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Epidemiology Research Projects Directory. Volumes 2 and 3

(U.S.) Interagency Regulatory Liaison Group
Washington, DC

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NTIS

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Volumes 2 and 3

JANUARY 1982

PROJECTS DIRECTORY
COMMITTEE OF
THE EPIDEMIOLOGY
WORK GROUP OF THE
**INTERAGENCY
REGULATORY
LIAISON GROUP (IRLG)**

EPIDEMIOLOGY RESEARCH PROJECTS DIRECTORY

United States
Consumer Product Safety
Commission

United States
Environmental Protection
Agency

Food and Drug
Administration
United States Department of
Health and Human Services

Food Safety and Quality Service
United States
Department of Agriculture

Occupational Safety and Health
Administration
United States
Department of Labor

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SPRINGFIELD, VA. 22161

INTERAGENCY REGULATORY LIAISON GROUP (IRLG) Washington, D.C.

NOTICE TO USERS

On September 28, 1981, the formation of the Regulatory Work Group on Science and Technology was announced. Members include the agency heads of the Consumer Product Safety Commission, the Environmental Protection Agency, The Food and Drug Administration, The Food Safety and Inspection Service, and Occupational Safety and Health Administration. The chairman is Dr. George A. Keyworth, Director of the Office of Science and Technology Policy, Office of the President. The purpose of this Work Group is to strengthen the role of scientific data and analysis in the regulatory process.

Concurrent with the formation of this Group, it was decided not to renew the agreement which established the Interagency Regulatory Liaison Group (IRLG). This agreement expired at the end of September 1981. As a result, the Epidemiology Research Projects Directory, supported by the IRLG, will no longer be published. As a service to current users of the Directory, it was decided to combine data on ongoing epidemiology research projects for both 1980 and 1981 in a single publication rather than to terminate this activity with Volume 2 (1980) alone. Volumes 2 and 3 are, thus, both contained in this final publication.

Interagency Regulatory Liaison Group

EPIDEMIOLOGY RESEARCH PROJECTS DIRECTORY

An Indexed Directory of
Current Research Project Abstracts in
Epidemiology and Related Fields

Volume 2

January 1981

United States
Consumer Product Safety
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Department of Labor

Published
For
The Epidemiology Work Group
of the
Interagency Regulatory Liaison Group (IRLG)
By
NTIS

FOREWORD

The *Epidemiology Research Projects Directory* (ERPD) is sponsored and funded by the Interagency Regulatory Liaison Group (IRLG) which is composed of the U.S. Consumer Product Safety Commission (CPSC), Food and Drug Administration (FDA), Food Safety and Quality Service (FSQS), Environmental Protection Agency (EPA) and Occupational Safety and Health Administration (OSHA). The IRLG was organized in 1977 to improve the public health through sharing of information, avoiding duplication of effort, and developing consistent regulatory policy through compatible practices in areas of activity common to the Agencies. The IRLG and its Epidemiology Work Group (EWG) hope that this *Directory* will serve as a central reference location for current epidemiological studies and, thus, increase the availability of the state-of-the-art knowledge concerning current epidemiological projects on adverse health effects resulting from diverse exposures. Regulatory decisionmaking should be enhanced by the facilitation of regulatory statutes implementation based on adequate scientific data which will identify gaps in knowledge, reduce redundancy and overlaps, and stimulate further pertinent investigations and studies. Information needs of non-Government researchers and administrators concerned with environmental hazards should also be fulfilled with scientific input useful for formulating their problems, resolving their courses of action, and improving their capability to assess risks and benefits of regulatory rules.

The *Epidemiology Research Projects Directory* is also the result of cooperation with another interagency committee, the DHHS Committee to coordinate Environmental and Related Programs (CCERP).

Both interagency committees wish to increase awareness of ongoing and planned research in epidemiology and toxicology and thus avoid possible unnecessary duplication of expensive research which would waste scarce resources. They hope to facilitate the identification of organizations supporting or performing research in these subject areas. This may be accomplished through the use of the Sponsoring Organization and Performing Organization Indexes.

The two interagency groups are also making available these epidemiology and toxicology data bases through an online system—Toxline—via a new index term, RPROJ. (Please see the User Guide, page iv.)

Epidemiology research projects include those related to morbidity and mortality; occupational, consumer, and other population exposure to various hazards; biologic, pharmacologic, and environmental research on susceptibility to disease; and illnesses related to chemical exposure.

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USER GUIDE

The *Epidemiology Research Projects Directory* is an annual publication of ongoing research projects in epidemiology selected from the files of the Smithsonian Science Information Exchange (SSIE).

Each project summary is categorized by scientific discipline and assigned a unique identification number for cross-referencing from the Directory Indexes—Subject, Investigator, Performing Organization, Supporting Agency, and Master Grant Number.

The emphasis of the Directory is on the relationship between a causal factor and the resultant human disease or problem. The cause may be an environmental, chemical, physical, or microbiological hazard, or it may be genetic, social, or behavioral. The resulting disease or condition may be a physiological or mental pathology or a destructive addiction. Studies of the use of animals to prove a theory of cause and effect have been excluded, but animals as vectors or reservoirs of human diseases have been included. Techniques for determining environmental hazards have been included only when a direct application to human exposure is to be made.

The **Description of Research Projects** contains all the project summaries in the Directory arranged by supporting organization.

The **Subject Index** is based on a classification system developed by SSIE in which index terms are arranged in hierarchies indicating relationships between broader and narrower subject areas. Related terms are thus grouped together under broader terms. Each index term is followed by the project title and a five-digit number (ie, 1.0001) indicating the specific location of each project indexed to that term.

The indexing is as specific as the project permits. A study dealing with the epidemiology of illness due to inhaled asbestos would be indexed to "Asbestos" under a hierarchy consisting of "Irritants-particulates" which in turn could be found under the broader term "Respiratory System". "See" and "See Also" cross-references are provided in the subject index to indicate the hierarchies where specific terms may be found. For instance, alphabetically within the subject index would be listed the term "Asbestos" with the reference "See Also Respiratory System Irritants-particulates". To further aid the reader in locating subject material, the subject index pages use a dictionary format: the first high-level term appearing on a left-hand page is printed in the upper left-hand corner of that page; the last high-level term on the right-hand page appears on the upper right-hand corner of that page.

The **Investigator Index** is an alphabetic listing of all investigators cited on the source document provided to SSIE. An asterisk is used to designate an individual specified as principal investigator; due to space limitations only this name appears on the project summary.

The **Performing Organization Index** lists alphabetically the name of the institution or laboratory actually conducting the investigation.

The Supporting Agency Index consists of a single alphabetical listing of both Federal and non-Federal sources of support. This index also uses "See" references (as in the subject index) to assist the user in locating major organizational units within the U.S. Government (i.e., FDA within USDHHS). In view of the large number of state agencies and departments, they are displayed as a combined group under each state. The Master Grant Number Index. Within the Projects Section are included a few reports that have no summary, but are referenced in the description of an encompassing master grant. The summary for this larger program grant to which a subproject is referred may be located by using this index.

The contents of the *Epidemiology Research Projects Directory* are also available through an online system—Toxline—via a new index term, RPROJ. Subscribers to the National Library of Medicine's Toxline file may now search for epidemiology and toxicology research abstracts in RPROJ, which is updated monthly.

Projects identified in the *Epidemiology Research Projects Directory* by D-IARC were originally collected by the International Agency for Research on Cancer (IARC) and are listed in a *Directory of On-Going Research in Cancer Epidemiology* which is published annually by IARC and the Germany Cancer Research Center in Heidelberg. This activity is supported by the International Cancer Research Data Bank Program of the National Cancer Institute.

For information about subscribing to or using this new Toxline subfile, RPROJ, please contact the Toxicology Information Program, Specialized Information Services, National Library of Medicine, Building 38A C6B, 8600 Rockville Pike, Bethesda, MD 20209. Telephone (301) 496-1131.

SAMPLE PROJECT SUMMARY

Project Number
Volume Number

1.0001

Project Title

NAVY ENVIRONMENT: HEALTH EFFECTS OF ASBESTOS EXPOSURE AMONG PEARL HARBOR NAVAL SHIPYARD WORKERS

Principal Investigator
Affiliation & Address
Grant or Contract Number

L. N. Kolonel, University of Hawaii System, Manoa Campus, Cancer Center of Hawaii, 1997 East West Rd.; Honolulu, Hawaii 96822 (DN675593) (N00014-76-C-0952)

Project Description

This study is to assess disease risks associated with varying degrees of asbestos exposure in a naval shipyard. The effect of smoking and other adverse respiratory exposures on these risks will be evaluated.

Asbestos exposure and disease incidence are being examined in a population of workers with primary exposure to one fiber type whose characteristics of small diameter and straight fibers permit deep penetration into the lungs. Detailed historical information regarding smoking habits and toxic exposures is being obtained by questionnaires. Measurements of air concentrations of asbestos fibers are being made with individual samples worn near the breathing zone. Diagnosis of all pulmonary and any suspicious intra-abdominal tumors in the workers will be confirmed by microscopic examination of the involved tissues. All data collected will be keypunched and stored on computer tape for analysis.

Supporting Organization

Project Funding

SUPPORTED BY: U.S. Dept. of Defense, Navy, Office of Naval Research, 800 N. Quincy St.; Arlington, Virginia 22217 $69,874

DESCRIPTION OF RESEARCH PROJECTS

2.0001,

STUDIES ON THE FREQUENCY AND INCIDENCE OF LYMPHOMA AND LEUKEMIA IN TWINS

E.R. Brown, University of Health Sciences - Chicago Medical School, Medical School, Dept. of Microbiology, *2020 W. Ogden Ave., Chicago, Illinois* 60612 (D-IARC-79-801)

The project relates to the higher incidence of lymphomas and leukemias found in twins, and breaks this down into the type, age, sex, etc. of the twins.

SUPPORTED BY American Blood Research Society funds n.a.

2.0002,

EPIDEMIOLOGIAL INVESTIGATION OF CERTAIN ASPECTS OF HAIR DYE AND SACCHARIN USE AND CANCER RISK

E.L. Wynder, American Health Foundation Inc., *320 E. 43rd St., New York, New York* 10017 (RD-48A)

No summary has been provided to the Smithsonian Science Information Exchange.

SUPPORTED BY American Cancer Society Inc. $24,240

2.0003,

EPIDEMIOLOGY OF CANCER AMONG MORMONS

L. Breslow, University of California, Los Angeles Campus, School of Public Health, Dept. of Public Health, *405 Hilgard Ave., Los Angeles, California* 90024 (PDT-51B)

Results ascertained by us for 350,000 California Mormons during 1968-75 and 750,000 Utah Mormons during 1970 and 1975 compared with U.S. whites show that the standardized mortality ratio (SMR) for total cancer is about 50 percent for active males, about 65 percent for all males, and about 75 percent for all females. For active males the SMR is about 25 percent for smoking-related cancer sites and about 65 percent for all other sites. Mormons are a health-conscious religious group, who appear to be similar to U.S. whites in many respects, such as, diet, socioeconomic status, and urbanization, but who use substantially less tobacco, alcohol, coffee, and tea than the general population. Active Mormons, defined here to be Church leaders known as High Priests and Seventies, abstain almost entirely from these substances. However, the reasons for the low Mormon cancer rates are largely unknown, primarily because there is no detailed data available on their health-related characteristics.

The objective now is to pursue this descriptive mortality data with a questionnaire survey and prospective mortality follow-up of active California Mormon adults, specifically High Priests and their wives. The survey will obtain detailed demographic, lifestyle, dietary, occupational, and medical history data on a representative sample of about 1000 individuals and limited demographic and lifestyle information on about 20,000 additional individuals. Mortality follow-up will be conducted on this active Mormon cohort for four years. Additional Church-based mortality data will be collected for all California Mormons during the years 1960-67 and 1976-79 and for all Utah Mormons during 1976-79 to increase the statistical reliability of the existing data summarized above.

The data on aggregate lifestyle and health-related characteristics of active California Mormons will be combined with their detailed cancer mortality rates. Distinctive differences between these Mormons and other comparison groups will be highlighted. Using variation in characteristics other than smoking and drinking, major subgroups of active Mormon questionnaire respondents will be defined and compared for subsequent mortality. These analyses should provide significant understanding as to why Mormons have low cancer mortality rates.

SUPPORTED BY American Cancer Society Inc. $82,920

2.0004,

EPIDEMIOLOGY OF LARGE BOWEL CANCER IN WOMEN

N.S. Weiss, Fred Hutchinson Cancer Research Center, Epidemiology & Biostatistics Program, *1124 Columbia St., Seattle, Washington* 98104 (PDT-96A)

A short extension of the case-control study is being proposed to test the hypothesis that use of menopausal estrogens offers relative protection against the development of large bowel cancer. All 35-74 year old female residents of King and Pierce Counties (Washington) who are diagnosed as having large bowel cancer during a 15-month period are to be interviewed concerning exogenous hormone exposure and menstrual and reproduction experience. Their responses will be compared to those of healthy women randomly selected from the population of these same counties.

SUPPORTED BY American Cancer Society Inc. $17,936

2.0005,

BREAST CANCER IN CONNECTICUT MOTHERS EXPOSED DURING PREGNANCY TO EXOGENOUS ESTROGENS

J.W. Meigs, Yale University, School of Medicine, Dept. of Epidemiology & Public Health, *333 Cedar St., New Haven, Connecticut* 06510 (PDT-144)

The aim of this research is to examine the claim that the administration of exogenous estrogens to women during pregnancy has increased their risks of cancer. The question of breast cancer risk will be examined intensively by expanding the objectives and extending the procedures of the Connecticut Diethylstilbestrol Cohort Study now in progress (NCI Grant #5 R01 CA 20347). The general method is to identify cohorts of exposed women and otherwise comparable non-exposed women by reviewing prenatal records from cooperating Connecticut obstetrician-gynecologists and to identify their breast cancer experience through the Connecticut Tumor Registry. A second control group, a stratified random sample of Connecticut mothers, are being selected using birth registration data. Cancer experience will be identified in an identical manner for this cohort. To determine person-years-at-risk of breast cancer subject to report to the Connecticut Tumor Registry, detailed follow-up procedures involving searches of City Directories and Motor Vehicle license files will be conducted for all subjects. Breast cancer incidence among the control mother cohorts will be compared to that in the at-risk group. In addition, the integrated and expanded study will complete the estimates of risk to offspring from prenatal exposures to exogenous estrogens.

SUPPORTED BY American Cancer Society Inc. $78,348

2.0006,

MINERAL FIBERS AND LUNG CANCER

A.M. Churg, University of California, San Francisco Campus, School of Medicine, Dept. of Pathology, *551 Parnassus Ave., San Francisco, California* 94122 (PDT-146)

Epidemiologic studies of lung cancer indicate that there are marked incidence variations which cannot be accounted for by cigarette smoking patterns, but do appear to relate to variables such as race, socioeconomic status, and geographic location. Air pollution is another factor which has sometimes been implicated in lung carcinogenesis, primarily on the basis of urban vs. rural cancer rates. Mineral fibers constitute a portion of the particulate fraction of urban air pollution, and it has been shown in animal studies that, under appropriate conditions, many particulates and especially mineral fibers may be carcinogenic or co-carcinogenic. Mineral fibers are known to be present in large numbers in the lungs of urban dwellers. This grant request involves an investigation to determine if there is an association between lung burden of fibrous minerals and bronchogenic carcinoma in general urban population in a geographically high lung cancer area. Numbers of mineral fibers will be quantitated at the light and electron microscopic level by dissolving autopsy and surgical lungs and collecting appropriate samples. Whole lung slices will be used to minimize topographic variation in numbers of fibers. Fibers will be further identified by electron diffraction and electron microprobe to determine mineral species, and will also be enumerated by lengths and diameters; the latter properties appear to be important in carcinogenesis. An attempt will be made to correlate total fibers, fiber specific mineral type, and/or fibers of various size classes with the presence or absence of bronchogenic carcinoma.

SUPPORTED BY American Cancer Society Inc. $24,659

2.0007,

IMMUNOLOGIC/EPIDEMIOLOGIC STUDY OF HODGKIN'S DISEASE

F.P. Siegal, City University of New York, Mount Sinai School of Medicine, School of Medicine, Dept. of Medicine, *5th Ave. at E. 100th St., New York, New York* 10029 (PDT-153)

The proposed research will investigate three aspects of the epidemiology and immunology of Hodgkin's Disease. Tissue antigens will be sought which are specifically stimulatory to lymphocytes of patients, their families and close personal contacts but not of appropriately-matched controls, to define the potential for transmission of a hypothetical agent. The same subjects will be evaluated to determine if there is a component of the immunodeficiency associated with Hodgkin's which is communicable, and might be secondary to the disease. To better understand susceptibility factors in Hodgkin's, B lymphocyte typing for Ia-like antigens will be done as well. Through this combined analysis, with its emphasis on the study of related and unrelated contacts, rather than patients (who might be expected not to respond well to Hodgkin's associated antigens) it is hoped that clues might be found which would help define the pathogenesis of the disease.

SUPPORTED BY American Cancer Society Inc. $37,787

2.0008,

TRANSIENT CEREBRAL ISCHEMIC AND EMBOLIC STROKE

R.I. Pfeffer, University of California, Irvine Campus, California College of Medicine, Dept. of Neurology, *Irvine, California* 92664

The association between transient cerebral ischemic attack (TIA) and embolic cerebral infarction will be examined in a large free-living population. Previous studies do not describe the mechanism of stroke in a large, unselected group of persons who suffer TIA, but only link TIA to embolic infarction anecdotally. All TIA and cerebral infarction affecting a cohort of 11,000 persons over a three-year period will be ascertained. Cases of cerebral infarction will be classifed as embolic (cardiac origin), embolic (noncardiac origin), nonembolic, lacunar, or indeterminate after careful review of clinical and laboratory data. The proportion of persons with embolic infarction of noncardiac origin and of persons with nonembolic infarction who did and did not experience a preceding TIA will be compared. Associations will also be evaluated in subclasses of TIA, based upon characteristics of the attacks such as vascular distribution affected, duration, and multiplicity of attacks.

Persons with TIA are an identifiable population for further diagnostic study and preventive intervention. If embolism were the major risk in TIA patients, the hazards of angiography and surgery might be avoided in many such persons. Alternatively, evidence of occlusive disease would justify major efforts at noninvasive detection of extracranial stenosis. Subpopulations at differential risk: e.g., carotid TIA should be considered separately in future therapeutic trials.

SUPPORTED BY American Heart Assn. $5,000

2.0009,

INVESTIGATION OF HDL-CHOLESTEROL IN CHRONIC DISEASE AND ESTABLISHMENT OF NORMAL VALUES IN A HEALTH PLAN POPULATION

A.G. Scottolini, Kaiser Foundation Hospital, Dept. of Pathology & Clinical Laboratories, *1697 Ala Moana Blvd., Honolulu, Hawaii* 96815

The inverse relationship between HDL-cholesterol and coronary heart disease has been well established, i.e., a high HDL-cholesterol is protective whereas a low one may place a patient at risk. However, the relationship between predisposing diseases, e.g., diabetes mellitus, hypothyroidism, etc., has not been investigated. Simplified methodology (polyanion precipitation techniques) while currently available is not part of the routine clinical laboratory. As a matter of fact, to my knowledge the technique is not available anywhere in the state of Hawaii except at our own facility. The Kaiser Permanente Health Care Program has over 107,000 subscribers in the state of Hawaii. They generate 400,000 clinic visits and 11,000 multiphasic health examinations annually. Since most of the following studies are being performed routinely, it is our goal to determine the relationship between serum HDL-cholesterol by multi-varied analysis with serum total cholesterol, triglycerides, uric acid, glucose, index of free thyroxin level, urea nitrogen, blood pressure, EKG, chest film, CBC and urinalysis. In addition, despite the pioneer efforts of Gulbrandsen et al in middle-aged and elderly Japanese males, there is a need for establishing normal values of HDL-cholesterol for our local population by age, sex and ethnic derivation. These studies are already in progress. Other effects need to be studied, e.g., the influence of exercise upon so-called 'normal' values (8-10% of our subscribers are estimated to be runners or joggers). Our system of medical care delivery affords us close followup of those patients who develop arteriosclerotic heart disease, permitting correlation of the serum HDL-cholesterol with the results of diagnostic studies, e.g., coronary angiography, treadmill EKG, serum enzyme and, in the event of fatal disease, by post-mortem examination.

SUPPORTED BY American Heart Assn. $11,000

2.0010,

CORONARY RISK FACTORS IN RUNNERS AND NON-RUNNERS

G.G. Rhoads, University of Hawaii System, Manoa Campus, School of Public Health, Dept. of Public Health Science, *Spalding Hall, Room 255, Honolulu, Hawaii* 96822

The purpose of this proposal is to compare selected lifestyle and physiologic characteristics between a random sample of marathon runners, other runners, and appropriate controls. Items to be evaluated by mail include height, weight, age, sex, ethnicity, education, occupation, alcohol and tobacco use, exercise habits, past medical history, and family history of coronary heart disease. Approximately 125 runners and 75 controls will be examined to obtain skinfolds, blood pressure, measured height and weight, and total and HDL cholesterol. Multivariate statistical techniques will be used to estimate the decrease in coronary disease incidence that might be expected in runners, based on differences in coronary risk factors.

SUPPORTED BY American Heart Assn. $10,000

2.0011,

FREQUENCY OF CLICK-MURMUR CHARACTERISTICS IN NORMALS

P.W. Willis, University of Michigan, Ann Arbor Campus, Medical School, Dept. of Internal Medicine, *1335 E. Catherine St., Ann Arbor, Michigan* 48104 (55-087-778)

The non-ejection systolic click and late systolic murmur syndrome has come to be recognized as a very common entity. There is disagreement about the prevalence of the auscultatory; phonocardiographic and echocardiographic characteristics of this syndrome among normal individuals. Studies thus far have shown prevalence rates of between .3% and 28% in healthy subjects depending on age and sex and method of detection. This project is designed to determine the prevalence of these findings among healthy young white men and women and to determine if individuals so affected are more often affected with chest pain, anxiety, arrhythmias, ECG changes at rest (T wave inversion in leads II, III, F, V5, V6) or ECG changes during or after exercise (RST segment depression or arrhythmia) than individuals from the same population who are free of the signs of the syndrome.

SUPPORTED BY American Heart Assn. $11,000

2.0012,

SERIAL EXERCISE TESTING IN HIGH RISK MALES

N.L. Lasser, College of Medicine & Dentistry of New Jersey, New Jersey Medical School, School of Medicine, Dept. of Medicine, *100 Bergen St., Newark, New Jersey* 07103

Although the submaximal graded exercise test (GXT) has become popular for the detection of preclinical ischemic heart disease, its predictive accuracy in asympatic subjects is low. The accuracy increases to 85% with serial testing, and the measurement of systolic time intervals (STI's) can greatly enhance predictive power. It is proposed to perform serial GXT's and pre-and post-exercise STI's at each annual examination of men participating in the Multiple Risk Factor Intervention Trial (MRFIT) in Newark. MRFIT, a multiple center collaborative Federally-sponsored clinical trial aimed at determining whether treatment of multiple risk factors (hypercholesterolemia, hypertension, smoking) reduces coronary mortality, is being carried out in 12,000 high-risk men, age 35-57, in control and experimental groups, with a 6 year follow-up. A baseline submaximal GXT was performed but will not be performed again as part of the national protocol. Continuation of GXT's at the Newark Center will be an ancillary study requiring outside funding. Tests will be carried out annually in the 632 men attending the Newark Clinic utilizing a Marquette Series 3500 Exercise System recording on paper and tape and an Irex Continu Trace 101 recorder, with computer analysis of the tapes. Analysis will be made of conversion rates of GXT's and changes in fitness levels. In addition to enhancing the power of the MRFIT these studies in this uniquely valuable population should demonstrate the ability to make the GXT a more accurate predictor of future coronary events and the potential use of the test as an endpoint in clinicial trials. These studies should indicate the utility of STI's as an adjunct to GXT and elucidate the effect of other lifestyle changes on exercise habits.

SUPPORTED BY American Heart Assn. $9,000

2.0013,

RELATIONSHIP OF BRONCHIOLITIS AND ASTHMA - A PROSPECTIVE STUDY

F.J. Twarog, Childrens Hospital Medical Center, Allergy Division, *300 Longwood Ave., Boston, Massachusetts* 02115

Bronchiolitis is an infectious disease of young children resulting in difficulty in breathing and wheezing. It is usually caused by a viral infection. It has been recognized that up to 50% of children who have had an episode of bronchiolitis go on to have recurrent attacks of wheezing and some develop asthma. Investigators have found that white blood cells from individuals with asthma have different characteristics than those of normal individuals. The purpose of this study is to determine whether children with bronchiolitis have similar abnormalities of their blood cells or whether those that subsequently develop asthma acquire this abnormality. If such a marker can be identified, it will be useful in studying the natural history and epidemiology of these diseases and for studying therapy and preventing asthma.

SUPPORTED BY American Lung Assn. $15,000

2.0014,

CENTRAL CANCER REGISTRY

N.J. Gray, Anti Cancer Council of Victoria, *90 Jolimont St., East Melbourne, Victoria 3002, Australia* (D-IARC-78-17)

The Central Cancer Registry continually monitors hospital data from large hospitals in Victoria, covering an estimated 50% of cancers occurring. Clinical data are recovered by medically qualified registry personnel and follow-up to provide survival data is rigorous. The registry yields information on relative frequency as well as treatment trends and results, and is available as a case-identifying center for retrospective epidemiological studies. A population based registry is now being developed to register all cases of cancer within the State of Victoria to enable incidence and prevalence to be established. Registry data are made available to research workers on request and advice on statistical and epidemiological techniques is also given.

SUPPORTED BY Anti Cancer Council of Victoria funds n.a.

2.0015,

CONTINUATION OF DEMONSTRATION CANCER CONTROL PROGRAM IN INDUSTRY

C.H. Tamburro, University of Louisville, School of Medicine, Dept. of Community Health, *101 W. Chestnut, Louisville, Kentucky* 40202

OBJECTIVE: To assess data gathered from an NCI Cancer Control Project Contract NO1-CN-55212. 'Implementation and Assessment of a Demonstration Cancer Control Detection and Prevention Program in a Cohort of Industrial Workers'.

APPROACH: A cancer control demonstration project was implemented in Louisville after the discovery of hepatic angiosarcoma, a rare cancer, Among polyvinyl chloride workers. This cohort is still undergoing medical surveillance and data is being stored and analyzed. This ongoing project is currently assessing the data gathered from the medical surveillance of these workers. The data base provides for evaluation of individually ill employees, provides monitoring of screening compliance, provides subcohorts for special studies, provides secondary non-invasive epidemiological research studies and finally a base for design and sample size consideration for future investigative projects.

PROGRESS: The sensitivity and specificity of federally-required screening tests as well as others is being determined. Twenty-two chemicals besides vinyl chloride are undergoing scrutiny as to their potential for causing disease. High and low risk subgroups have also been identified as to non-malignant hepatic and splenic disease. Four major primary sites of cancer development in the chemical (industrial) environment are under study in addition to hepatic angiosarcoma: A) Lung cancer, particular large cell carcinoma, B) Bilateral pleural thickening and possible relationship to inadvertent asbestos exposure, C) Colon cancer and acrylonitrile exposure and D) Brain cancer and vinyl chloride exposure.

SUPPORTED BY B.F. Goodrich Chemical Co. funds n.a.

2.0016,

EPIDEMIOLOGY OF MALE BREAST CANCER

M.A. Rahim, Bangladesh Cancer Epidemiology Research Program, Research Coordinating Unit, *49 E. Azimpur Gov. Estate, Dacca 5, Bangladesh*

OBJECTIVE: It has been observed that male/female breast cancer is 1:19 in Bangladesh. This observation is being followed-up by case control studies of patients reported to the radiotherapy units and registered to the ad-hoc registry of BCERP. Questions are asked on family history, local irritation, local trauma, sexual characteristics, testis abnormalities, gynecomastias, liver function tests including liver biopsy, and 17-ketosteroid excretions are examined. Compilations of data are done at the Bangladesh Cancer Epidemiology Research Program Research Coordinating Unit.

SUPPORTED BY Bangladesh Medical Research Council funds n.a.

2.0017,

EPIDEMIOLOGY OF CANCER OF THE CERVIX

M.A. Rahim, Bangladesh Cancer Epidemiology Research Program, Research Coordinating Unit, *49 E. Azimpur Gov. Estate, Dacca 5, Bangladesh*

OBJECTIVE: The characteristics of groups at high risk for cancer of the uterine cervix will be studied with the help of an ad hoc cancer registry of BCERP. Radiotherapy units of Bangladesh will be places of study, and compilation of data, which will be done manually, will be carried out at Bangladesh Cancer Epidemiology Research Program Research Coordinating Unit.

SUPPORTED BY Bangladesh Medical Research Council funds n.a.

2.0018,

CANCER EPIDEMIOLOGY RESEARCH PROGRAM (BCERP) - DATA ACQUISITION

M.A. Rahim, Bangladesh Cancer Epidemiology Research Program, Research Coordinating Unit, *49 E. Azimpur Gov. Estate, Dacca 5, Bangladesh*

OBJECTIVE: To study relative frequency of cancer, all sites, in hospital populations in Bangladesh.

APPROACH: The hospital facilities to treat cancer patients which are available have been included in the present study, but participation of the hospital is voluntary and some hospitals, therefore, have elected not to join the project. Consultants of the participating hospitals are co-investigators. After interview and examination of the patient a record is prepared

according to guide lines of WHO Hand Book for Standardized Cancer Registries. The records are sent to the Bangladesh Cancer Epidemiology Research Program Research Coordinating Unit for manual compilation and statistical analysis.
SUPPORTED BY Bangladesh Medical Research Council funds n.a.

2.0019,

A STUDY OF EPIDEMIOLOGY, PATHOLOGY, CLINICAL MANAGEMENT AND OUTCOME OF MALIGNANT MELANOMA IN WESTERN AUSTRALIA

B.K. Armstrong, National Health & Medical Research Council, Research Unit in Epidemiology & Preventive Medicine, *Canberra, A.C.T., Australia*

All patients (about 500 expected) having pre-invasive or invasive malignant melanoma of the skin diagnosed in Western Australia in 1980 and 1981 will be included in a case-control study - and detailed review of histopathology and clinical management undertaken. The case-control study will include demographic features, details of sun exposure (particularly intermittent versus continuous), objective measures of solar skin damage, diet and other relevant habits. Controls will be matched by age and sex using the electoral roll as a sampling frame. All relevant prognostic features will be recorded in the histopathologic review, including Clark's level and tumor thickness. Melanoma patients will be followed for at least ten years to document prognosis in relation to histopathology and clinical management.
SUPPORTED BY Cancer Council of Western Australia funds n.a.

2.0020,

DIET AND BILE SALT METABOLISM IN THE AETIOLOGY OF COLON CANCER

W.M. Castleden, University of Western Australia, Queen Elizabeth II Medical Centre, Dept. of Surgery, *Nedlands, W. Australia 6009, Australia*

Dietary and metabolic epidemiological studies in humans, by us and others, have suggested that colon cancer development may be related to diet and/or bile salt metabolism.
OBJECTIVE: To examine the biliary and fecal bile salt concentrations in patients with adenocarcinoma of the large bowel, and to compare this with control patients, matched for age and sex.
APPROACH: A form of consent is obtained from all patients. The first specimen of feces passed by the patient after admission to hospital is collected and freeze-dried for fecal bile salt estimation. Bile is collected either by endoscopic retrograde cannulation of the bile duct or from patients at operation. Bile salts are estimated by gas chromatographic method.
PROGRESS: Studies are still in the developmental phase.
BIBLIOGRAPHIC REFERENCES: Castleden, W.M., Doouss, T.W., Jennings, K.P. and Leighton, Monica. Clinical Oncology (1978) 4, 139-144. Gallstones, Carcinoma of the Colon and Diverticular Disease.
SUPPORTED BY Cancer Council of Western Australia funds n.a.

2.0021,

PROSPECTIVE CLINICAL STUDY OF PROGNOSTIC FACTORS IN PRIMARY AND RECURRENT COLORECTAL CANCER

L.H. Blumgart, University of Glasgow, Royal Infirmary, Dept. of Surgery, *84 Castle St., Glasgow G4 0SF, Scotland, United Kingdom* (SP1406-B)

OBJECTIVE: A detailed prospective study of clinical and pathological prognostic factors in patients with colorectal cancer.
APPROACH: All patients with large bowel cancer treated at a single center were prospectively studied. Detailed information on clinical presentation, relevant past history, operative findings and evidence of distant metastases were noted. Particular attention was paid to the extent of primary tumor spread. Patients have been followed at regular intervals postoperatively and precise data on survival and cause of death has been recorded.
PROGRESS: Local tumor invasion to involve adjacent organs or structures significantly decreases the 3-4 year survival pattern, as compared to patients with freely mobile tumors. This factor has been of more significance in this study than the tumor involvement of lymph nodes (Dukes' C1 tumors). The survival pattern of patients with liver metastases is related to the extent of liver involvement with tumor. Thus, patients with solitary liver metastases have a significantly improved survival compared to those with widespread metastases. The study of natural history and prognostic factors has defined those patients who would receive most benefit from adjuvant therapy.
SUPPORTED BY Cancer Research Campaign funds n.a.

2.0022,

BACTERIA AND THE ETIOLOGY OF CANCER

R. Williams, Central Public Health Lab., Bacterial Metabolism Research Laboratory, *Colindale Ave., London NW9 5DX, England, United Kingdom* (SP 1386)

OBJECTIVE: To study the role of bacterial metabolites of bile acids in the causation of large bowel cancer.
APPROACH: We have developed, over the last 5 years, a discriminant based on fecal analyses for bile acids and certain clostridia. We are testing the value of this discriminant prospectively in: (a) groups of patients at St. Mark's Hospital, London at high risk of developing bowel cancer and (b) healthy persons living in 3 areas of Britain recruited through their general practitioners.
PROGRESS: The groups of patients and healthy persons have been recruited to the study. It is too early in the study to report on the results.
SUPPORTED BY Cancer Research Campaign funds n.a.

2.0023,

VASCULAR SURGERY CASES

Unknown, Cleveland Vascular Society, *Cleveland, Ohio*

To develop registry for vascular surgery cases, sophisticated services in epidemiology, statistical decision making, and computer analysis.
SUPPORTED BY Cleveland Foundation $15,000

2.0024,

THE RELATIONSHIP OF LOWER RESPIRATORY TRACT DISEASE IN INFANCY TO THE DEVELOPMENT OF CHRONIC LUNG DISEASE IN ADULTS (ABBREV)

C.B. Hall, University of Rochester, School of Medicine & Dentistry, Dept. of Pediatrics & Medicine, *601 Elmwood Ave., Rochester, New York* 14627 (1164R1)

Bronchiolitis due to respiratory syncytial virus is the most important cause of mortality and morbidity in the first year of life. Evidence has been accumulating, suggesting that long-term sequelae in the form of chronic obstructive pulmonary disease in adult life, has its origins in respiratory illness during infancy. We are studying several populations of children in order to construct a long-term follow-up of the effects of lower respiratory tract disease in infancy.
SUPPORTED BY Council for Tobacco Research U.S.A. Inc. $58,717

2.0025,

PULMONARY FUNCTION TESTS IN ADOLESCENTS AND THEIR PARENTS - AN EPIDEMIOLOGICAL APPROACH

B.J. van den Berg, University of California, Berkeley Campus, School of Public Health, Dept. of Social & Administrative Health Sciences, *Berkeley, California* 94720 (1171R1)

This is a continuation of an epidemiologic study, whose main objectives are to increase knowledge of the determinants and correlates of spirometric measurements of pulmonary function in adolescents and to evaluate the importance of these measurements to predict chronic adult pulmonary disease. The following studies are proposed: 1) Establishment of norms of ventilation capacity for 15- to 17-year old adolescents; 2) Investigation of medical, biologic and environmental factors in relation to ventilation capacity; 3) Evaluation of familial patterns of basic parameters of pulmonary function in siblings, and adolescent-parent sets; 4) Analysis of the frequencies of medically attended acute and chronic diseases of the respiratory system in infancy, early and late childhood in our study population; and 5) To compare the data under 3) with the parents' smoking habits as well as with the adolescent's smoking habits. The 2400 adolescents selected for these studies are a subgroup of the study population of the Child Health and Development Studies.
SUPPORTED BY Council for Tobacco Research U.S.A. Inc. $100,000

2.0026,

EFFECT OF SMOKING ON EVOLUTION OF THE MAXIMUM EXPIRATORY FLOW-VOLUME CURVE

P. Hamosh, Georgetown University, School of Medicine, Dept. of Physiology & Biophysics/Medicine, *3800 Reservoir Rd. N.W., Washington, District of Columbia* 20007 (1108 R1)

The primary aim of this study is to obtain the MEFV curve three consecutive years in adolescents 12-14 years of age and relate the analysis of the curve to smoking habits and respiratory symptoms. The latter will be obtained by questionnaire.
Since the MEFV curve shows major abnormalities by the time subjects present themselves with respiratory complaints due to chronic bronchitis and emphysema, it is essential to identify early the 'susceptible.'
The secondary aim of this research is to identify a number of subjects who develop MEFV changes more severely or rapidly after starting smoking and follow this select group over an extended period of time.
SUPPORTED BY Council for Tobacco Research U.S.A. Inc. $0

2.0027,

STATISTICAL-GENETIC EVALUATION OF RISK FACTORS IN LUNG CANCER

H.T. Lynch, Creighton University, School of Medicine, Dept. of Preventive Medicine, *629 N. 27th St., Omaha, Nebraska* 68131 (941AR2)

We have designed an investigation which should enable the identification of risk factors in lung cancer with specific relevance to genotype-environmental interaction. This will involve an investigation of a large cohort (150 probands and their relatives) from Lynch, Nebraska (Holt County) and adjacent residential areas wherein a very homogeneous environmental setting (rural-farming) exists. Detailed family histories and smoking histories with emphasis upon first degree relatives have been obtained. Correlation between smoking history and cancer clustering, considering all histologic varieties, has been the prime objective of this study. This has lately involved assistance from the Nebraska State Department of Vital Records so that accurate information relevant to dates of birth and death could be compiled. This now includes cancer information on 7,558 individuals and smoking histories and information on chronic lung disease for probands and their first degree relatives (2,921 individuals). Incidence data from the state of Iowa will be utilized for appropriate comparison with the data from Holt County, Nebraska (inclusive of Lynch, Nebraska).
Analyses have considered only two-way associations between the phenotypes of cancer, smoking behavior, and chronic obstructive pulmonary disease (COPD). Familial factors to date have been studied with respect to cancer incidence. It will be advantageous to study familial clustering of COPD in a manner analogous to our model applied to cancer clustering. Impeding this effort is the lack of incidence for COPD comparable to cancer incidence surveys which exist nationally. At the present time, we are examining various ways to circumvent this problem. Should this prove feasible, we will then be able to examine familial clustering of COPD in families of smokers and families of nonsmokers to study this association within families. It may also then be possible to search for genetic association between COPD and cancer by consideration of the clustering of both phenotypes within families.
SUPPORTED BY Council for Tobacco Research U.S.A. Inc. $77,797

2.0028,

EPIDEMIOLOGICAL STUDIES ON THE NEW SWEDISH TWIN REGISTRIES

L. Friberg, Karolinska Institutet, Institute of Environmental Hygiene, *Solnavagen 1, S10401 Stockholm 60, Sweden* (1136R2)

The project aims at studying gross and cause specific mortality on the old Swedish Twin Registry (11,000 pairs born 1886-1925) as well as health status on the New Swedish Twin Registry (13,000 pairs born 1926-1958) in relation to smoking habits. A second aim is to investigate as far as possible the confounding influence of smoking related behavioral characteristics such as psycho-social status and other exposures such as alcohol drinking and drug consumption.
SUPPORTED BY Council for Tobacco Research U.S.A. Inc. $59,967

2.0029,

REVIEW OF LUNG CANCER IN CONNECTICUT, 1935 - PRESENT

J.W. Meigs, Yale University, School of Medicine, *333 Cedar St., New Haven, Connecticut* 06510 (1255)

The purpose of this study is to determine, by review of slides made available through the Connecticut Tumor Registry, whether changes in the distribution of histologic types in lung cancer in Connecticut have occurred since 1935, and whether such trends result from changing diagnostic criteria. Particular emphasis will be placed upon the apparent increase in adenocarcinoma and to survival in relation to histologic type. Approximately 1,000 slides will be reviewed.

SUPPORTED BY Council for Tobacco Research U.S.A. Inc. $40,437

2.0030,

GLUCOCORTICOID HORMONE RESISTANCE IN THE LYMPHOCYTES OF INDIVIDUALS WITH ALLERGIES AND CYSTIC FIBROSIS

C.W. Distelhorst, Children's Hospital, *561 S. 17th St., Livingston Pike, Columbus, Ohio* 43205

The objective of this study is to test the hypothesis, resulting from our preliminary studies that glucocorticoid resistance is an inherited biochemical defect in the lymphocytes of a subset of individuals with allergic disorders. A possible relationship of this observation to cystic fibrosis is suggested by epidemiologic evidence that there is an increased incidence of respiratory allergy in cystic fibrosis patients and their families, and by biochemical evidence that the fibroblasts from patients with cystic fibrosis are resistant to the cytotoxic effect of glucocorticoids. Lymphocytes from allergic individuals and patients with cystic fibrosis will be tested for glucocorticoid resistance using a highly sensitive assay system. Family members will be studied in order to determine the role of heredity in the glucocorticoid resistance observed. The mechanism of glucocorticoid resistance will be determined by a detailed investigation of glucocorticoid receptor function in sensitive and resistant lymphocytes. It is expected that these studies will result in an improved understanding of the basic pathophysiology of allergic disorders and/or cystic fibrosis and could lead to more innovative forms of therapy.

SUPPORTED BY Cystic Fibrosis Foundation funds n.a.

2.0031,

ALCOHOL USE/ABSTINENCE AMONG MEN AND WOMEN IN A SMALL TOWN SETTING

E. Harburg, University of Michigan, Ann Arbor Campus, School of Liberal Arts, Dept. of Psychology, *Ann Arbor, Michigan* 48104

The general aims of this inquiry are to explore (through analyses of data already collected) the use, abuse, and nonuse of alcohol among men and women in a small town setting. The data concern drinking styles and histories, drinking behavior, temperament measures, life-stress, reasons for use and nonuse of alcohol, and recall of early family relations. The specific aim is to isolate some strong findings and prepare a paper and article.

The data come from a questionnaire survey of 2,273 persons who had been censused in a prior long-term medical study. The final sample of 1,683 persons represents 74% of those who completed and returned their questionnaire in 1977. The sample is about half men and half women. It includes four (overlapping) subsamples: (1) 183 husband-wife pairs (N=366 persons); (2) 314 sibling pairs (N=628 persons); (3) persons with alcohol and medical data from 1960-1962 (N=700 persons); and (4) persons with blood type data from 1965 (N=466 persons).

We will describe separately by sex and age for each of the four subsamples all the 539 variables and selected medical data and relate each variable to alcohol usage, i.e., amount of ethanol usage per week or category of usage. For the husband-wife and sibling subsamples, matched pair analysis will be used; for the other subsamples of individuals, basic regression or analyses of cavariance will be used. Human subject rights will be maintained.

This study should contribute to knowledge about women's use, abuse, and nonuse of alcohol which at present in spite of many years of research still seems in short supply. It is hoped such knowledge will be useful for educational purposes and therapy.

SUPPORTED BY Distilled Spirits Council of the U.S. Inc. $9,000

2.0032,

THE EFFECT EARLY-LIFE EXPERIENCES HAVE UPON MORBID AND MORTAL EVENTS

Unknown, University of Michigan, Ann Arbor Campus, Graduate School, *Rackham Bldg., Ann Arbor, Michigan* 48104

To enable the University's Program for Urban Health Research to complete it's studies into the effect early-life experiences have upon morbid and mortal events, especially heart disease, in the lives of middle-aged and elderly women.

SUPPORTED BY Fannie E. Rippel Foundation $1,864

2.0033,

EPIDEMIOLOGY OF OROPHARYNGEAL CANCER, AND ESOPHAGUS AND BREAST CANCERS

D.D. Patel, Gujarat Cancer & Research Inst., Dept. of Surgery, *New Civil Hosp. Campus Asarwa, Ahmedabad 380016, Gujarat, India*

DESCRIPTION: Oropharyngeal cancer constitutes 45% of all cancers in men. Cancer of the base of the tongue is the most common form of this cancer. The exact etiology of such high prevalence of these cancers is still unknown.

Cancer of the esophagus constitutes 6% of all cancers in men. Etiological factors causing such high prevalence are still elusive.

Cancer of the breast constitutes 20% of all cancers in females. It is thought that its incidence is higher in Bohra community, a sect of muslims.

By collecting data on epidemiology it is desired to obtain some sensitive data to throw light on etiology.

SUPPORTED BY Gujarat Cancer & Research Inst. funds n.a.

2.0034,

PATHOLOGY OF BREAST TUMORS IN THE GUERNSEY PROSPECTIVE TRIAL

R. Millis, Imperial Cancer Research Fund, Breast Cancer Unit, *Lincolns Inn Field, c/o St. Bartholomew Hospital, London WC2A 3PX, England, United Kingdom* (311)

Review of breast cancers occurring in women who took part in the Guernsey prospective trial continues. Histological sections from all tumors developing in these women are examined and features which may be of prognostic significance evaluated. Particular note is made of the degree of inflammatory reaction, consisting mainly of lymphocytes and plasma cells, around and within the tumor, as preliminary studies have indicated that the degree of cellular reaction may be correlated with the levels of urinary aetiocholanolone in these women.

SUPPORTED BY Imperial Cancer Research Fund funds n.a.

2.0035,

THE ANGLO-JAPANESE TRIAL - THE EPIDEMIOLOGY OF BREAST CANCER IN GREAT BRITAIN AND JAPAN

J.L. Hayward, Imperial Cancer Research Fund, Breast Cancer Unit, *Lincolns Inn Field, c/o St. Bartholomew Hospital, London WC2A 3PX, England, United Kingdom* (303)

Data on the clinical findings and fate of patients with breast cancer in Great Britain and Japan are being recorded on identical sheets at the Breast Cancer Unit at Guy's Hospital, the National Defense Medical College in Tokyo and the Aichi Cancer Center in Nagoya. These sheets will be completed for all new patients presenting at these centers during the years 1979 to 1981 inclusive. The data sheets will be forwarded to London where the analysis will be undertaken.

SUPPORTED BY Imperial Cancer Research Fund funds n.a.

2.0036,

EPIDEMIOLOGY OF BREAST CANCER - ANGLO-JAPANESE TRIAL

R.D. Bulbrook, Imperial Cancer Research Fund, Clinical Endocrinology Laboratory, *Lincolns Inn Field, c/o St. Bartholomew Hospital, London WC2A 3PX, England, United Kingdom* (25)

The experiment described in Report 24 is being duplicated in Japan. Urine and blood specimens are now being collected from a large normal Japanese population and mammograms are also being taken. It should now be possible to compare breast structure and endocrine function in Japanese and British women. (See also Report 303).

SUPPORTED BY Imperial Cancer Research Fund funds n.a.

2.0037,

EPIDEMIOLOGY OF BREAST CANCER - EARLY ENDOCRINE EVENTS AND RISK

R.D. Bulbrook, Imperial Cancer Research Fund, Clinical Endocrinology Laboratory, *Lincolns Inn Field, c/o St. Bartholomew Hospital, London WC2A 3PX, England, United Kingdom* (26)

When the mean levels of plasma androgens, prolactin, progesterone and oestradiol were compared in adolescent girls with or without a family history of breast cancer, no clear differences were found (ICRF Scientific Report 1978-report 26). There is, however, tentative evidence that the inter-correlations between the various hormones differ in the two groups. For example, oestradiol and progesterone levels are highly correlated in the luteal phase in controls but not in the family history groups. It will be necessary to accumulate rather large numbers of subjects to investigate this point further.

SUPPORTED BY Imperial Cancer Research Fund funds n.a.

2.0038,

FIBROUS CARCINOGENS IN TURKESTAN FLOUR

C.H. O'Neill, Imperial Cancer Research Fund, Anchorage Dependence Laboratory, *Lincolns Inn Field, c/o St. Bartholomew Hospital, London WC2A 3PX, England, United Kingdom* (161)

Esophageal cancer is a major cause of death in parts of Turkestan. The local distribution of the disease in this region, and its occurrence in certain other remote arid parts of the world, point to an environmental cause.

We have now been able to identify a sharply pointed silica fiber, about two hundred microns in length and three in diameter, as a common contaminant of the flour from this region. It is not present in European flour, or in flour from various villages in Turkey and Syria. It originates from the surface of the seed of a species of grass, Phalaris genus, which can readily be identified in the wheat because of its characteristic morphology. X-ray scattering distinguishes it from fibers of mineral origin such as asbestos and shows it to be pure silica. While we do not know how fibrous carcinogens act, we have in the past shown that they can stimulate the growth of cultured fibroblasts. Tissue culture experiments have now shown that Phalaris fibrils similarly cause conspicuous and immediate stimulation of the proliferation of 3T3 cells in soft gel suspensions, ultimately resulting in the production of large colonies.

During the course of the last year investigations in Iran have shown that 80 percent of the people in the affected areas suffer from esophageal dysplasia (leucoplakia). We have therefore instituted animal experiments to determine whether Phalaris fibers can cause similar dysplasia in mice, and whether they can promote the appearance of tumors initiated by chemicals. It is hoped that this work may eventually stimulate epidemiological testing of this hypothesis either in Iran or in the other affected regions (the Transkei and the area around Lin-Hsien in China).

SUPPORTED BY Imperial Cancer Research Fund funds n.a.

2.0039,

EPIDEMIOLOGY OF BREAST CANCER - GUERNSEY PROSPECTIVE TRIALS 1961-1979

R.D. Bulbrook, Imperial Cancer Research Fund, Clinical Endocrinology Laboratory, *Lincolns Inn Field, c/o St. Bartholomew Hospital, London WC2A 3PX, England, United Kingdom* (23)

Blood and urine specimens have been obtained from 1,800 normal Guernsey women whose breasts were subsequently examined by mammography and palpation. Four radiological patterns of breast structure can be defined, which are thought to be correlated with various degrees of risk of breast cancer (although there is much controversy over this claim). We have found a highly significant correlation between the radiological patterns and several determinants of risk (such as age at birth of first child, parity, and use of contraceptive steroids). It follows, therefore, that the mammographic gradings are truly related to risk. The next step is to assay the blood

and urine specimens to see if particular endocrine profiles correlate with the radiographic patterns.
SUPPORTED BY Imperial Cancer Research Fund funds n.a.

2.0040,

EPIDEMIOLOGY OF BREAST CANCER - PILOT STUDY OF ENDOCRINE RISK FACTORS IN A SCREENED AMERICAN POPULATION

R.D. Bulbrook, Imperial Cancer Research Fund, Clinical Endocrinology Laboratory, *Lincolns Inn Field, c/o St. Bartholomew Hospital, London WC2A 3PX, England, United Kingdom* (24)

Results from prospective studies in Guernsey (ICRF Scientific Report 1978-report 23) indicate that three endocrine abnormalities are associated with increased risk of breast cancer. These are a subnormal urinary excretion of androgens, a subnormal production of progesterone in the luteal phase of the menstrual cycle and an abnormally high level of plasma prolactin in the early hours of the evening. The results are tenuous and require confirmation and for this, a population of some 30,000 volunteers would be required. A pilot study has been started in New York in which the feasibility of obtaining blood from a screened population during the evening hours and of measuring, simultaneously, plasma androgens, progesterone and prolactin is being studied.
SUPPORTED BY Imperial Cancer Research Fund funds n.a.

2.0041,

PATHOLOGY OF NORMAL AXILLARY LYMPH NODES FROM WOMEN IN GREAT BRITAIN AND JAPAN WHO DIED FROM CAUSES OTHER THAN BREAST CANCER (ABBREV)

J.L. Hayward, Imperial Cancer Research Fund, Breast Cancer Unit, *Lincolns Inn Field, c/o St. Bartholomew Hospital, London WC2A 3PX, England, United Kingdom* (306)

Comparative studies of the pathology of breast tumors and axillary lymph nodes from patients in Great Britain and Japan have shown that Japanese patients with early breast cancer have a higher incidence of sinus histiocytosis in the uninvolved axillary lymph nodes than patients in Great Britain. The incidence of sinus histiocytosis in axillary lymph nodes from British and Japanese women without breast cancer is now being investigated. In Great Britain lymph nodes obtained from coroner's post mortems performed on women who die suddenly without evidence of any malignant disease are being collected so that the degree of sinus histiocytosis can be assessed in histological sections. Similar nodes are being collected in Japan.
SUPPORTED BY Imperial Cancer Research Fund funds n.a.

2.0042,

SMOKING AND LUNG CANCER - STUDY OF BACKGROUND VARIABLES

S.K. Malik, Inst. of Postgraduate Medical Education & Research, Dept. of Medicine, *Chandigarh 160012, Punjab, India*

OBJECTIVES: 1. To determine risk of cigarettes, bidi, hukka with regard to lung carcinoma. 2. To identify the role of rural/urban factors and any specific occupational predilection. 3. To identify risk factors operating in lung cancer among women.

APPROACH: Retrospective analysis of confirmed cases, and a prospective study.

SUPPORTED BY Inst. of Postgraduate Medical Education & Research funds n.a.

2.0043,

STUDY BY RIA AND RELATED TECHNIQUES OF SERUM ALPHA-FETOPROTEIN AND HEPATITIS B ANTIGEN IN ACUTE AND CHRONIC LIVER DISEASES IN GHANA

A.K. Foli, University of Ghana, School of Medicine, Medicine & Therapeutics, *P.O. Box 4236 Legon, Accra, Ghana* (1572/R1/RB)

OBJECTIVE: The objective of the project is: (1) To establish radioimmunoassay techniques for alpha-fetoprotein and Hepatitis B surface antigen in the country and use these facilities to (2) evaluate the diagnostic and prognostic significance of changes in alpha-fetoprotein level in patients with acute and chronic liver diseases as well as neoplasms, (3) to assess the importance of Hepatitis B virus in the aetiology of acute and chronic liver diseases as well as liver cancer in Ghana.

APPROACH: Normal serum values of alpha-fetoprotein are being established in the Ghanaian African. Changes in the protein level will be studied during the course of acute hepatitis, cirrhosis and primary cancer of the liver. The frequency of Hepatitis B surface antigen in the normal population will be evaluated. This antigen will be studied in the same group of people in which alphafetoprotein studies will be carried out and any correlation present will be assessed. Periodic, regulatory monitoring of alpha-fetoprotein and Hepatitis B antigen levels in asymptomatic antigen carriers as well as patients who have recovered from Hepatitis B virus infection will be pursued to determine the fate of these people with respect to the development of chronic liver disease and primary cancer of liver.

PROGRESS: Normal level of alpha-fetoprotein in the Ghanaian has been established as 10.2 ng/ml SD. 5.58. Transient rises of the protein occur in patients with hepatitis. The protein level was raised in 17% of 23 patients with cirrhosis and 83% of 30 patients with primary cancer of the liver. It was also raised in a small proportion with tumors having primary lesion in the sites other than liver.
SUPPORTED BY International Atomic Energy Agency funds n.a.

2.0044,

CONTROLLED ASSESSMENT OF CURRENT AND PAST PSYCHOPATHOLOGY IN MEN WITH TESTICULAR TUMORS

J.G. Gorzynski, Memorial Sloan Kettering Cancer Center, Psychiatry & Solid Tumor Services, *1275 York Ave., New York, New York* 10021

OBJECTIVE AND APPROACH: Developmental history and current and past psychopathology are assessed in men with germ cell non-seminomatous tumors. Current and past psychopathology scales (CAPPS) are used for the assessment purposes. Age matched men with leukemia are used as a control group. The scale has eight areas of current and eighteen areas of past psychopathology. Preliminary results indicate a higher degree of past psychopathology, particularly among men with early life onset of testicular cancer.

Generally, they have poor social adaptation, low professional drive, frequent history of drug abuse, and delayed puberty. Endocrine evaluation of possible impairment of hypothalamic-pituitary-gonadal axis in men with testicular tumors is being planned.
SUPPORTED BY J.S. Johnson & B.P. Johnson Foundation funds n.a.

2.0045,

INFANT MORTALITY, SOCIOECONOMIC AND RELATED CHARACTERISTICS: KANSAS COUNTIES-1975

D.J. Adamchak, Kansas State University, School of Arts & Sciences, Dept. of Sociology Anthropology & Social Work, *Anderson Hall, Manhattan, Kansas* 66502 (0013761)

OBJECTIVE: Measure the association between infant mortality, total mortality and socioeconomic and related characteristics in Kansas for the time period centering around 1975 in order to ascertain the nature of this traditional inverse relationship.

APPROACH: The research prodecure will utilize an ecological analysis, with the county of residence as the basic analytical unit. The independent indicators include functionsl county types (Capital intensive griculture, family farm, non-metropolitan manufacturing, servide center and metropolitan), demographic variables (age, population over 65 years of age, net migration, population density, percent rural-urban), family variables percent female head of houshold, marital instability), economic variables (several income variables including farm income, education variables, occupation variables), and housing, health, and medical, crime, and farm related variables. This structure will serve to discriminate counties and measure their overall health, social and economic well-being and thus serve to provide policy recommendations for disadvantaged counties by locating the particular type of indicator that is most sensitive to this relationship.

PROGRESS: In cooperation with the Ozarks Regional Commission, prepared a typology of Kansas counties related to their structure and function. Four major types emerged family farm, manufacturing, service and capital intensive farm. Pairs of counties of each type have been choosen, one which has had continuous out-migration since 1960 (called out-migration counties) and one which had out-migration between 1960 and 1970, but in-migration between 1970 and 1976. A ninth county, of the capital intensive farm type, had in-migration in both periods and will also be included. Contacts were made with community leaders and open meetings held in each county to get local input for the study, particularly in determine data they would feel would be useful on the questionnaire. Questionnaires were then sent out to pre-selected samples of in-migrant names, using local leades to trace down addresses. The results were then received, coded and analyzed. A meeting in each county was held to present the results and get local reaction. As of December, 1977, the process is underway in 7 of the 9 counties. It is completed in two of the counties, for which the final report is completed. (Text Truncated - Exceeds Capacity)
SUPPORTED BY Kansas State Government funds n.a.

2.0046,

DIETARY PRACTICES AND CANCER RISKS

G. Bras, Rijskuniversiteit te Utrecht, Pathologisch Instituut, *Pasteurstraat 2, Utrecht, Netherlands* (UUKC PATH. 79-7)

OBJECTIVES: 1. To determine whether it is possible to predict early in life, which of the individuals permitted to select their own diets will develop tumors and which will not on the basis of their dietary practices. 2. To determine the extent to which the 'tumor inhibiting' dietary regiment voluntarily adopted by animals permitted freedom of choice will depress tumor incidence when that regimen is used as a guide for feeding animals that are generally tumor prone.

APPROACH: Our objective is to test the hypothesis that dietary practices early in life have a long-lasting effect on spontaneous tumor susceptibility. This hypothesis is based on data obtained from studies of rats permitted freedom of dietary choice. Rats that developed tumors differed in their dietary and growth behavior early in life from those that did not develop tumors. Additionally, there was a high degree of specificity between the dietary practices and tumor type. The conditions that characterize the pathological status of the individuals were expressed in the form of mathematical models comprised of multiple interacting factors; each factor representing a temporal-specific dietary or growth-related variable. The models will be used in two long-term experiments designed to test the hypothesis.
SUPPORTED BY Koningin Wilhelmina Fonds funds n.a.

2.0047,

RELATIONSHIP OF DOSE AND EFFECT IN CARCINOGENESIS BY UV RADIATION

J.C. van der Leun, Rijskuniversiteit te Utrecht, Inst. of Dermatology, *Catharijnesingel 101, 3500 CG Utrecht, Netherlands* (UUKC D.77-6)

OBJECTIVE: The aim of this investigation is to find a correct description of the dose-response relationship in carcinogenesis by ultraviolet radiation. This will be used in the first instance for a better-founded estimation of the impact of a possible decrease in stratospheric ozone on the incidence of skin cancer.

APPROACH: Groups of albino hairless mice are exposed daily to the radiation from fluorescent sunlamps. Various groups of mice are given different daily doses of UV radiation; the doses given extend to lower, more realistic, values than in earlier investigations. The tumors formed are counted and examined histologically. By combining these and other experimental results with epidemiological data, an attempt is made to develop a consistent model for carcinogenesis by UV radiation.

PROGRESS: The first groups of mice have been under exposure since July 1, 1978. In the meantime we developed, on the basis of experimental and epidemiological data available, a theoretical relationship between dose and incidence of UV-induced skin cancers in human population. It yields an over-all amplification factor of 4, i.e., a decrease in stratospheric ozone of 1% would ultimately lead to an increase in skin cancer incidence of 4%.
SUPPORTED BY Koningin Wilhelmina Fonds funds n.a.

2.0048,

PROLIFERATIVE LESIONS OF THE FEMALE BREAST - RETROSPECTIVE AND PROSPECTIVE STUDIES

H.W. Venekamp, Nederlands Kankerinstituut, *106-108 Sarphatistraat, Amsterdam, Netherlands*

OBJECTIVE: Investigation of the relationship between apparently benign proliferative lesions of the female breast and subsequent appearing of infiltrat-

ing mammary carcinoma in ipsi- and heterolateral breast.
RETROSPECTIVE STUDY: Comparison of slides of benign proliferative lesions of women who developed mammary carcinoma afterwards with women (age-matched) who did not develop breast cancer after at least ten years of observation.
PROSPECTIVE STUDY: Study in a consecutive series of 1,000 women who were operated for apparently benign proliferative lesions. Follow-up period will be at least ten years.
APPROACH: Clinical examination; epidemiology; morbid histology; androgene metabolism; hormone receptor contents of the tissue; and cytophotometric procedures.
SUPPORTED BY Koningin Wilhelmina Fonds funds n.a.

2.0049,

CONGENITAL BONE MARROW FAILURE - COMPILATION OF NATIONAL REGISTER

E.C. Gordon Smith, University of London, Royal Postgraduate Medical School, Dept. of Haematology, *Ducane Rd., c/o Hammersmith Hospital, London W12 0HS, England, United Kingdom* (77/11)
OBJECTIVE: To set up a register of patients in the U. K. who have congenital bone marrow disorders. The purpose of the register is to establish the incidence of these diseases, the inheritance and their association with malignant disease.
PROGRESS: The project has just started, the first step being the examination of death certificates and the notes of hematological patients therefrom to establish accuracy of diagnosis.
SUPPORTED BY Leukemia Research Fund funds n.a.

2.0050,

CARCINOMA OF THE LARGE BOWEL AND DIETARY FIBER

M.L. Burr, Medical Research Council, Epidemiology Unit, *4 Richmond Rd., Cardiff CF2 3AS, Wales, United Kingdom*
OBJECTIVE: To investigate the possibility that a high intake of dietary fibre confers some protection against carcinoma of the large bowel.
APPROACH: About 10,000 subjects who are customers at Health Food shops, or who read health food journals, have been enlisted for this study. They have all completed a brief questionnaire which allows them to be classified into those who do and those who do not eat a high fiber diet. They can also be divided into meat-eaters, vegetarians, and vegans. Their National Health Service numbers have been obtained and notified to the NHS central registry, which informs us of deaths, with causes, as they occur in this population. Cancer registrations are similarly notified to us. Mortality and morbidity from large bowel cancer will be compared those in those on the high fiber diet and the rest, who will serve as controls. The effects of different kinds of dietary fiber and of vegetarianism will be examined separately.
SUPPORTED BY Medical Research Council funds n.a.

2.0051,

ORAL CONDITIONS IN RELATION TO TRACE ELEMENTS IN HUMAN TISSUE AND THE ENVIRONMENT

P.M. James, University of Birmingham, Dept. of Dental Health, *P.O. Box 363, Birmingham, England, United Kingdom*
No summary has been provided to the Smithsonian Science Information Exchange.
SUPPORTED BY Medical Research Council $3,585

2.0052,

LONG-TERM SURVEILLANCE OF MORTALITY AND CANCER INCIDENCE IN WOMEN RECEIVING HORMONE REPLACEMENT THERAPY

M.P. Vessey, University of Oxford, Dept. of Social & Community Medicine, *S. Parks Rd., Oxford OX2 6HE, England, United Kingdom* (G978/327)
OBJECTIVE: To detect any adverse (or beneficial) effects of hormone replacement therapy (HRT) on mortality and cancer incidence in perimenopausal and postmenopausal women. The use of HRT is on the increase in the United Kingdom and there is a need to monitor the long-term effects of such treatment. Concern about the long-term safety of HRT centers particularly around the fear that the risk of cancers of the breast, endometrium and ovary may be increased.
APPROACH: Women seen at menopause clinics in different parts of the country who (1) are currently using HRT and have been using it continuously for at least one year, or (2) are not currently using HRT, but used it in the past for six months or less, will be recruited and followed up indefinitely using the facilities of the National Health Service Registries. Mortality rates and cancer incidence rates experienced by the short-term and long-term users of HRT will be computed from time to time and comparisons will be made with national mortality and cancer incidence data. It is hoped that about 7,000 women will be recruited into the study prospectively and another 1,000 retrospectivey.
PROGRESS: Twenty-four menopause clinics have been visited and are now participating in the project; one more clinic will be visited shortly. A total of 1,200 women's records have been 'labelled' at the Central Registries.
SUPPORTED BY Medical Research Council funds n.a.

2.0053,

LONGITUDINAL STUDIES IN ORAL LEUKOPLAKIA

J. Banoczy, Semmelweis Orvostudomanyi Egyetem, Conservative Dentistry Clinic, *Mikszath Kalman ter 5, 1088 Budapest V, Hungary*
670 patients with oral leukoplakia are under continuous control over a period from 1-30 years, with a mean observation period of 9.8 years. The objectives studied are: the frequency of malignant transformation, the distribution according to age, sex, localization and smoking habits, possible etiological factors and the conditions favoring malignant transformations. In the histological material of the same leukoplakia patients the frequencies of histological dysplasia and cancer as well as the ultrastructural characteristics are studied in correlation with the clinical types of leukoplakia.
SUPPORTED BY Ministry of Health funds n.a.

2.0054,

INVESTIGATION OF SELECTED VEHICLE ACCIDENTS

D.F. Huelke, University of Michigan, Ann Arbor Campus, Inst. of Science & Technology, Highway Safety Research Institute, *Box 618, Ann Arbor, Michigan* 48104
Objective: To establish the mechanisms of trauma in motor vehicle collisions through intensive study of the relationship of occupant injuries to vehicle components, crash severity, and restraint system effectiveness. Significance: The emphasis of this continuing program is on establishing precisely how and why the injuries occurred and how they can be prevented or reduced. Methods: Approximately 130 collisions per year are selected from Washtenaw County crashes for detailed investigation. Only crashes with the following characteristics are selected: The crash has resulted in an injury; the vehicle (a late-model passenger car, pickup truck, van, recreational vehicle, or large truck) was manufactured by an MVMA-member company; the vehicle was towed away from the accident scene; and the vehicles involved can be examined within 48 hours of the collision. Results: Each clinical case is documented with the Collision Performance and Injury Report long form; detailed medical report; 35 mm color slides of the accident scene, vehicles, impacted object, exterior and interior damage; and reporting on other pertinent factors (alcohol, drugs, extrication complications, etc.).
SUPPORTED BY Motor Vehicle Manufacturers Assn. of the U.S. Inc. funds n.a.

2.0055,

CANCER INCIDENCE AND MORTALITY IN A COHORT OF RAILWAY EMPLOYEES

G.R. Howe, University of Toronto, Epidemiology Unit, *92 College St., Toronto, Ontario, Canada* M5S 1B2
OBJECTIVE: The study is designed to evaluate increased risk of cancer, particularly bladder cancer, in a cohort of railway employees classified by their occupation at time of retirement. This is a follow-up to an observation made in a previously reported case/control study of bladder cancer where increased risk was associated with exposure to fumes in railway workers.
APPROACH: Ex-employees of the Canadian National Railway alive at January 1, 1960 and who received a pension from the CNR form the cohort. The fact and data of death are on record and cause of death will be established using computerized record linkage to the national mortality data maintained by Statistics Canada. Cancer incidence amongst those alive as of January 1, 1969 will be determined using similar techniques with respect to the national cancer registry data (Statistics Canada). Comparisons will be made between those individuals whose occupations involve exposure to fumes and those whose occupations did not and also with Canadian population data.
PROGRESS: The basic records have been computerized and are currently ready for the linkage process.
SUPPORTED BY National Cancer Inst. of Canada funds n.a.

2.0056,

AN ECOLOGICAL APPROACH TO ENVIRONMENTAL CANCER

R.A. Sonstegard, McMaster University, Dept. of Biology Pathology, *1200 Main St. W., Hamilton, Ontario, Canada* L8S 4L8
OBJECTIVE: Development of a system of monitoring tumor frequencies in feral fishes as a sentinel for the detection of environmental carcinogens. Initiate cohort epidemiological studies of 'heavy' fish-eaters in the Great Lakes basin.
APPROACH: Field epizootiological studies of fishes in the Great Lakes basin strongly link elevated tumor frequencies with extrinsic factors, possibly pollutants. Sports fishermen consume these fish(es) in quantity, and in light of their high xenobiotic burdens (they are banned from commercial sale), this represents an uncontrolled source of carcinogen exposure. In light of the same, feeding trials (feeding diets of fish which exhibit pathobiological response(s) which epizootiological studies link to extrinsic factors to laboratory rats and fishes) are being made with particular reference to health effects associated with dietary consumption of fish. The health responses recorded in these feeding trials will be incorporated (e.g., clinical chemistry) into the cohort epidemiological studies of heavy fish-eaters.
SUPPORTED BY National Cancer Inst. of Canada funds n.a.

2.0057,

FOLLOW-UP OF BREAST CANCER CASES REPORTED BY NOVA SCOTIA SUBJECTS IN THE FLUOROSCOPY STUDY

G.R. Howe, National Cancer Inst. of Canada, Epidemiology Unit, *121 St. Joseph St., Toronto, Ontario, Canada* M5S 2R9
OBJECTIVE: The study is designed to determine whether any particular risk factors show synergism with respect to radiation in the induction of breast cancer.
APPROACH: This is a case-control study, the cases being those females identified as having developed breast cancer following institutionalization for tuberculosis in Nova Scotia between 1930 and 1952. Controls are being selected from the corresponding group who have not developed breast cancer. A substantial proportion of subjects have received considerable radiation exposure from fluoroscopy used in conjunction with artificial pneumothorax. All subjects are being personally interviewed in their own homes by a single interviewer to ascertain known risk factors for breast cancer other than radiation. The information so obtained will be combined with radiation exposure data obtained in an ongoing cohort project in order to evaluate any synergistic effect which may exist between radiation and other risk factors.
PROGRESS: The majority of respondents have been traced and a number of interviews completed.
SUPPORTED BY National Cancer Inst. of Canada funds n.a.

2.0058,

MONITORING THE OCCUPATIONAL ENVIRONMENT FOR CARCINOGENS - A PILOT STUDY IN MONTREAL

J. Siemiatycki, Armand Frappier Institut, Centre de recherche en epidemiologie et medecine preventive, *531 Blvd. des Prairies, Case Postale 100, Laval des Rapides, Quebec, Canada* H7N 4Z3
Of the thousands of chemicals in the occupational environment, only a score have at present been demonstrated to be human carcinogens. There is no human evidence one way or another for almost all of the others. The very large number of agents renders inadequate conventional 'one-factor-at-a-time' epide-

miologic study methods (case-control or cohort). The objective is to establish an ongoing monitoring system capable of scanning the occupational environment to detect hitherto unsuspected human carcinogens. A case-control type methodology will be used. Cases will be adult male cancer patients hospitalized in the Montreal region. Several sites will be included and each will be analyzed separately. In the pilot study, controls for each site will be selected from the cases with cancer of other sites. For each man we will ascertain a lifetime history of exposure to a large number of agents. An innovative approach will be developed to ascertain occupational exposures which the worker might not be able to report or recall. This will be based on a self-administered questionnaire followed by an in-depth interview and research on the part of chemists and engineers with a view to inferring a list of possible chemical exposures associated with each job. This research will be based on technical documentation and consultation with a network of experts in various industrial sectors. The analyses will aim to identify high risk chemicals and workplaces. A two-year feasibility study will evaluate diverse aspects such as case ascertainment, data collection methods, and the statistical sensitivity of the system, before a long-term system is established.
SUPPORTED BY National Cancer Inst. of Canada funds n.a.

2.0059,
THE EFFECT OF HYSTERECTOMY ON MORTALITY FROM CANCER OF THE CERVIX
A.B. Miller, National Cancer Inst. of Canada, Epidemiology Unit, Dept. of Preventive Medicine & Biostatics, *121 St. Joseph St., Toronto, Ontario, Canada* M5S 2R9
OBJECTIVE: To attempt to correct the effect of hysterectomy on mortality rates from cancer of the uterus for province by province data in Canada.
APPROACH: Previous work on mortality from cancer of the uterus (Int. J. of Cancer, 17, 602-672, 1976) did not include the effect of hysterectomy in the study population. Hysterectomies carried out for benign conditions would remove women from being at risk for cervical cancer and thus might explain the previously observed decline in mortality due to this disease. The current project will study this by repeating the analysis on national data in a province by province study.
On collaboration with Statistics Canada, data on the numbers of hysterectomies by one year age groups for women of ages 27-64, tabulated by province, will be used to estimate the number of women removed from being at risk. The available data will cover the period from 1969-1974. Thus, year by year the known population at risk in each age group can be adjusted to 'uteri at risk' instead of 'women at risk'. Using these corrected populations for the denominator, the mortality rates due to cervical cancer will be calculated on a province by province basis.
PROGRESS: The hospital morbidity data base of Statistics Canada is being used to produce initial tabulations of hysterectomies. Use of this data in the analysis of national cervical cancer data is expected to start in mid 1979.
SUPPORTED BY National Cancer Inst. of Canada funds n.a.

2.0060,
EPIDEMIOLOGICAL STUDY OF LARYNX CANCER
A.B. Miller, National Cancer Inst. of Canada, Epidemiology Unit, *121 St. Joseph St., Toronto, Ontario, Canada* M5S 2R9
OBJECTIVE: The study is designed to investigate the relative contribution of the known and suspected aetiological factors in laryngeal carcinoma. A prime focus of the study is on evaluating possible occupational causes, specifically asbestos exposure but also possibly other occupational factors such as exposure to nickel and nickel manufacturing processes. The study also investigates the relative contribution of smoking and alcohol consumption together with other factors to the development of laryngeal cancer.
APPROACH: The study is a case/control study with data on past events and exposures obtained from cases and controls by means of a detailed questionnaire. The study population consists of all newly diagnosed (as of March 1, 1977) cases with carcinoma of the larynx together with controls matched to cases by age, sex, and area of residence. All cases resident in southern Ontario together with those living in the Sudbury and North Bay areas are eligible for interview. Case acquisition will continue from March 1, 1977 through February 28, 1979.
PROGRESS: The study is currently in the second year of case identification and interview and after fourteen months of fieldwork a total of 130 case/control pairs have been interviewed. All questionnaires have been coded and have been entered on the NCIC Unit's computer for analysis.
SUPPORTED BY National Cancer Inst. of Canada funds n.a.

2.0061,
HERPESVIRUSES AND CERVICAL CANCER
W.E. Rawls, McMaster University, Dept. of Pathology, *1200 Main St. W., Hamilton, Ontario, Canada* L8S 4L8
OBJECTIVE: The purpose of the study is to evaluate the role of herpes simplex virus type 2 (HSV-2) in the genesis of cervical carcinoma.
APPROACH: Previous seroepidemiologic studies have demonstrated an excess of antibody activity to HSV-2 among women with cervical carcinoma when compared to control women. However, the degree of association between antibodies to the virus and cervical cancer varies in different populations studied. To better define the meaning of the association, radioimmunoassay for HSV-2 type-specific antibodies will be used to analyze sera from a series of women with carcinoma of the cervix and from control women.
PROGRESS: A series of about 450 serum samples have been collected from women with cervical cancer and control women. Analyses of the samples for antibody activity to HSV-1 and HSV-2 are under way.
SUPPORTED BY National Cancer Inst. of Canada funds n.a.

2.0062,
CASE CONTROL STUDY OF THE POSSIBLE ASSOCIATION OF MULTIPLE SCLEROSIS AND PETS
R.F. Kibler, Emory University, School of Medicine, Dept. of Neurology, *1364 Clifton Rd. N.E., Atlanta, Georgia* 30322
In a case control study we plan to look at the possible association between multiple sclerosis and pets, especially dogs. Pet ownership, characteristics of the exposure to the pet, some characteristics of life style, socio-economic status, places of residence and job history will be determined by interviewing patients with MS and two sets of controls, a neighborhood control and a clinic control. Through a review of medical records and interview we will establish the clinical status of the patient at the time of the interview, the date of onset of MS, and the clinical course. The pet history in both cases and controls will be corroborated by interviewing a family member or friend. Serum samples of patients and clinic controls will be tested for measles and canine distemper virus (CDV) antibodies by neutralization and complement fixation tests. The study results will be analyzed by matched pair analysis.
SUPPORTED BY National Multiple Sclerosis Society $17,880

2.0063,
MULTIPLE SCLEROSIS IN THE FAEROES
J.F. Kurtzke, Georgetown University, School of Medicine, Dept. of Neurology, *3800 Reservoir Rd. N.W., Washington, District of Columbia* 20007 (RG 1191-A-5)
Survey of the Faroes in 1974, 1975 and 1977, and record review in 1976 by the authors led to the finding that 24 clinically definite MS cases among resident native Faroese had developed their first symptoms between 1943 and 1960. One born in 1950 had onset in 1970. Four cases of MS were excluded for prolonged foreign residence, and five for birth in Denmark. Otherwise there are known MS cases in Faroese. The 24 cases comprise a single cohort of the affected with a median year of onset in 1949. Their occurrence may be considered to constitute an epidemic, whose origin may possibly have been British troops (or their baggage) during the military occupation of the Faroese on the islands. Patient residences then matched well those currently known for the British forces.
Because of the critical importance of these findings in our understanding of MS, efforts will be made to accomplish (1) identification of the specific British troop units in question with manning levels, dates, and locations, (2) serologic evaluations and HLA-testing of MS and control households, (3) epidemiologic questionnaire of MS and control households, (4) ongoing neurologic surveillance of the islands (5) investigation of time-course of known diseases and deaths in the Faroes, (6) investigation of environmental changes in the Faroes (7) population sample questionnaires and serology.
SUPPORTED BY National Multiple Sclerosis Society $55,329

2.0064,
THE GENETIC CONTROL AND THE REGULATION OF THE IMMUNE RESPONSE IN EXPERIMENTAL ALLERGIC ENCEPHALOMYELITIS AND MULTIPLE SCLEROSIS
M.J. Moore, Boston University, School of Medicine, Dept. of Neurology, *80 E. Concord St., Boston, Massachusetts* 02215 (RG 897-B-2)
Multiple sclerosis is a demyelinating disease affecting the central nervous system, primarily of young adults. It is a common disease which affects one in 2000 persons. Epidemiological studies have indicated that there is a higher risk of MS among family members of MS patients, but strict genetic inheritance has not been proven. Recent work has shown some correlation between susceptibility to MS and histocompatibility type as determined both by serological and mixed lymphocyte techniques. An experimental disease termed experimental allergic encephalomyelitis, EAE, has long been studied as a possible model for the human disease, MS. Using inbred populations of rats, we have recently shown that susceptibility to EAE depends in part on the presence of an autosomal dominant immune response gene, Ir-EAE, which is linked to the major histocompatibility locus of this species. When the genes of EAE susceptible and resistant rat strains are mixed by appropriate cross breeding, susceptibility to EAE still depends on the presence of the Ir-EAE gene. But now there are other factors which modify the disease process so that the symptoms may be very mild, or absent, even in a genetically susceptible individual. This sort of incomplete expression of a disease process which is controlled by a histocompatibility linked gene and modified by other genes, is exactly what would be predicted for human diseases which may be controlled by histocompatibility linked immune response genes. The purpose of this project is to identify the factors in the human and experimental disease which determine susceptibility and the severity of clinical course. Data obtained from these studies may lead to a rational form of immunotherapy for multiple sclerosis.
SUPPORTED BY National Multiple Sclerosis Society $30,642

2.0065,
TRANSMISSION STUDIES IN MULTIPLE SCLEROSIS
J.S. Burks, University of Colorado, Medical Center, School of Medicine, Dept. of Neurology, *4200 E. 9th Ave., Denver, Colorado* 80262
No summary has been provided to the Smithsonian Science Information Exchange.
SUPPORTED BY National Multiple Sclerosis Society $81,655

2.0066,
EVALUATION OF ORGANIC COMPOUNDS WITH MUTAGENIC AND CARCINOGENIC PROPERTIES PRESENT IN DRINKING WATER
H.J. Kool, National Inst. for Water Supply, Chemical Biological Division, *Postbox 150, 2260AD Leidschendam, Netherlands* (RID 80-1)
In the last decade significant advances have been made in the area of the quantitative and qualitative analysis of organic compounds in drinking water. The increased possibilities of analytical techniques to measure organic constituents have led to the conclusion that the occurrence of these compounds in surface water and in drinking water may create health risks.
In this respect special attention is nowadays paid to those compounds which may cause irreversible changes of the body tissues and for which at this moment threshold limit values cannot be established on a scientific basis, the carcinogens and mutagens.
In the Netherlands a survey of the organic composition of drinking water has been carried out. This study revealed that in drinking water prepared from surface water organic compounds with carcinogenic and mutagenic properties could be detected. For this reason the National Institute for Water Supply (NIWS) started an epidemiological study relating cancer mortality with the presence of organic micropollutants in drinking water of 20 cities in The Netherlands. In connection with this epidemiological

study, a preliminary examination for the presence of mutagenic activity in drinking water or surface water was carried out (Ames test). Without using concentration techniques half of the tested samples from the Rhine river were found to have mutagenic activity. Mutagenic activity could be shown in some drinking water after concentrating the organic contaminants by a factor 3000. A further screening of the drinking water in 16 cities is scheduled for 1979/1980.

SUPPORTED BY Netherlands Ministry of Health & Environmental Protection funds n.a.

2.0067,

EVALUATION OF ALTERNATE STRATEGIES FOR CONTROL OF XEROPHTHALMIA (VITAMIN A DEFICIENCY) IN THE PHILIPPINES

M.C. Latham, Cornell University, Ithaca Campus, Agricultural Experiment Station, *Ithaca, New York* 14850 (0072127)

OBJECTIVE: Determine the extent of the problem of vitamin A deficiency in Cebu in the Philippines and evaluate the feasibility effectiveness and cost of alternate strategies for its control.

APPROACH: Twelve areas in four different ecological zones (two urban and two rural) are being studied. Clinical, biochemical and dietary information indicated the extent of the vitamin A problem. Three intervention strategies are being evaluated each in 4 locations. These include providing a high dose vitamin A capsule every six months to children, fortification of MSG with vitamin A, and a public health and horticulture intervention.

PROGRESS: In the initial phase of the project we investigated the prevalence and epidemiology of vitamin A deficiency in 12 locations on the island of Cebu in the Philippines. The second phase recently completed consisted of an evaluation of three different intervention strategies to control vitamin A deficiency. These were (a) a public health and horticulture intervention ('PHI'), (b) the provision of 200,000 IU of vitamin A to children every 6 months (the 'capsule intervention'), and (c) the fortification of monosodium glutamate with vitamin A ('MSG intervention'). Each intervention was evaluated in 4 different locations or barangays, 2 rural and 2 urban. There was a reduction in eye signs of vitamin A deficiency with all three interventions, but the MSG intervention was the only one which also associated with a significant rise in serum vitamin A levels. Fortification is now being evaluated in three whole provinces, namely Cebu, Marinduque and Nueva Viscaya. The significance of the project is that it is testing and leading to a program to control vitamin A deficiency, the major cause of childhood blindness in the Philippines and some other Asian countries.

SUPPORTED BY New York State Government funds n.a.

2.0068,

THE EPIDEMIOLOGY OF VISCERAL LARVA MIGRANS

R.H. Cypess, Cornell University, Ithaca Campus, New York State College of Veterinary Medicine, *825 Veterinary Research Tower, Ithaca, New York* 14853 (0074936)

OBJECTIVE: Determine the validity and reliability of the ELISA in the diagnosis of acute VLM.

APPROACH: Measure prevalence of antibody in several populations of children by using cross-sectional analysis. These studies should enable us to assess the Public Health implications of environmental contamination with this nematode.

PROGRESS: Continued progress has been made in determining the prevalence of infection with Toxocara canis in a variety of populations and determining associated risk factors related to transmission of this disease. Descriptive studies have indicated that infection rates vary with age, sex, and geographic distribution of populations, that occupational exposure is not a signficant risk factor, that the enzyme-linked-immunoabsorbant assay (ELISA) for the detection of Toxocara antibody is highly significant and specific under field and clinical situations.

SUPPORTED BY New York State Government funds n.a.

2.0069,

ULTRASTRUCTURAL STUDIES OF BENIGN AND MALIGNANT HUMAN THYROID TUMORS

J.V. Johannessen, Radiumhospitalet, Laboratory for Ultrastructural Pathology, *Montebello, Oslo 3, Norway*

OBJECTIVE: To determine whether we can separate the benign thyroid tumors derived from the follicular epithelium from the malignant ones, by using transmission and scanning electron microscopy in conjunction with morphometry and DNA flow cytophotometry.

APPROACH: I have, during the past 6 years, collected several hundred specimens from human thyroid tumors. Most of the specimens have been secured for histopathology, cytology, transmission electron microscopy, scanning electron microscopy as well as histochemistry and DNA flow cytophotometry. The investigation aims to clarify whether there are diagnostically useful differences in the benign and malignant follicular thyroid tumors, as a proper classification may sometimes be impossible by light microscopy when no metastases are present.

The investigation furthermore aims to determine whether the follicular areas of papillary thyroid carcinomas are similar to follicular carcinomas or papillary ones, to determine whether the classification into mixed follicular and papillary carcinomas of the thyroid should be sustained or omitted. This not only has prognostic implications but also epidemiological ones, as some investigators now classify mixed tumors as such, while others classify them as papillary carcinomas, while still others classify follicular tumors with ground glass nuclei as papillary carcinomas.

PROGRESS: The work on the material has already started and preliminary results been published.

BIBLIOGRAPHIC REFERENCES: Johannessen, J.V., Gould, V.E., Jao, W.: The fine structure of human thyroid cancer. Hum. Pathol. 9, 385-400, 1978; and Gould, V.E., Johannessen, J. V. and Sobrinho Simoes, M.A.: The Thyroid Gland in Electron Microscopy in Human Medicine, Vol. 10, Endocrine Organs (ed. J.V. Johannessen), McGraw-Hill International Book Company, New York, 1980, in press.

SUPPORTED BY Norwegian Cancer Society funds n.a.

2.0070,

IDENTIFICATION AND CHARACTERIZATION OF HUMAN HISTOCOMPATIBILITY ANTIGENS - ASSOCIATIONS BETWEEN HISTOCOMPATIBILITY ANTIGENS/MALIGNANT DISEASES

E. Thorsby, National Hospital of Norway, Tissue Typing Laboratory, *Oslo 1, Norway*

OBJECTIVE: To characterize human histocompatibility antigens on normal and malignant cells; to study associations between histocompatibility antigens and certain malignant diseases on a population level, as well as associations between normal histocompatibility antigens and tumor-specific antigens in the cell membrane.

APPROACH: Antisera against human histocompatibility antigens were obtained by planned immunizations. Furthermore, to type for the HLA-D determinants, cells homozygous for HLA-D determinants were collected after studies of Norwegian families and the primed lymphocyte typing technique was established to identify these determinants. These reagents were then used to identify histocompatibility antigens on several different normal as well as malignant cells. Furthermore, HLA typing has been performed on several different patient categories. We are currently studying the association which might exist in the cell membrane between certain normal histocompatibility antigens and possible tumor-specific/induced antigens.

PROGRESS: By means of these techniques we are able to type for approximately 50 different HLA determinants. Some of them are present on all normal as well as malignant cells (the HLA-A, -B and -C antigens), others (the HLA-D determinants) are present only on some cells (lymphocytes, epidermal cells, endothelial cells, macrophages and possibly sperms). Some of the HLA-D determinants appear also to be serologically detectable, and have been detected on B lymphocytes, macrophages and endothelial cells. They are also present on leukaemic cells, and typing for these determinants seems to make it possible to distinguish between acute lymphatic leukaemia of B and T cell origin. This has previously not been possible, and appears to have important prognostic value. Furthermore, an association between malignant melanoma and the HLA-D antigen LD 108 has been detected.

SUPPORTED BY Norwegian Cancer Society funds n.a.

2.0071,

DETERMINATION OF TOBACCO SMOKE METABOLITES IN URINE AND BLOOD

I. Baksaas, Telemark Sentralsjukehus, Dept. of Occupational Medicine, *Olavsgt. 26, 3900 Porsgrunn, Norway*

OBJECTIVES: Phase I: To determine metabolites of tobacco smoke in urine and blood. Phase II: Use of metabolite studies to identify indicators characteristic of individuals with high risk of cancer.

APPROACH: I) Metabolites are going to be determined in urine and blood of heavy smokers and non-smokers. The metabolites will be studied by gas chromatography with flame ionization/electron capture detector, high-pressure liquid chromatography with variable UV/fluorescence detector and by mass spectrometry. II) The same procedures are to be applied for screening of metabolites in already identified tobacco smoke-exposed population and industrial-exposed population.

SUPPORTED BY Norwegian Cancer Society funds n.a.

2.0072,

EPIDEMIOLOGY OF CERVICAL DYSPLASIA

R.W. Morgan, University of Toronto, Dept. of Preventive Medicine & Biostatistics, *92 College St., Toronto, Ontario, Canada* M5S 1B2

OBJECTIVE: This project has two phases. Phase I encompasses the compilation and analysis of already existing data on approximately 1,800 patients seen at the Toronto General Hospital Dysplasia Clinic. This data will be used to generate hypotheses for Phase II, a case-control study designed to examine the relationship between cigarette smoking and dysplasia of the uterine cervix. Because of the recent evidence linking cigarette smoking and various types of cancer (including carcinoma of the uterine cervix) it is likely that exposure to cigarettes may also increase the risk of cervical dysplasia, a precursor to carcinoma of the uterine cervix.

APPROACH: Cases and controls will be drawn from three hospital clinics: the Dysplasia Clinic (cases), the Family Planning Clinic (controls), both from Toronto General Hospital, and the Dermatology Clinic (controls) from Women's College Hospital. Each case and control will be interviewed during regular clinic hours in the hospital. The questionnaire for the study will contain questions on demographic information (date of birth, education, income, race, marital status), smoking history, age at first intercourse, number of sexual partners, and obstetrical and gynecological history, and questions on contraceptive practices.

SUPPORTED BY Ontario Cancer Treatment & Research Foundation funds n.a.

2.0073,

A SEROEPIDEMIOLOGIC STUDY OF ENDOGENOUS SEX HORMONES IN NEOPLASTIC DISEASE OF THE ENDOMETRIUM

C.A. Woolever, McMaster University, School of Medicine, Dept. of Obstetrics & Gynecology, *1200 Main St. W., Hamilton, Ontario, Canada* L8S 4J9 (367)

We will determine the serum concentration of sex hormones in three groups of women, i.e., those having a recent diagnosis of carcinoma of the endometrium, hyperplasia of the endometrium and no endometrial disease. Serum samples are obtained from women who have had a recent histologic diagnosis of these conditions, as well as from a control population of age-matched women living in the same neighborhood as the cases. The samples are being analyzed for androstenedione, estrone, estradiol, estriol and their conjugates. Intergroup comparisons will be made with respect to the presence and absence of recent disease and the use of exogenous estrogens. Sample collection will be completed in April 1979 and the analyses by the end of the grant year.

SUPPORTED BY Ontario Cancer Treatment & Research Foundation funds n.a.

2.0074,

ASSOCIATION BETWEEN BENIGN AND MALIGNANT BREAST LESIONS

I.H. Soini, Tampere Yliopisto, Dept. of Public Health, *Vuolteenkatu 11, 33100 Tampere 10, Finland*

The objective of this study is to demonstrate a possible relationship between benign and malignant breast lesions using risk factor analysis of hormonal and reproductive data.

Epidemiological data were gathered from 600 women operated on for benign breast lesions be-

tween 1974 and 1977. The risk factors of benign and malignant lesions should also be related if there is a causal association between benign and malignant lesions or if they are associated without the transition of a benign lesion to breast cancer.
SUPPORTED BY Pirkanmaa Cancer Society funds n.a.

2.0075,
QUEENSLAND MELANOMA PROJECT
N.C. Davis, Princess Alexandra Hospital, Queensland Melanoma Project, *Ipswich Rd., Woolloongabba, Brisbane, Queensland 4102, Australia* (D-IARC-78-13)
The Queensland Melanoma Project has been in existence since July 1963. Between 1963 and 1969 every new case of malignant melanoma occurring in the state of Queensland was registered at the Princess Alexandra Hospital in Brisbane. All the microscopic diagnoses were confirmed by a panel of pathologists. We now have records of over 1500 patients whose clinical and pathological features have been recorded. These patients are being carefully followed up and form the basis of many papers on the epidemiology, clinical and pathological features, and biological aspects of melanoma.
SUPPORTED BY Queensland State Government funds n.a.

2.0076,
DEMOGRAPHIC, CLINICAL AND HISTOPATHOLOGICAL STUDIES OF PRIMARY MALIGNANT BONE TUMORS
S.E. Larsson, Umea University, Dept. of Orthopaedic Surgery, *S90187 Umea, Sweden* (711-B78-06X)
Tumors Recorded in the Swedish Cancer Registry: (1) Correlation of epidemiological, clinical and histopathological data. (2) Studies of exogenous and endogenous factors related to tumor incidence. (3) Studies of diagnostic problems. (4) Correlation of diagnostic measures and clinical treatment to prognosis. (5) Planned: prospective study on the effect of a uniform diagnostic and therapeutic approach to these tumors within the whole country.
SUPPORTED BY Riksforeningen Mot Cancer funds n.a.

2.0077,
ESTROGEN TREATMENT AND CANCER OF THE ENDOMETRIUM - A PROSPECTIVE EPIDEMIOLOGICAL STUDY
E.D. Johansson, Riksforeningen Mot Cancer, Dept. of Obstetrics & Gynecology, *Sturegatan 14, S11428 Stockholm, Sweden* (1291-B78-01XA)
The objective of this prospective follow-up survey is to investigate the supposed relationship between oestrogen treatment and endometrial carcinoma in climacteric women. The incidence of endometrial cancer in women treated with various oestrogens during an observation period of at least 5 years is studied and observed; incidence will be compared to that of non-exposed women. In Sweden the recorded crude incidence of endometrial cancer is approximately 40-50 per 100,000. To demonstrate a two-fold increase with statistical validity, it will be necessary to follow approximately 15,000 individuals. A special procedure has been set up to register all oestrogen-treated women through their prescription forms and collect data regarding their exposure. Approximately 18,000 women have been registered after 20 months of collection. All cases of endometrial cancer that occur during the observation period will be registered continually at the pathology departments of this region. To safeguard against losses due to migration, a final check in the national cancer register will be made. The oestrogen-exposed cases will be thoroughly examined for certain characteristics that are known to be linked to endometrial cancer, such as obesity, hypertension, diabetes, infertility, etc. The distribution of these characteristics will be compared to that of non-exposed cancer cases, exposed women without cancer and 'healthy' women of corresponding ages.
SUPPORTED BY Riksforeningen Mot Cancer funds n.a.

2.0078,
CANCER EPIDEMIOLOGY IN THE COUNTY OF VASTERBOTTEN
G. Tibblin, Regionsjukhuset, Dept. of Social Medicine, *90185 Umea, Sweden*
Cancer epidemiology is often restricted to follow the development of incidence curves during time. This study is an attempt to relate incidence of cancer and trends in incidence to socio-economic structure of the 12 'kommuner' and some of the largest 'forsamlingar' of the county of Vasterbotten.
SUPPORTED BY Riksforeningen Mot Cancer funds n.a.

2.0079,
STATISTICAL STUDIES OF SURVIVAL DEPENDING ON DIFFERENT CANCER SITES, ESPECIALLY BREAST CANCER IN WOMEN
B. Mattsson, Radiumhemmet, Oncologic Centre, *S10401 Stockholm, Sweden* (750-B77-05X)
Breast cancer is the most common form of cancer in women. A remarkable increase in the number of registered cases in the Regional Cancer Registry of Stockholm has been noted during the last decades. This increase in incidence can not be explained only by a change in the age-distribution of the population. The mortality trends do not show the same increase. This project aims to study the incidence and survival trends in female breast cancer in the Stockholm region.
The increasing discrepancy between incidence and mortality figures will be studied with the view of elucidating whether it is real or not. The observed discrepancy might for instance be explained by prolonged survival time. By studying cancer registry breast cancer material from 1961-1963 and from 1971-1973 the survival times will be compared.
The explanation for the increasing number of breast cancer cases could be: a) changing diagnostic criteria; b) earlier diagnosis; c) increased diagnostic efforts; d) more frequent reports to the registry; and e) a real biological increase in incidence.
All these factors will be studied in relation to incidence and mortality trends.
SUPPORTED BY Riksforeningen Mot Cancer funds n.a.

2.0080,
GEOGRAPHIC INCIDENCE STUDIES ON CANCER MORTALITY AND CANCER MORBIDITY IN NORTHERN SWEDEN
L. Larsson, University Hospital of Umea, Center of Oncology, *S90185 Umea, Sweden* (1046-B78-04XA)
With data from the Swedish cancer registry age-adjusted incidence rates have been calculated for all communes in the three most northern counties in Sweden for the period 1959-71. Significant differences between the communes have been observed for several cancer types, such as male lung cancer, female breast cancer and malignant lymphomas, probably caused by differences in environment and living habits. The material is at present supplemented by data about new cases reported from 1972-77. Case-control studies are performed as regards lung cancer and malignant lymphomas with special regard to environmental factors.
SUPPORTED BY Riksforeningen Mot Cancer funds n.a.

2.0081,
FOR RESEARCH IN TRINIDAD AND JAMAICA ON DISEASE DISTRIBUTION IN TRINIDAD AND TOBAGO
M.J. Alexander, Tufts University, Boston Campus, School of Medicine, *136 Harrison Ave., Boston, Massachusetts* 02111
No summary has been provided to the Smithsonian Science Information Exchange.
SUPPORTED BY Social Science Research Council funds n.a.

2.0082,
CHECKLIST AND TRAINING GUIDELINES FOR AGRICULTURAL WORKER SAFETY
D.L. Roberts, Clemson University, Agricultural Experiment Station, Dept. of Agricultural Engineering, *Long Hall, Clemson, South Carolina* 29631 (0072857)
OBJECTIVE: Develop a usable safety and health inspection checklist having a hazards hierarchy for S.C. Agricultural Branch Experiment Stations and a modified version for the agricultural producer. Establish guidelines for agricultural employee training in high-potential accident job functions.
APPROACH: Define ag worker annual job functions at ag exp stations; index jobs' potential for serious acci; develop hazards hierarchy checklist on basis of indexing to include items based on characteristics of 72-76 worker injury reports, NSC survey statistics of farm acci, OSHA requirements, etc.; compile & establish guidelines for ag employee training for safe & healthful job performance; test checklist & use training guidelines at ag exp stations & modify for ag producer.
PROGRESS: Six years of injury reports (785) were analyzed for South Carolina Agricultural Experiment Station workers. Partial findings support the statement that nearly all such injuries can be prevented through improved worker training and worker's subscription to correct work procedures and use of personal protective equipment. Preliminary descriptions of agricultural job functions according to their potential for producing serious accidents or health hazards. (Job's Hazards Hierarchy) coupled with characteristics of the 785 accidental injuries and other agricultural accident data indicate areas where improved and increased training would be beneficial. Most agricultural jobs have been rated to have very low potential for serious injury or health hazard. Jobs rated to have slight to high potential for serious injury/health hazard show most potential for beneficial worker training in 'risk assessment of jobs'.
SUPPORTED BY South Carolina State Government funds n.a.

2.0083,
EPIDEMIOLOGICAL EVALUATION OF HUMAN AND ANIMAL HEALTH AS ASSOCIATED WITH CONTAMINATED WELL WATER
A. Robinson, University of Minnesota, St. Paul Campus, School of Veterinary Medicine, Dept. of Large Animal Clinical Sciences, *256 Veterinary Science, St. Paul, Minnesota* 55101 (0077655)
OBJECTIVE: Determine the severity, frequency and magnitude of motality and morbidity in humans and animals consuming well water of various qualities. Estimate the economic impact of mortality and morbidity in humans and animals as a result of consumption of contaminated well water supplies. If needed, provide a description of the cost benefit ratio of implementing available methods to treat contaminated water or provide alternative sources of water, in cases where it has been indicated as the source of human and domestic animal illness.
APPROACH: Analyze the health of humans and domestic animals who obtain their water supply from wells of various construction and depths in the Karst topography of southeastern Minnesota. Approximately 20 farms will be included in the study. Farms presently participating in the School of Public Health Study to identify significant indicators of contamination will be utilized, including cohorts of humans and animals consuming a satisfactory quality of water, and those consuming an unsatisfactory quality of water.
PROGRESS:
SUPPORTED BY U.S. Dept. of Agriculture funds n.a.

2.0084,
SEQUELAE TO LEAD POISONING:
D.K. Goldberg, Cornell University, Ithaca Campus, New York State College of Veterinary Medicine, Diagnostic Laboratory, *825 Veterinary Research Tower, Ithaca, New York* 14853 (0078461)
OBJECTIVE: Determine if there are long-term consequences of increased lead absorption in children and evaluate the current criteria for treatment of lead over-exposed children.
APPROACH: Twins who are discordant in their histories of childhood lead exposures will be compared on a number of measures including intelligence, visual-motor coordination, hyperactivity, and school performance. Use of twins will provide control for environmental risk factors other than lead and for genetic and cultural factors which might otherwise lead to confounding in outcome measures. The population of twins will be obtained from the records on the New York City Bureau of Lead Poisoning Control. Premorbid conditions will be determined from birth records, hospital/doctors records, and from parental interviews.
PROGRESS:
SUPPORTED BY U.S. Dept. of Agriculture funds n.a.

2.0085,

ECOLOGY AND GENETIC STABILITY OF FOOD POISONING C. BOTULINUM AND C. PERFRINGENS

H.P. Riemann, University of California, Davis Campus, School of Veterinary Medicine, Dept. of Epidemiology & Preventive Medicine, *Davis, California* 95616 (0002606)

OBJECTIVE: Find the natural reservoirs of food-poisoning strains of C. perfringens and C. botulinum and obtain information as to how these reservoirs are maintained. Obtain information with respect to the genetic control of toxigenicity in these two organisms.

APPROACH: Survey of prevalence and possible causal factors of C. botulinum will be carried out in areas epidemic with respect to wild fowl botulism, ranches, and slaughter houses and data studied epidemiologically. Same for C. perfringens. Genetic transfer will be studied by application of adapted genetic techniques and use of toxigenic and non-toxic mutants with appropriate genetic markers. Special attempts will be made to look for incomplete toxins, i.e., serologically cross-reacting materials.

PROGRESS: A number of seagull sera from Alaska were tested for botulinum antitoxins with negative results. Otherwise, research activities have been very limited because of lack of funds. A grant proposal for ecology studies of C. botulinum has been submitted to USPH.

SUPPORTED BY U.S. Dept. of Agriculture, Cooperative Research Office, California funds n.a.

2.0086,

HUMAN-FACTORS ENGINEERING FOR SAFETY, COMFORT, AND PRODUCTIVITY OF WORKERS

M.S. Kaminaka, University of California, Davis Campus, Agricultural Experiment Station, Dept. of Agricultural Engineering, *Davis, California* 95616 (0067664)

OBJECTIVE: Study equipment, work practices, and work environment and identify unsafe, inefficient, and uncomfortable practices with the intent of improving worker productivity, safety, and comfort. Acquire information on the capabilities and limitations of workers for performing typical tasks in the agricultural industry. This information should include the effects of fatigue and boredom and should be measured in terms of both physiological and sociological responses. Develop methods for gathering and analyzing statistics on accidents in typical agricultural and agribusiness operations. Develop effective, efficient and economical noise attenuating techniques to reduce noise levels in canneries.

APPROACH: Noise level measurements will be made throughout several canneries and specific noise sources isolated to determine the magnitude of cannery noise levels and the physical and economical constraints of noise control that will be consistent with FDA sanitation regulations and the efficient operation of canneries. Currently available noise attenuation materials will be tested for their noise reduction characteristics. Cannery equipment will be modified as needed to reduce noise levels.

PROGRESS: Analysis of Agricultural Machinery Related Job Skills. Detailed skills analyses (as opposed to descriptive task analyses) of agricultural machinery related jobs are not now available. Such analyses could be used to develop appropriate training or apprenticeship programs, or to aid in the placement of farm workers in jobs which match their present skills. Present screening methods for job applicants tend to rely upon selecting applicants based upon characteristics which seem to be related to success on the specified job. The approach followed here was to analyze selected types of agricultural machinery in order to determine how machine functions dictate what skill are required to operate the machine. The eventual goal is to determine what these required skill are. The immediate question was, 'Can these skills be inventoried in this manners?' A taxonomy of human skills developed by E. Fleishman was used in the initial phase of this work. In cooperation with a local farmer, analyses were conducted with machine operators and other workers (e.g., sorters) involved with mechanical tomato harvesters, pepper harvesters, sunflower combines, and manual operations such as row-crop (Text Truncated - Exceeds Capacity)

SUPPORTED BY U.S. Dept. of Agriculture, Cooperative Research Office, California funds n.a.

2.0087,

SELECTED FACTORS AFFECTING THE CONSUMER USE PERFORMANCE OF FLAME RETARDANT FABRICS

H.R. Richards, Colorado State University, School of Home Economics, Dept. of Clothing & Textiles, *Fort Collins, Colorado* 80523 (0071924)

OBJECTIVE: Determine the effects of methods of construction, selection of accessaries, stitching and garment design on the fammability performance of fabrics and apparel. Evaluate the feasibility of developing a meaningful fire hazard index for fabrics and garment systems to help the consumer in making judgments before purchasing fabrics and garments.

APPROACH: Medium weight fabrics will be used including untreated and flameresistant cotton and untreated and flame-resistant 50:50 cotton-polyester. Similar lightweight fabrics will be tested, if the results on medium weight indicate the necessity. Flame-resistant #50 cotton or 50:50 cotton-polyester thread will be used for stitching the flame-resistant fabrics and accessories and untreated thread used for the untreated fabrics and accessories. Accessories will include zippers, velcro, buttons of different materials, buttonholes, and pockets. Construction methods will be by fusible-tape adhesion, high frequency adhesion, and three types of sewn seams. Constructed specimens will be tested by 3-second and 12-second exposures in the vertical flame test and the char length and residual flame time determined, as well as the residual strength where practical. Appropriate data from cooperating stations and other sources will be tested in experimental formulae to develop a Flammability Hazard Rating (FHR) for fibers or apparel. This should correlate with the frequency with which the fabric or garment is involved in burn injuries, taking into account the market share and frequency of use.

PROGRESS: The effect of heat on fabrics, yarns, and sewing thread was determined for temperatures from 125 degrees C to 180 degrees C and periods of from 4 to 120 hours. Fabrics included untreated and flame-retardant wool, cotton, and 70-30 polyester/cotton, and untreated polyester and nylon - a total of 12 fabrics was examined. Yarns and threads included yarns from each of the above-noted fabrics and other commercial untreated and flame-retardant cotton, polyester, and nylon threads - a total of 32 yarns. Each fabric was characterized according to structure, fabric count, and weight, and each yarn by tex, twist, and ply. Before and after heat treatment, the following properties were determined: yarn length and breaking strength, and fabric dimension (standard square), breaking (tensil (Text Truncated - Exceeds Capacity)

SUPPORTED BY U.S. Dept. of Agriculture, Cooperative Research Office, Colorado funds n.a.

2.0088,

FUNGAL- AND ALGAL-INDUCED DISEASES IN ANIMALS AND MAN

P. Krogh, Purdue University, School of Veterinary Science & Medicine, Dept. of Veterinary Microbiology, *Life Sciences Bldg., West Lafayette, Indiana* 47907 (0076505)

OBJECTIVE: Elucidate the etiology of fungal- and algal induced diseases in animals; privide methods for detection of fungal and algal agents in feeds and foods; determine the health implications in man of fungal and algal agents.

APPROACH: Animal diseases will be experimentally induced by fungal and algal agents in order to determine the causal role of these agents. Field cases in animals and man of comparable diseases will be studied in order to elucidate the causal relationships.

PROGRESS: Since funds became available for this research project by September 21, 1978, equipment has been ordered to enable the conductance of the following investigations: Chemical determination of residues of ochratoxin A in human kidneys, by thin-layer chromatography. Taxonomic investigation of the ochratoxin-producing molds in ochratoxin-contaminated cereals from an area of endemic (Balkan) nephropathy. Laboratory production of algal toxins, including saxitoxin, gonya toxins, and anatoxiu. Development of chemical procedures for detection of algal toxins in foodstuffs and water.

SUPPORTED BY U.S. Dept. of Agriculture, Cooperative Research Office, Indiana funds n.a.

2.0089,

DIETARY DISTRIBUTION AND METABOLIC FATE OF TRANS FATTY ACIDS

M. Keeney, University of Maryland, College Park Campus, Agricultural Experiment Station, Dept. of Dairy Science, *College Park, Maryland* 20740 (0079349)

OBJECTIVE: Determine fatty acid composition, particularly Trans-and Cis- acids in the American diet; alterations in membrane structure resulting from incorporating trans fatty acids; the transport of trans fatty acids into brain tissue; whether trans fatty acids are transported across placental membranes, and conduct an epidemiological study comparing intake of trans fatty acids by 3 groups with different risk of cancer.

APPROACH: By standard methods determine fatty acid content of dietary fats and oils. Evaluate lipid from many tissues of organs for mice fed control diets and diets high in trans fatty acids. Similar studies to 2 on brain tissue. Evaluate lipids in the fetuses from cattle and mice fed diets high in trans fatty acids. Evaluate kind of fat eaten by a Jewish (high risk) and Seventhe Day Adventist (SDA) (low risk), and a non-Jewish-non-SDA population (control). Compare trans fatty acid levels in these diets.

PROGRESS:

SUPPORTED BY U.S. Dept. of Agriculture, Cooperative Research Office, Maryland funds n.a.

2.0090,

HUMAN FACTORS ENGINEERING

R.H. Wilkinson, Michigan State University, Agricultural Experiment Station, Dept. of Agricultural Engineering, *New Administration Bldg., East Lansing, Michigan* 48823 (0067899)

OBJECTIVE: Study the agricultural worker's performance, safety and comfort as affected by: machine vibrations, noise, dust, temperature, humidity and other environmental factors, machine controls, display location and operator position.

APPROACH: Field studies to determine health problems of agricultural workers. Develop vibration measuring capability for field studies of conditions, experienced by machine operators. Monitor body functions (i.e. heart rate, muscle tremor, etc.) as a measure of man's physical response to job demands, vibration, environment and work space. Modify a tractor cab to control and analyze environmental stress. Simulate work tasks to evaluate mental and physical performance. Evaluate shape coding of controls, location, movement, displays and operator position on performance. Evaluate performance in various milking parlor configurations.

PROGRESS: A graduate student project is underway to evaluate the effects of various levels of whole body vibration on operator response time and performance. An operators station has been constructed that can be vibrated with various amplitudes and frequencies. The operators performance on a tracking task will be studied with and without whole body vibration. Results are expected in 1979.

SUPPORTED BY U.S. Dept. of Agriculture, Cooperative Research Office, Michigan funds n.a.

2.0091,

ELEMENTS OF NUTRITIONAL ANEMIA AMONG BLACKS IN CENTRAL MISSOURI, PHASE II

R.M. O'Neal, Lincoln University, School of Agriculture, Dept. of Agricultural & Natural Resources, *Jefferson City, Missouri* 65101 (0074830)

OBJECTIVE: Delineate the types and extent of the anemias associated with nutrient deficiencies, i.e., iron, folic acid and vitamin B(12). Relate the incidence and types of nutritional anemies to the food consumption patterns of the population groups. Relate socioeconomic characteristics of the population groups to the incidence of nutritional anemias and food consumption patterns.

APPROACH: Samples of participants from black population in Central Missouri will be determined. Blood samples, food recall history and socioeconomic records will be obtained. Blood will be checked for anemia and nutrients. The blood data and food intake will be examined for correlation.

PROGRESS: With 83% of the families interviewed, tested and the data in preliminary summation, we found that among women of child bearing age there was a direct relationship between weight and height ratios to elevation of blood pressure, and increased skinfold thickness to elevated blood pressure. There also seems to be a relationship between family income and dollars spent on food, as well as the family size in relationship to the family income. As

the size of the family increased the total income decreased and as this decreasd the average grocery dollar also decreased. A fairly extensive food preference list has been compiled to reflect the eating habits of Black families in Central Missouri. The dietary summary so far reflects 36% receiving L100% but -G67% of the RDA for iron and 19% receiving less than 67 but more than 50% for iron. There is no problem with dietary intake of B(12) as reflected in the biochemical data and in the case of folic acid there were 36% receiving less than 100% RDA but greater than 67% and 27% receiving less than 67% of their RDA but greater than 50% as is reflected in the biochemical data. Early summaries tend to point to iron and folic acid as being the ones in greatest need of attention since it has been shown that deficiencies do exist and should be corrected.

SUPPORTED BY U.S. Dept. of Agriculture, Cooperative Research Office, Missouri funds n.a.

2.0092,

BURN INJURY STUDY: PRODUCT-RELATED BURN VICTIMS

J. Laughlin, University of Nebraska, Lincoln Campus, Agricultural Experiment Station, Dept. of Textiles & Clothing & Design, *Lincoln, Nebraska* 68508 (0079517)

OBJECTIVE: Determine the relationship of clothing-related and interior product-related burn injuries to various segments of the population in everyday living and working situations during a specified period of time for a well-defined population.

APPROACH: A questionnair, refined from the Nebraska Burn Study, will be sent to every hospital in Nebraska and will be completed from the medical records of inpatients by the hospital staff. The Nebraska Hospital Association endorsed the proposal for this project. Additional information will be obtained from data files of the Office of the State Fire Marshall. The questionnaire was designed to eliminate duplications in retrived data and eliminate outpatients, classify burn injuries, and identify factors which contribute to the accident. The total number of burn injuries and the number and characteristics of the clothing-related and interior product-related deaths and injuries for fiscal year (July-1, 1979 through June 30, 1980) will be determined for Nebraska. Statistical analysis will be developed as needed to utilize the information obtained from the questionnaire.

PROGRESS:

SUPPORTED BY U.S. Dept. of Agriculture, Cooperative Research Office, Nebraska funds n.a.

2.0093,

DETERMINANTS OF CONSUMER HEALTH STATUS IN THE NON-METROPOLITAN AREAS OF CENTRAL NEW YORK

P.S. Chi, Cornell University, Ithaca Campus, Agricultural Experiment Station, Dept. of Consumer Economics & Public Policy, *Ithaca, New York* 14850 (0074273)

OBJECTIVE: Collect micro-data on consumer health status and related information; assess health levels of certain groups within the non-metropolitan areas of Central New York; construct a multivariate model in which the key determinents of consumer health status will be ascertained; develop policy recommendation and publish research results.

APPROACH: A sample of 800 respondents will be randomly selected from the six non-metropolitan counties in Central New York. A mail-questionnaire will be the instrument for data collection. Techniques of cross-tabulation and standardization will be used to compare health levels among different social groups in the sample. Pathanalysis is the method for multivariate model construction.

PROGRESS: By September 1978, the literature review on consumer health staus was thoroughly completed with assistance of two computerized search systems: Social Science Citation Index and Sociological Abstracts. Decision was alllso made with regard to the measurement of consumer status. The sampling framework for the mai-questionnaire survey was established and the detailed structure of questionnaire was constructed. The next research step will be to pre-test the questionnaire instruments and to collect survey data. Since the investigator is on leave from September 1978 to August 1979, this research wi be resumed after he returns to Cornell.

SUPPORTED BY U.S. Dept. of Agriculture, Cooperative Research Office, New York funds n.a.

2.0094,

THE QUALITY OF SEAFOOD CONSUMED BY THE PEOPLE OF SOUTH CAROLINA

A. Koli, South Carolina State College, School of Arts & Sciences, Dept. of Chemistry, *Orangeburg, South Carolina* 29115 (0073560)

OBJECTIVE: Determine mercury levels of Sea and Freshwater fish consumed by the people of South Carolina, determine the effect of fish species on the accumulation and distribution of mercury in their tissues, and compare levels of mercury found by geographic location and relate to environmental factors.

APPROACH: Determine the availability of knowledge on the quality of seafood consumed by the people of South Carolina. The fish samples will be collected from the Atlantic Coast of South Carolina for determination of mercury content. To accomplish this the state's coastline will be divided into 30 sections of ten miles apart. The fish samples will be frozen on dry ice and stored in a freezer. The fish tissue will be analyzed for mercury contents by flameless atomic absorption spectroscopy--Mercury Analyzer.

PROGRESS: A survey of mercury residues in saltwater fish from the Atlantic Coast of South Carolina was conducted to see if the problem of the magnitude of mercury contamination was evident in the South Carolina fisheries. Samples of fish and shellfish from the Atlantic Coast of South Carolina were collected during 1977 and 1978. The fish collected were Spot, Whitting, Silver Snapper, Flounder, Shrimp, Sea Bass, Squid, Grouper, Bluefish, Clam, Crab, Scallop, Speckled Trout, Opsanus Tau, Trinectes Maculatus, Stellifer Lauceolatus and Mullet. Mercury determinations were made on 75 fish samples collected from eight locations on the Atlantic Coast of South Carolina. Triplicate samples of fish tissue were analyzed by the wet digestion method. Digests were analyzed using flameless atomic absorption spectrophotometry procedures outlined by Hatch and Ott, and Uthe et. al as modified for use with a Perkin-Elmer, Colemena MAS-50 mercury analyzer. Different species vary in mercury content and larger fish contain higher concentrations of mercury than do smaller fish of the same species. All the fish analyzed contain mercury levels below the currently accepted guideline of 0.5 ppm. This means that fish from the Atlantic Coast of South Carolina are relatively clean and safe with respect to mercury for human consumption.

SUPPORTED BY U.S. Dept. of Agriculture, Cooperative Research Office, South Carolina funds n.a.

2.0095,

BURN INJURY STUDY: PRODUCT-RELATED BURN VICTIMS

M.M. Hurlocker, South Dakota State University, School of Home Economics, *Brookings, South Dakota* 57006 (0079429)

OBJECTIVE: Determine the relationship of clothing-related and interior product-related burn injuries to various segments of the population in everyday living and working situations during a specified period of time for a well-define population.

APPROACH: The questionnaire, refined from the Nebraska Burn Stidy, will be sent to every hospital in South Dakota and will be completed from the medical records of inpatients by the hospital staff. The State Health Department of South Dakota has endorsed the proposal for this project. Additional information will be obtained from data files of the Office of the State Fire Marshall. The questionnaire was designed to eliminate duplications in retrieved data and to eliminate outpatients, classfy burn injuries, and identify factors which contribute to the accident. The total number of burn injuries and the number and characteristics of the clothing-related and interior product-related deaths and injuries for fiscal year (July 1, 1979 through June 30, 1980) will be determined for South Dakota. Further statistical analysis will be developed as needed to utilize the information obtained from the questionnaire.

PROGRESS:

SUPPORTED BY U.S. Dept. of Agriculture, Cooperative Research Office, South Dakota funds n.a.

2.0096,

AN EPIDEMIOLOGICAL STUDY OF MENTAL HEALTH NEEDS OF RURAL COUNTIES IN TENNESSEE

B.A. Husaini, State University & Community College System of Tennessee, Tennessee State University, School of Arts & Sciences, Dept. of Sociology, *Nashville, Tennessee* 37203 (0070866)

OBJECTIVE: Determine the mental health needs and their specific etiological factors in the rural communities of Tennessee; determine the variation in both the needs and their etiology in relation to the demographic characteristics; determine the extent to which mental health services are utilized in the rural communities; determine the relationship between the demographic characteristics and both the use of mental health services and the degree of satisfaction with the services received; and develop model plants and services directed toward an effective resolution of mental health needs of the rural communities.

APPROACH: The study will use the survey method where individuals between the ages of 18 and 65 years will be interviewed for approximately an hour.

PROGRESS: Data regarding psychiatric symptomatology obtained from 713 residents of 9 rural Tennessee counties indicate that approximately 12% of the rural population may require some form of psychiatric services. Impairment was common among those of lower socioeconomic status, the divorced, widowed, or separated, females, and among older respondents. Further analyses indicated that apparent higher levels of symptomatology among blacks were due to the predominately lower socioeconomic states of black respondents. When the effect of physical health status is controlled, socioeconomic status differences diminish and impairment was more common among younger respondents. The occurrence of stressful life events was related to impairment--respondents reporting more life events manifested more psychiatric symptoms. Events most strongly related to impairment involved those regards as undesirable, unpredictable, and those for which social support was unavailable. Further analyses regarding the individual's internal resources (ego strength and locus of control) and external resources (social support) indicate that stressful life events exerted their greatest effect upon impairment in cases where both internal and external resource were minimal. Individuals with developed coping styles and well established social ties were strongly resistant to the effects of life stress. Service utilization in the rural community was quite limited--only 4% of respondents admitted to having sought psychiatric help.

SUPPORTED BY U.S. Dept. of Agriculture, Cooperative Research Office, Tennessee funds n.a.

2.0097,

ETIOLOGY AND EPIDEMIOLOGY OF MUSHROOMS COMPOST COMPETITORS

R.A. Calderone, Georgetown University, Graduate School, *3800 Reservoir Rd. N.W., Washington, District of Columbia* 20007 (0044593)

OBJECTIVE: Develop new and essential information about the causes and occurrence of mushroom compost competitors, and identify and evaluate specific fungi and actinomycetes as incitants of hypersensitivity pneumonitis (mushroom worker's lung) and make recommendations for control to mushroom growers.

APPROACH: Conduct a complete mycological investigation of the microbial flora of the mushroom growing media and atmosphere at various stages of crop preparation growth and clean-up to determine which specific organisms are responsible: Identify and culture fungi which cause pneumonitis reactions in mushroom workers. Extract and characterize antigens from these fungi which promote these reactions. Evaluate purified allergens as incitant of pneumonitis reactions using animal models. Elucidate commercial practices which control the condition.

PROGRESS: Frequently allergic respiratory diseases were contracted in the latter stages of mushroom culture and clean-out operation due to great spore loads from microbial flora occurring in mushroom compost. One hundred fifty-five organisms were isolated from these areas by means of spore traps and Anderson air samplers. The reactivity of 11 of the most frequently occurring organisms (9 fungi and 2 actinomycetes) was established using immunodiffusion and charcoal agglutination with sera obtained from both workers with alleged episodes of Mushroom Workers Lung Disease as well as workers with no recent episodes of disease. Six of 11 organisms isolated from mushroom beds showed reactivity with workers sera. Other fungi, actinomycetes, compost, and compost aerosols did not display reactivity. Although this data implies these organisms are responsible, no clinical proof of the disease has been obtained in any of the workers who claimed they were so affected. More organisms are being tested and more sensitive assays will be conducted to indicated which are causing the disease.

SUPPORTED BY U.S. Dept. of Agriculture, Federal Research Office, Beltsville Agricultural Research Center funds n.a.

2.0098,

NATIONAL MICROCONSTITUENTS

H.L. Seagran, U.S. Dept. of Commerce, National Oceanic & Atmospheric Admin., National Marine Fisheries Service, Southeast Fisheries Center, *P.O. Box 12607, Charleston, South Carolina* 29412 (SEC-212)

Program will be national in scope and will address contaminant issues related to consumer safety. Will address chemical substances transferred from the environment to fish and fishery products at levels that may be harmful to the consumer. Management of this new program, separate from but augmenting existing regional contaminant/microconstituent activities, will be under a program manager, designated by SEFC, assisted by a NMFS National Board of Advisors and through consultation with industry nationally. Program will be organized into five (5) topics. These follow, together with the corresponding current year objectice(s) for each topic: (1) Contaminant surveys-improve methodology for trace lead levels in seafoods and implement a survey on PCB levels in selected inshore species suspected to accumulate organic contaminants; (2) Chemical form of specific contaminants-accelerate past-year NMFS research on mode of occurrence and chemical form of toxic cadmium residues in selected shellfish species, known to accumulate cadmium; (3) Toxicity of contaminants-accelerate past-year NMFS research on specific toxicity (to experimental animals) of cadmium naturally contained in seafoods and correlate/extrapolate to humans; (4) consumption surveys-complete application of earlier developed simulation model to determine probable intake by U.S. consumers of cadmium from dietary seafoods to assess relative risk; (5) Data management-develop system specifications for various users of a proposed national contaminant daia base. Contract activities will constitute the primary means by which this program will implemented. All the objectives and related current year activities summarized above will be carried out either by competitive contracts or by agreements with cooperating institutions.

SUPPORTED BY U.S. Dept. of Commerce, National Oceanic & Atmospheric Admin., National Marine Fisheries Service, Southeast Fisheries Center $510,000

2.0099,

24-HOUR MEAN PLASMA HORMONE LEVELS IN MEN WITH CORONARY HEART DISEASE

B. Zumoff, Montefiore Hospital & Medical Center, *111 E. 210th St., Bronx, New York* 10467 (DF051630)

AF FUNCTION-CORONARY HEART DISEASE IS A SERIOUS, WIDESPREAD MEDICAL AND PUBLIC HEALTH PROBLEM THAT IS OF PARTICULAR CONCERN TO THE USAF BECAUSE IT RESULTS IN THE LOSS OF MANY VIGOROUS AND RELATIVELY YOUTHFUL MEN FROM FLYING DUTIES AND OTHER MILITARY ASSIGNMENTS. THE AF HAS RECOGNIZED THE SERIOUSNESS AND MAGNITUDE OF THIS PROBLEM BY INSTITUTING BOTH RESEARCH STUDIES, SUCH AS THE LONG-TERM BLOOD LIPID FOLLOW-UP PROGRAM, AND CLINICALLY-ORIENTED LARGE-SCALE RISK MODIFICATION STUDIES, E.G. THE RECENTLY-APPROVED HEART (HEALTH EVALUATION AND RISK TABULATION) PROGRAM. THE RATIONALE FOR THESE STUDIES RESTS LARGELY ON THE PREMISE THAT COUNTERACTING OR MITIGATING THE KNOWN 'MAJOR RISK FACTORS' FOR CORONARY HEART DISEASE, NAMELY SMOKING, HYPERLIPIDEMIA AND HYPERTENSION, WOULD DIMINISH THE INCIDENCE AND PREVALENCE OF CORONARY HEART DISEASE IN USAF PERSONNEL. DEFICIENCY-EPIDEMIOLOGICAL STUDIES HAVE SHOWN THAT 'CLASSICAL' RISK FACTORS ACCOUNT IN THE AGGREGATE FOR ONLY ABOUT ONE-HALF OF THE INCIDENCE OF CORONARY HEART DISEASE IN HIGH-INCIDENCE POPULATIONS SUCH AS THAT OF THE UNITED STATES. THUS EVEN IF IT WERE POSSIBLE TO DECREASE ALL OF THESE FACTORS SIMULTANEOUSLY, AS THE USAF HEART PROGRAM PROPOSES TO ATTEMPT, AN EXCESSIVE INCIDENCE OF CORONARY HEART DISEASE WOULD REMAIN AS A SERIOUS HEALTH PROBLEM. IT APPEARS ESSENTIAL THEREFORE, TO DEVELOP NEW HYPOTHESES TO ACCOUNT FOR THE REMAINDER OF THIS EXCESS INCIDENCE OF CORONARY HEART DISEASE IN ORDER TO DEVISE APPROPRIATE METHODS FOR PREVENTION AND TREATMENT. OBJECTIVE-THE HYPOTHESIS UNDERLYING THIS RESEARCH IS THAT ABNORMALITIES OF THE ENDOCRINE ENVIRONMENT IN MAN PREDISPOSE TO THE DEVELOPMENT AND/OR PROGRESSION OF CORONARY HEART DISEASE. IF THIS IS SO, IT SHOULD BE POSSIBLE TO DEVELOP NEW AND EFFECTIVE PHARMACOLOGICAL THERAPY (WITH HORMONES, HORMONE METABOLITES, OR DRUGS CAPABLE OF ALTERING THE BLOOD LEVELS OF HORMONES OR HORMONE METABOLITES OR ANTAGONIZING THEIR EFFECTS) THAT COULD ACCOMPLISH BOTH PRIMARY AND SECONDARY PREVENTION OF MYOCARDIAL INFARCTION. HOW CONTRIBUTES-CONTRIBUTES DIRECTLY TO SUBAREA 1.5. PLANS ARE TO IDENTIFY WHATEVER DIFFERENCES IN PLASMA HORMONE CONCENTRATIONS THERE MAY BE BETWEEN MEN WITH AND WITHOUT CORONARY HEART DISEASE. TO ACHIEVE THIS, THE INVESTIGATORS WILL RIGOROUSLY DEFINE THE DISEASE-POSITIVE AND DISEASE-NEGATIVE POPULATIONS AND THEN CARRY OUT AN EXHAUSTIVE 'CROSS-SECTIONAL' COMPARISON OF THE HORMONAL STATUS OF THESE TWO POPULATIONS, USING A LARGE NUMBER OF PARAMET (TEXT TRUNCATED -EXCEEDS CAPACITY)

SUPPORTED BY U.S. Dept. of Defense, Air Force, Office of Scientific Research $45,500

2.0100,

THE EFFECT OF HIGH GZ FORCES ON SYMPATHETIC NERVOUS ACTIVITY

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AF function - aircrew personnel operating high performance aircraft are exposed to increasing levels of rapid onset, sustained, repetitive maneuvering forces. It has been recognized that cardiovascular responses can be encountered which may be particularly important in determining performance and severely limit or restrict the capabilities of the aircrew. Deficiency - high performance combat aircraft are now capable of plus Gz forces in excess of those man can tolerate and still maintain consciousness. The primary physiologic means by which man tolerates plus Gz forces is through vasoconstriction and tachycardia regulated by sympathetic nervous activity. Recent animal studies indicate that high plus Gz forces may elicit sympathetic nervous activity so intense that it can cause cardiac lesions. Objective - the study is designed to measure the involvement of the sympathetic nervous system in man's response to high gravitational forces. Since norepinephrine is the neurotransmitter of the sympathetic nervous system, measurements of levels of plasma norepinephrine should provide a reliable index of sympathetic nervous activity. How research contributes - this research directly supports research and exploratory development on-going under Subarea 1.6, 'habitable crew environments in the Air Force operations' and ADM TP06, 'crew technology', respectively.

These experiments will determine the NE and DBH responses of men to stress and high plus Gz. The effect of duration and intensity of plus Gz on plasma NE will be measured and then some of these studies repeated with subjects wearing an anti-g-suit to see how effectively the suit decreases stress to the sympathetic nervous system. The M-1 maneuver is effective in increasing man's tolerance to high plus gz. Since muscular straining increases plasma NE, the M-1 maneuver may work partly through stimulation of sympathetic nervous activity. Plasma NE levels will be measured on subjects performing the M-1 maneuver to determine how effective a stimulus this is to sympathetic nervous activity. The levels of NE elicited by plus Gz and the M-1 maneuver will be compared with those elicited by exhaustive exercise.

SUPPORTED BY U.S. Dept. of Defense, Air Force, Office of Scientific Research $10,000

2.0101,

USAFSAM RETURNED PRISONER OF WAR (RPW) DATA REPOSITORY

H.P. Wetzler, U.S. Dept. of Defense, Air Force, School of Aerospace Medicine, *Brooks Air Force Base, San Antonio, Texas* 78235 (DF322040)

TO ESTABLISH A SINGLE ARCHIVAL SOURCE OF CLINICAL DATA ON RETURNED PRISONERS OF WAR OF THE VIET NAM CONFLICT TO SUPPORT EPIDEMIOLOGICAL STUDIES AND TO PROVIDE A PERMANENT DATA BASE FOR FUTURE HEALTH CARE OF THE RPWS.

DATA TO BE ACQUIRED WILL INCLUDE ALL IN-PATIENT AND OUT-PATIENT CLINICAL RECORDS OF INITIAL RPW CLINICAL EVALUATIONS, ALL RADIOGRAPHIC STUDIES, ELECTROCARDIOGRAMS, ELECTROENCEPHALOGRAMS, RESULTS OF ANY OTHER SPECIALIZED PROCEDURES, THE DOD INITIAL MEDICAL EVALUATION FORM (IMEF), AND THE MEDICAL PORTION OF INTELLIGENCE BRIEFINGS. THE RESULTS OF ALL USAFSAM AEROMEDICAL EVALUATIONS ON RPWS WILL BE ADDED TO THIS DATA REPOSITORY. DATA WILL BE MICROFILMED FOR LONG- TERM STORAGE. SELECTED DATA ITEMS WILL BE COMPUTERIZED FOR STORAGE, RETRIEVAL, AND ANALYSIS.

SUPPORTED BY U.S. Dept. of Defense, Air Force, School of Aerospace Medicine funds n.a.

2.0102,

TECHNIQUES FOR ASSESSING G-RELATED PATHOLOGY IN PILOTS OF HIGH-PERFORMANCE AIRCRAFT

E.B. Smith, Technology Inc., *16821 Buccaneer, Suite 206, Houston, Texas* 77058 (DF323760)

The myocardial infarctions that go unrecognized each year in the general population and the cardiomyopathy and subendocardial hemorrhage detected recently in swine exposed to acceleration stress make it imperative to develop a diagnostic tool to detect this damage if it exists in aircrew members of high-performance aircraft. An analytical biochemical technique that correlates with myocardial injury will be developed.

The experimental protocol of this task is divided into four parts: (1) select the most appropriate analytical method for serum creatine phosphokinase isoenzymes and other chemical indicators to validate myocardial injury, (2) correlate laboratory induced myocardial injury with these selected chemical indicators, (3) correlate myocardial damage resulting from plus GZ acceleration stress as in part 2, and (4) compare changes in isoenzymes concentrations in human subjects exposed to plus GZ acceleration.

SUPPORTED BY U.S. Dept. of Defense, Air Force, School of Aerospace Medicine $20,000

2.0103,

G-RELATED PATHOLOGY IN AF PERSONNEL EXPOSED TO HIGH-G STRESS

K.K. Gillingham, U.S. Dept. of Defense, Air Force, School of Aerospace Medicine, *Brooks Air Force Base, San Antonio, Texas* 78235 (DF319710)

TO DETERMINE THE MAGNITUDE, DURATION AND OTHER PARAMETERS OF THE STRESS TO WHICH AIRCREW OF HIGH-PERFORMANCE FIGHTER/ ATTACK AIRCRAFT ARE EXPOSED DURING AERIAL COMBAT, AND TO DETERMINE THE PHYSIOLOGIC AND PATHOLOGIC RESPONSES TO THIS STRESS.

INFLIGHT RECORDINGS OF G STRESS, ECG, RESPIRATORY FLOW AND OTHER MEASUREMENTS WILL BE OBTAINED FROM PILOTS OF F-15, F-16, AND OTHER HIGH-PERFORMANCE AIRCRAFT DURING AIR COMBAT TRAINING. BLOOD AND URINE OF PILOTS AND HUMAN CENTRIFUGE RIDERS WILL BE QUANTITATIVELY ANALYZED FOR LEVELS OF CATECHLOAMINES AND OTHER STRESS HORMONES TO DETERMINE THE RELATIVE PHYSIOLOGIC AND BIOCHEMICAL EFFECTS OF DIFFERENT TYPES OF G STRESS.

SUPPORTED BY U.S. Dept. of Defense, Air Force, School of Aerospace Medicine funds n.a.

2.0104,

USAFSAM RETURNED PRISONER OF WAR %RPW CLINICAL EVALUATION AND LONG-TERM FOLLOW-UP

H.P. Wetzler, U.S. Dept. of Defense, Air Force, School of Aerospace Medicine, *Brooks Air Force Base, San Antonio, Texas* 78235 (DF321600)

TO COMPILE AND INTERPRET EPIDEMIOLOGICALLY ALL MEDICALLY RELEVANT DATA ON THE 332 USAF RPWS OF THE VIET NAM CONFLICT. TO OBTAIN MEDICAL INFORMATION FOR THE EVALUATION OF EXISTING SURVIVAL COURSE CURRICULA, LIFE SUPPORT SYSTEMS, AND HEALTH CARE SERVICES.

DATA TO BE ACQUIRED WILL INCLUDE ALL IN-PATIENT AND OUT-PATIENT CLINICAL RECORDS OF INITIAL RPW PROCESSING, ALL RADIOGRAPHIC STUDIES, ELECTROENCEPHALOGRAMS, ELECTROCARDIOGRAMS, RESULTS OF OTHER SPECIALIZED MEDICAL PROCEDURES, PERFORMED EITHER IN IN-PATIENT OR OUT-PATIENT STATUS, THE DOD INITIAL MEDICAL EVALUATION FORM (IMEF), AND THE MEDICAL PORTION OF INTELLIGENCE DEBRIEFINGS. ADDITIONALLY, THE USAF AERO-

MEDICAL CONSULTATION SERVICE WILL EXAMINE AS MANY OF THE USAF RPWS AS FEASIBLE, UTILIZING A STANDARDIZED PROTOCOL, TO ACQUIRE BASELINE MEDICAL DATA. THE RPWS WILL BE RE-EXAMINED AT USAFSAM AT PERIODIC INTERVALS IN AN ATTEMPT TO IDENTIFY ANY CHANGE IN MEDICAL STATUS OR ANY DELAYED RESIDUA OF CAPTIVITY.

SUPPORTED BY U.S. Dept. of Defense, Air Force, School of Aerospace Medicine funds n.a.

2.0105,

USAFSAM CARDIOVASCULAR DISEASE FOLLOWUP STUDY LABORATORY SAMPLING PHASE

D.A. Clark, U.S. Dept. of Defense, Air Force, School of Aerospace Medicine, *Brooks Air Force Base, San Antonio, Texas* 78235 (DF321790)

AS DIRECTED BY AFR 160-131/ AR40-577, STUDY SERUM LIPID AND LIPOPROTEIN LEVELS AND OTHER RISK FACTORS ASSOCIATED WITH CARDIOVASCULAR DISEASE IN MILITARY OFFICERS, TO ACCUMULATE DATA FROM WHICH TO PREDICT RISK OF CARDIOVASCULAR DISEASE AT AN EARLY AGE.

CONDUCT A LIFETIME STUDY OF SERUM LIPID AND LOPOPROTEIN LEVELS IN MEMBERS OF THE 1956 GRADUATING CLASS OF THE U.S. MILITARY ACADEMY AT WEST POINT. OBTAIN BIENNIAL SAMPLES FOR LIPID ANALYSIS, RECORD RESULTS OF PHYSICAL EXAMINATIONS AND OTHER HEALTH-RELATED DATA, AND ACCUMULATE AS BROAD A DATA BASE AS PRACTICAL FOR EVALUATING RISK OF CARDIOVASCULAR DISEASE.

SUPPORTED BY U.S. Dept. of Defense, Air Force, School of Aerospace Medicine funds n.a.

2.0106,

AF ACADEMY LIPIDS

D.A. Clark, U.S. Dept. of Defense, Air Force, School of Aerospace Medicine, *Brooks Air Force Base, San Antonio, Texas* 78235 (DF321800)

TO DETERMINE WHETHER THE UNFAVORABLE CHANGES IN SERUM LIPIDS OBSERVED EARLIER IN WEST POINT CADETS ALSO OCCUR IN USAF ACADEMY CADETS.

STUDY SERUM LIPIDS AND KNOWN RISK FACTORS IN A GROUP OF USAF ACADEMY CADETS, BEGINNING WITH THEIR ENTRY INTO THE USAF ACADEMY AND CONTINUING THROUGHOUT THEIR FOUR YEARS AT THE ACADEMY AND FOR TWO YEARS THEREAFTER. EVALUATE DIET, BODY COMPOSITION, AND OTHER CONTRIBUTORS TO THE RESPONSE OF THE INDIVIDUAL CADET TO HIS ENVIRONMENT AS IT IMPACTS ON FACTORS RELATED TO HIS RISK OF HEART DISEASE.

SUPPORTED BY U.S. Dept. of Defense, Air Force, School of Aerospace Medicine funds n.a.

2.0107,

HISTOLOGY & EPIDEMIOLOGY OF HODGKIN'S DISEASE

F.M. King, U.S. Dept. of Defense, Armed Forces Inst. of Pathology, *c/o Walter Reed Medical Ctr., Washington, District of Columbia* 20306

The purpose of this study is to examine 1,000 cases on a National Research Council (NRC) tape of which only 400 cases were located in the Institute. These cases are to be matched with an equal number of military men who did not come down with the disease, then by a computer analysis. Factors which appear unique to those who developed Hodgkin's disease are to be identified.

As a side study, the survival by cell type would also be evaluated through the computer after review of the histology, with a comparison study of pediatric cases.

Most of the 400 cases have been subclassified. (Some of the remaining cases which were first thought to be Hodgkins disease turned out to be either reactive lymph nodes, metastatic carcinoma, or rhabdomyoma sarcoma. Material was not available on some of the cases.)

A list of survivals, printed by the NRC computer is in the process of being compiled. We are also waiting for additional cases, possibly from the 600 cases which could not be located.

SUPPORTED BY U.S. Dept. of Defense, Armed Forces Inst. of Pathology funds n.a.

2.0108,

LIVER CELL ADENOMA

K.G. Ishak, U.S. Dept. of Defense, Armed Forces Inst. of Pathology, *c/o Walter Reed Medical Ctr., Washington, District of Columbia* 20306

The epidemiologic, clinical, and pathologic data from this series of 105 cases have been published in several reports.

This study is discontinued until such time as additional cases warrant re-evaluation of the data.

SUPPORTED BY U.S. Dept. of Defense, Armed Forces Inst. of Pathology funds n.a.

2.0109,

STATISTICAL CORRELATIONS OF CLINICAL, EPIDEMIOLOGIC & HISTOPATHOLOGIC INFORMATION ON LEPROSY PATIENTS FROM ZAIRE

W.M. Meyers, U.S. Dept. of Defense, Armed Forces Inst. of Pathology, *c/o Walter Reed Medical Ctr., Washington, District of Columbia* 20306

Clinical and histopathologic data have been coded and computerized. These data were derived from 1423 leprosy patients under treatment for leprosy at the Institut Medical Evangelique, Zaire. Biopsy specimens from 1123 of these patients have been studied at the Armed Forces Institute of Pathology.

The data from all patients have been analyzed, comparing age, sex, class of leprosy (clinical and histopathologic), lepromin reaction, blood groups and other parameters. The most important comparison thus far been between the clinical classification and the histopathologic classification of the 1123 patients. Using the Ridley-Jopling classification scheme, a six-group classification, we obtained 75 percent concordance between the clinical and histopathologic diagnoses. Ninety-eight percent of the diagnoses agreed within one step in the classification scheme.

Although this scheme of classification was proposed by Ridley and Jopling in 1966, it has never been tested. The results of our study thus far suggest that this classification scheme is practical and reliable. We are now using our sample of leprosy patients to test other parameters on which this classification scheme was based, i.e., the lepromin reaction (Mitsuda component), and bacillary population density.

SUPPORTED BY U.S. Dept. of Defense, Armed Forces Inst. of Pathology funds n.a.

2.0110,

STUDY OF ANTIBODIES AGAINST THE AGENT OF LEGIONNAIRES' DISEASE (LD)

W.M. Meyers, U.S. Dept. of Defense, Armed Forces Inst. of Pathology, *c/o Walter Reed Medical Ctr., Washington, District of Columbia* 20306

An explosive, common-source outbreak of pneumonia caused by a previously unrecognized bacterium primarily affected persons attending an American Legion convention in Philadelphia, Pennsylvania in July, 1976. Twenty-nine of the 182 cases were fatal. The disease has since been reported in at least 43 states of the U.S.A., in Canada, an in Europe, thus pointing to the wide distribution of the previously undiagnosed infection. By retrospective diagnosis on clinical and serological grounds other past outbreaks of LD have been discovered, such as: an epidemic in St. Elizabeth's Psychiatric Hospital in Washington, D.C. in 1965, an episode of acute febrile illness in the Pontiac, Michigan County Health Department in July, 1968, and an outbreak among members of the independent Order of Odd Fellows in Philadelphia in September, 1974. Results of serologic, cultural, and DNA relatedness studies have demonstrated that the LDB and an unclassified agent isolated in 1947 are the same species. Since the Philadelphia outbreak of Legionnaires' Disease in 1976, and to date, nine other outbreaks of Legionnaires' Disease have been reported to the Center for Disease Control (CDC) in Atlanta, Georgia involving a total of 558 cases of LD. Additionally, hundreds of sporadic cases of LD have been confirmed.

The recognition of any 'new' disease immediately raises the question of its impact on military preparedness. In the case of LD, the questions range from current prevalence to risk of exposure upon deployment. Specifically, we hope to learn whether clinical disease is limited to individuals who are medically compromised and whether exposure (as evidenced by seroconversion) can be predicted gecgraphically. We hope to learn the ratio of subclinical cases, and whether infection or exposure is occupation-related.

In addition, we hope to become experienced with diagnostic techniques, including both serologic and direct identification of the organism(s). There is sufficient evidence to suggest that, heretofore, different laboratories, using slightly different techniques, obtained radically different results. The proliferation of antigenically different strains of the organism (or at least recognition of the differences) suggests that the military would be well advised to not only remain abreast of the state-of-the-art but to attempt improvements.

Initially, antibod (Text Truncated - Exceeds Capacity)

SUPPORTED BY U.S. Dept. of Defense, Armed Forces Inst. of Pathology funds n.a.

2.0111,

TRANSMISSION CONTROL AND TREATMENT OF INFECTIOUS DISEASES OF MILITARY IMPORTANCE IN EQUATORIAL ASIA

G.F. Dewitt, Inst. for Medical Research, *Jalan Pahang, Kuala Lumpur, Malaysia* 0319 (DA0A7413)

TO INVESTIGATE THE INCIDENCE OF SCRUB TYPHUS INFECTION IN SELECTED LOCAL AND FOREIGN POPULATIONS, TO RELATE THIS TO THE PREVALENCE OF VECTOR CHIGGERS AND THEIR COMMON RODENT HOSTS, TO DETERMINE THE STRAINS OF R. TSUTSUGAMUSHI CAUSING HUMAN INFECTIONS AND RELATE TO CLINICAL DISEASE, TO DEVELOP IMPROVED SEROLOGICAL METHODS, TO STUDY THE BASIS FOR IMMUNITY, TO DEFINE VECTOR-RICKETTSIA RELATIONSHIPS, TO DEVELOP A LABORATORY ANIMAL MODEL FOR THE DISEASE, AND TO PRODUCE LABORATORY ANIMALS IN SUPPORT OF THE MISSION. SCRUB TYPHUS IS AN INCAPACITATING DISEASE OF MILITARY IMPORTANCE.

COORDINATED STUDIES ARE BEING CONDUCTED AT SELECTED FIELD SITES IN AN EFFORT TO RELATE THE INCIDENCE OF SCRUB TYPHUS IN HUMANS TO NUMBERS OF VECTOR CHIGGERS, RODENT HOSTS, AND THE STRAINS OF R. TSUTSUGAMUSHI PREVALENT IN EACH. CLINICAL STUDIES INCLUDE AN EVALUATION OF A SINGLE DOSE DOXYCYCLINE FOR THE TREATMENT OF SCRUB TYPHUS. STANDARD TECHNIQUES DEVELOPED HERE AND ELSEWHERE ARE UTILIZED AND MODIFIED AS NEEDED.

SUPPORTED BY U.S. Dept. of Defense, Army, Medical Research & Development Command $448,915

2.0112,

LIFE SUPPORT EQUIPMENT RETRIEVAL PROGRAM (DA0C6897)

R.G. Pinkson, U.S. Dept. of Defense, Army, Medical Research & Development Command, Field Research & Biomedical Applications Div., *Fort Rucker, Alabama* 36362 (DA0G0167)

TO PROVIDE A TECHNOLOGICAL DATA BASE CONCERNING THE PHYSIOLOGICAL AND BIOMEDICAL ASPECTS OF THE EVALUATION AND INJURY CORRELATION OF LIFE SUPPORT EQUIPMENT, IDENTIFICATION OF HAZARD PROTECTION PROBLEMS ASSOCIATED WITH LIFE SUPPORT EQUIPMENT AND TO PROVIDE CONCEPTUAL DESIGN RECOMMENDATIONS AND CRITERIA FOR THE IMPROVEMENT OF LIFE SUPPORT EQUIPMENT.

ARMY AVIATION LIFE SUPPORT EQUIPMENT INVOLVED IN EITHER INJURY CAUSATION OR PREVENTION, IN FIELD, ARE SENT TO USARL FOR BIOMEDICAL AND INJURY CORRELATION EVALUATION. THIS EVALUATION ASSESSES THE EFFECTIVENESS/DEFICIENCIES OF THE LIFE SUPPORT EQUIPMENT THROUGH AN ANALYSIS OF THE PHYSICAL CONDITION OF THE PROTECTIVE DEVICES, THE HUMAN INJURY INCURRED AND THE RELATED HUMAN DYNAMICS INVOLVED IN THE ACCIDENT. THE ANALYSIS IS ACCOMPLISHED BY THE APPLICATION OF EPIDEMIOLOGIC METHODS INCORPORATING MEDICALLY RELATED ENGINEERING FAILURE MODE ANALYSIS, ACCIDENT INVESTIGATIVE PROCEDURES, FORENSIC PATHOLOGY, MATHEMATICAL MODELING AND APPLIED BIOENGINEERING RESEARCH TECHNIQUES. THE RESULTANT INFORMATION AND RECOMMENDATIONS ARE PROVIDED TO FLIGHT SURGEONS, USERS, SAFETY ORGANIZATIONS, PROJECT MANAGERS, AND MATERIEL DEVELOPERS CONCERNING THE MEDICAL AND LIFE SCIENCE ASPECTS OF LIFE SUPPORT EQUIPMENT, DESIGN, CRITERIA AND STANDARD.

SUPPORTED BY U.S. Dept. of Defense, Army, Medical Research & Development Command, Aeromedical Research Lab. funds n.a.

2.0113,

ELECTROMYOGRAPHIC ANALYSIS OF MUSCLE STRESSES INDUCED BY WHOLE BODY VIBRATION AND ASYMMETRIC HEADLOADS

J.C. Johnson, U.S. Dept. of Defense, Army, Medical Research & Development Command, Bioengineering & Life Support Equipment Div., *Fort Rucker, Ozark, Alabama* 36362 (DA0B6896)

1. TO DEVELOP A RELIABLE, SENSITIVE AND QUANTITATIVE TECHNIQUE FOR EVALUATING MUSCULAR ACTIVITY AND FATIGUE. 2. TO DETERMINE THE EFFECT OF WHOLE BODY VIBRATION AND HEAD LOAD ON MUSCULAR STRESS IN THE NECK AND BACK OF HUMAN SUBJECTS. FIELD CONDITIONS WHICH EXPOSE HUMANS TO WHOLE BODY VIBRATION AND REQUIRE PROTECTIVE HEADGEAR WILL BE SIMULATED IN THE LABORATORY. COMPUTER PROCESSED SURFACE ELECTROMYOGRAMS WILL BE USED AS A MUSCLE STRESS INDICATOR TO COMPARE FATIGUE PRODUCING CHARACTERISTICS OF PROTECTIVE HEADGEAR AND AUXILLARY HELMET MOUNTED DEVICES.

SUPPORTED BY U.S. Dept. of Defense, Army, Medical Research & Development Command, Aeromedical Research Lab. funds n.a.

2.0114,

RESEARCH OF BIOENGINEERING AND VIBRATION PROBLEMS MEDICALLY SIGNIFICANT TO ARMY AVIATION

T.M. Erhardt, U.S. Dept. of Defense, Army, Medical Research & Development Command, Bioengineering & Life Support Equipment Div., *Fort Rucker, Ozark, Alabama* 36362 (DA0E6733)

To determine the short-term clinical effect of helicopter vibration on the musculoskeletal system and to develop an orthopaedically, anthropometrically sound helicopter crew seat to reduce vibration effects.

Prospective clinical and epidemiologic study using physical examination subjective reporting forms, Norland bone mineral analysis, biochemistry, and x-ray techniques. Seat design and validation will be accomplished statically and dynamically on a three-degree-of-freedom, man-rated vibration table using dynamic EMG techniques. Pilot performance and efficiency are studied. Animal models are used and the techniques of tetracycline bone labeling and scanning electron microscopy of the joint surfaces are employed.

SUPPORTED BY U.S. Dept. of Defense, Army, Medical Research & Development Command, Aeromedical Research Lab. funds n.a.

2.0115,

MILITARY ACOUSTIC HAZARDS - MECHANISMS OF HEARING LOSS

C.K. Burdick, U.S. Dept. of Defense, Army, Medical Research & Development Command, Bioacoustics Div., *Fort Rucker, Ozark, Alabama* 36362 (DA0B6889)

TO ESTABLISH VALID DAMAGE RISK CRITERIA TO ENSURE THE ADEQUATE HEARING PROTECTION OF ARMY PERSONNEL.

HUMAN AUDIOMETRIC AND PSYCHOPHYSICAL PROCEDURES AS WELL AS ANIMAL BEHAVIORAL AND HISTOLOGICAL TECHNIQUES WILL BE USED.

SUPPORTED BY U.S. Dept. of Defense, Army, Medical Research & Development Command, Aeromedical Research Lab. funds n.a.

2.0116,

SKIN DISEASES AMONG SOLDIERS

P. Schmid, U.S. Dept. of Defense, Army, Medical Research & Development Command, Letterman Army Inst. of Research, Division of Cutaneous Hazards, *Presidio of San Francisco, San Francisco, California* 94129 (DA0B6915)

THE OBJECTIVES ARE TO DETERMINE THE TYPE AND FREQUENCY OF POTENTIALLY DISABLING SKIN DISEASES AMONG SOLDIERS IN VARIOUS ENVIRONMENTS, TO CONDUCT TRIALS OF POTENTIAL PREVENTIVE AND THERAPEUTIC AGENTS AGAINST THE COMMON DISABLING DERMATOSES THAT AFFLICT MILITARY PERSONNEL, AND TO DEVELOP OR IMPROVE METHODS OF STUDYING MILITARILY RELEVANT SKIN DISEASES UNDER FIELD CONDITIONS.

CONDUCT A 3-YEAR STUDY OF ALL OUTPATIENT VISIT DIAGNOSES AT THE 4 ARMY DERMATOLOGICVAL CENTERS- DETERMINE PREVELENCE OF CONTACT SENSITIVITIES TO MATERIALS THAT MAY PRODUCE CONTACT DERMATITIS IN SOLDIERS- DEVELOP AND TEST PERFORMANCE CHARACTERISTICS OF NEW TECHNIQUES FOR DIAGNOSING SKIN DISEASES IN THE FIELD.

SUPPORTED BY U.S. Dept. of Defense, Army, Medical Research & Development Command, Letterman Army Inst. of Research funds n.a.

2.0117,

RESEARCH AND DEVELOPMENT FOR HEALTH AND ENVIRONMENTAL HAZARD ASSESSMENT (TMP063)

J. Berkowitz, Arthur D. Little Inc., *15 Acorn Park, Cambridge, Massachusetts* 02140 (DA0G0959)

PROVIDE SUPPORT FOR HEALTH AND ENVIRONMENTAL HAZARD ASSESSMENT OF MILITARY RELEVANT MATERIALS.

(1) COMPILE CHEMICAL, PHYSICAL, BIOLOGICAL AND TOXICOLOGICAL DATA BASES FOR PROBLEM DEFINITION STUDIES ON MILITARY-RELEVANT MATERIALS; (2) PERFORM SITE-SPECIFIC AND NONSPECIFIC HAZARD ASSESSMENT AS PART OF A PROBLEM DEFINITION STUDY; (3) EVALUATE ENVIRONMENTAL MODELS.

SUPPORTED BY U.S. Dept. of Defense, Army, Medical Research & Development Command, Medical Bioengineering Research & Development Lab. $168,000

2.0118,

BIOLOGIC EFFECTS OF SHORT, HIGH-LEVEL EXPOSURE TO GASES

J.D. Morton, Enviro Control Inc., *11300 Rockville Pike, 1 Central Plaza, Rockville, Maryland* 20852 (DA0Q7894)

THE OBJECTIVE OF THIS RESEARCH IS THE COLLECTION AND EVALUATION OF INFORMATION CONCERNING THE BIOLOGIC EFFECTS OF SHORT, HIGH-LEVEL, EXPOSURES TO GASES ASSOCIATED WITH ARMY WEAPON SYSTEMS. THE GASES OF CONCERN ARE CARBON MONOXIDE (CO), SULFUR DIOXIDE (SO SUB 2), OXIDES OF NITROGEN (NO SUB X) AND AMMONIA (NH SUB 4). THE EXPOSURES ARE LIKELY TO BE BRIEF, INTENSE, AND REPEATED. IT WILL BE NECESSARY TO CHARACTERIZE THE BIOLOGIC (PHYSIOLOGIC, PHARMACOLOGIC, TOXICOLOGIC) RESPONSES AND ASSOCIATED BEHAVIORAL OR PERFORMANCE EFFECTS AS WELL AS ADVERSE HEALTH IMPACTS. BOTH IMMEDIATE AND DELAYED RESPONSE, AND REVERSIBLE AND IRREVERSIBLE CHANGES ARE TO BE ADDRESSED. AN EXHAUSTIVE LITERATURE REVIEW WILL BE CONDUCTED TO IDENTIFY REFERENCES PERTINENT TO THE OBJECTIVE. SCIENTIFIC VALIDITY OF INDIVIDUAL DOCUMENTS WILL BE ASSESSED. SUMMARIES WILL BE PREPARED FOR EACH COMPOUND OVER THE ARRAY OF POSSIBLE RESPONSES. CONCENTRATION THRESHOLD OR CONCENTRATION-TIME RELATIONSHIPS WILL BE SOUGHT AND MAJOR DATA GAPS WILL BE IDENTIFIED.

SUPPORTED BY U.S. Dept. of Defense, Army, Medical Research & Development Command, Medical Bioengineering Research & Development Lab. $153,408

2.0119,

DEVELOPMENT OF CRITERIA FOR WASTEWATER REUSE STANDARDS

J.C. Eaton, U.S. Dept. of Defense, Army, Medical Research & Development Command, Medical Bioengineering Research & Development Lab., *Fort Detrick, Frederick, Maryland* 21701 (DA0B6199)

TO STUDY HEALTH EFFECTS ASSOCIATED WITH RENOVATION AND REUSE OF WASTEWATER IN BOTH POTABLE AND NON-POTABLE APPLICATIONS, AND TO DEVELOP CRITERIA UPON WHICH STANDARDS OF QUALITY FOR SUCH RENOVATED WATERS CAN BE BASED.

IDENTIFY THE KNOWN OR PREDICTABLE COMPONENTS OF WASTEWATERS GENERATED AT MILITARY INSTALLATIONS AND FIELD FACILITIES WHERE WATER REUSE MAY BE REQUIRED. REVIEW THE LITERATURE CONCERNING A CUTE AND LONG-TERM HEALTH EFFECTS OF INGESTION OF THE IDENTIFIED COMPONENTS IN POTABLE WATER AND THE OCULAR AND DERMAL EFFECTS IN THE CASE OF NONPOTABLE BODY CONTACT APPLICATIONS SUCH AS LAUNDRY, BATHING AND RECREATIONAL USES. DOCUMENT THE AVAILABLE KNOWLEDGE, IDENTIFY AREAS IN WHICH THE NECESSARY INFORMATION IS LACKING, AND RECOMMEND SPECIFIC STUDIES TO OBTAIN THAT INFORMATION. MAXIMUM USE WILL BE MADE OF EXISTING STANDARDS, RATIONALES AND HEALTH EFFECTS DATA, AND THE RECOMMENDED CRITERIA WILL BE BASED UPON THE USES OF THE RENOVATED WASTEWATERS, THE DURATION OF EXPOSURE, THE POPULATION EXPOSED, AND THE MILITARTY MISSION INVOLVED. ADVICE AND RECOMMENDATIONS WILL BE SOUGHT FROM THE NATIONAL ACADEMY OF SCIENCES, AND COORDINATION WILL BE MAINTAINED WITH INTERESTED GOVERNMENT AGENCIES AND PROFESSIONAL ORGANIZATIONS.

SUPPORTED BY U.S. Dept. of Defense, Army, Medical Research & Development Command, Medical Bioengineering Research & Development Lab. funds n.a.

2.0120,

ASSEMBLY AND EVALUATION OF HEALTH EFFECTS DATA ON REUSE OF SHOWER AND LAUNDRY WATERS BY FIELD ARMY UNITS

D.R. Cogley, Abcor Inc., Walden Division, *850 Main St., Wilmington, Massachusetts* 01887 (DA0M7897)

THE OBJECTIVE OF THIS PROJECT IS TO ASSEMBLE THE RELEVANT TOXICOLOGICAL INFORMATION FROM STUDIES CONDUCTED BY AND FOR THE ARMY AND OTHER AGENCIES CONCERNING THE POTENTIAL HEALTH EFFECTS OF REUSE OF RENOVATED WASTEWATERS IN SHOWERS AND LAUNDRIES BY THE ARMY IN THE FIELD, TO EVALUATE THE ASSEMBLED INFORMATION WITH RESPECT TO ITS USEFULNESS IN DERIVING WATER CRITERIA FOR SUCH REUSE, AND TO IDENTIFY WHAT FURTHER INFORMATION MUST BE OBTAINED.

THE PROGRAM SHALL BE DIVIDED INTO FOUR TASKS- ASSEMBLY OF A LIST OF CONTAMINANTS LIKELY TO ENTER LAUNDRY AND SHOWER WATERS-ENGINEERING EVALUATION OF THE TREATABILITY OF THESE INGREDIENTS AND THEIR LIKELY TRANSFORMATION PRODUCTS IN WASTEWATER TREATMENT SYSTEMS-DERMAL AND ORAL TOXICITY OF THESE INGREDIENTS AND TRANSFORMATION PRODUCTS, AND AN ASSESSMENT OF PREVIOUS RESEARCH RELATED TO SHOWER AND LAUNDRY WATER REUSE.

SUPPORTED BY U.S. Dept. of Defense, Army, Medical Research & Development Command, Medical Bioengineering Research & Development Lab. $22,950

2.0121,

SURVEY ANALYSIS OF ENVIRONMENTAL MEDICAL SYMPTONS AND RISK IN ARMY PERSONNEL

J.B. Sampson, U.S. Dept. of Defense, Army, Medical Research & Development Command, Research Inst. of Environmental Medicine, *Natick, Massachusetts* 01760 (DA0C6132)

THE NUMBER AND TYPE OF ARMY PERSONNEL WHO ARE SUBJECTED TO ENVIRONMENTALLY INDUCED ILLNESS AND INJURY ARE NOT AVAILABLE FROM THE CURRENT MEDICAL RECORDS SYSTEM. DATA ARE NEEDED ON THOSE EXPOSED AS WELL AS THOSE TREATED, ON PARTIALLY DISABLING SYMPTOMS WHICH MAY GO UNREPORTED, ON THE NATURE OF EXPOSURE (ESPECIALLY AS RELATED TO MOS DUTIES) AND ON MEDICAL RISK FACTORS DUE TO INDIVIDUAL BACKGROUND, PHYSICAL CONDITION AND HEALTH-RELATED BEHAVIORS. SUCH DATA, OBTAINED FROM AND PUBLISHED IN TERMS OF ACTUAL ARMY POPULATIONS, WILL BE VALUABLE IN FOCUSING RESEARCH, PROPHYLAXIS AND TRAINING. IT WILL BE OF DIRECT USE TO OPERATIONAL PLANNERS, FIELD COMMANDERS, AND POTENTIALLY EFFECTED INDIVIDUALS. AT THE END OF THE DEVELOPMENTAL PROCESS IT IS EXPECTED THAT THE PERFECTED SURVEY PROCEDURES WILL BE USED IN APPLIED WORK UNITS DEDICATED TO THE ANSWERING OF SPECIFIC QUESTIONS.

DEVELOP AND FIELD TEST SPECIFIC METHODOLOGY FOR DATA COLLECTION AND ANALYSIS FROM ARMY PERSONNEL WHO ARE EXPOSED TO CLIMATIC EXTREMES AND/OR SUSTAINED OPERATIONS DURING FIELD MANEUVERS, SPECIAL TRAINING, OR TRANSMERIDIAN DEPLOYMENTS AND TO RIGOROUS PHYSICAL FITNESS PROGRAMS. METHODOLOGY INCLUDES QUESTIONNAIRES, INTERVIEWS AND BEHAVIORAL OBSERVATIONS DESIGNED TO OBRAIN SUBJECTIVE AND OBJECTIVE DATA ON ILLNESS AND INJURY DURING FIELD OPERATIONS, AS WELL

AS RELEVANT BACKGROUND INFORMATION. THE METHODOLOGY WILL ALSO BE USED IN CONTROLLED LABORATORY EXPERIMENTS WHERE CLIMATIC CONDITIONS ARE MANIPULATED. SURVEY SAMPLING STATISTICS WILL BE APPLIED TO DETERMINE CONFIDENCE LEVEL IN THE OBTAINED SAMPLES. DEVELOPMENT INVOLVES TRAINING OF PERSONNEL AND THE DESIGN, PRETEST, SAMPLE TEST, REVISION AND VALIDATION OF THE SURVEY INSTRUMENTS. DATA OBTAINED WILL BE DESCRIBED IN TERMS OF PERCENT OR PERCENTILES IN SELECT ARMY SUBPOPULATIONS FOR EACH RELEVANT OR CLEARLY IDENTIFIABLE CLIMATIC CONDITION. WORK UNIT WILL CONSULT WITH MILPERC, OTSG'S PATIENT ADMINISTRATIVE DIVISION.

SUPPORTED BY U.S. Dept. of Defense, Army, Medical Research & Development Command, Research Inst. of Environmental Medicine funds n.a.

2.0122,

DEVELOPMENT OF ASSESSMENT OF BIOMETEROLOGIC VARIABLES AND THEIR INFLUENCE ON HEALTH AND PERFORMANCE (22)

J.B. Sampson, U.S. Dept. of Defense, Army, Medical Research & Development Command, Research Inst. of Environmental Medicine, *Natick, Massachusetts* 01760 (DA0G0711)

AN EXTENSIVE LITERATURE IN THE FIELD OF BIOMETEROLOGY INDICATES THAT VARIOUS ATMOSPHERIC PHENOMENA MAY ACT ALONE OR WITH AMBIENT TEMPERATURE TO PRODUCE MALAISE, DYSPNEA, UPPER RESPIRATORY SYMPTOMS, HEADACHE, BEHAVIORAL AND MOOD CHANGES AND PERFORMANCE DEGRADATION.

SUPPORTED BY U.S. Dept. of Defense, Army, Medical Research & Development Command, Research Inst. of Environmental Medicine funds n.a.

2.0123,

PREVENTION OF MILITARY ENVIRONMENTAL CASUALTIES BY EPIDEMIOLOGIC RESEARCH AND INFORMATION DISSEMINATION (22)

H.G. Dangerfield, U.S. Dept. of Defense, Army, Medical Research & Development Command, Research Inst. of Environmental Medicine, *Natick, Massachusetts* 01760 (DA0C6149)

IDENTIFY ENVIRONMENTAL MEDICINE PROBLEMS IN ARMY UNITS AS RESEARCH REQUIREMENTS. MAINTAIN DIALOGUE WITH DA STAFF AND LINE TO (A) COMMUNICATE RESEARCH RESULTS TO POTENTIAL USERS, (B) PROVIDE ASSISTANCE AND RESOLVE DIFFICULTIES IN INTERPRETING AND APPLYING RESEARCH, (C) IDENTIFY UNSOLVED PROBLEMS. PROVIDE A CONTINUING SOURCE OF IDENTIFIED, IN-DEPTH EXPERTISE ON THE IMPACT OF PHYSIOLOGICAL AND PSYCHOLOGICAL STATUS, MILITARY CLOTHING AND EQUIPMENT, NATURAL AND CREW COMPARTMENT ENVIRONMENTS, HIGH TERRESTRIAL ELEVATIONS, AND PHYSICAL FITNESS, ON THE SOLDIER S HEALTH AND MISSION CAPABILITY.

MAINTAIN DIRECT LIAISON WITH DA SCHOOLS, LINE AND STAFF UNITS BY VISITS, CONFERENCES, AND CORRESPONDENCE. MAINTAIN REFERENCE FILES ON CLIMATE, CLOTHING, AND EQUIPMENT, AND PHYSICAL AND PHYSIOLOGICAL DIFFERENCES AMONG MILITARY POPULATIONS, AS A BASE FOR PREDICTING ENVIRONMENTAL IMPACT AND MISSION CAPABILITY. ASSIST IN PREPARATION OF TRAINING FILMS, TB MEDS, FMS, AND OTHER DOCTRINE- PROVIDE CONSULTATION TO UNITS PLANNING MILITARY OPERATIONS UNDER STRESSFUL CONDITIONS- ASSIST WITH DOCTRINE FOR PHYSICAL TRAINING AND/OR ACCLIMATIZATION.

SUPPORTED BY U.S. Dept. of Defense, Army, Medical Research & Development Command, Research Inst. of Environmental Medicine funds n.a.

2.0124,

DEVELOPMENT OF SURVEY METHODOLOGY FOR ANALYSIS OF ENV MEDICAL SYMPTOMS AND RISK IN ARMY PERSONNEL

J.B. Sampson, U.S. Dept. of Defense, Army, Medical Research & Development Command, Research Inst. of Environmental Medicine, *Natick, Massachusetts* 01760 (DA0C6129)

THE NUMBER AND TYPE OF ARMY PERSONNEL WHO ARE SUBJECTED TO ENVIRONMENTALLY INDUCED ILLNESS AND INJURY ARE NOT AVAILABLE FROM THE CURRENT MEDICAL RECORDS SYSTEM. DATA ARE NEEDED ON THOSE EXPOSED AS WELL AS THOSE TREATED, ON PARTIALLY DISABLING SYMPTOMS WHICH MAY GO UNREPORTED, ON THE NATURE OF EXPOSURE (ESPECIALLY AS RELATED TO MOS DUTIES) AND ON MEDICAL RISK FACTORS DUE TO INDIVIDUAL BACKGROUND, PHYSICAL CONDITION AND HEALTH-RELATED BEHAVIORS. SUCH DATA, OBTAINED FROM AND PUBLISHED IN TERMS OF ACTUAL ARMY POPULATIONS, WILL BE VALUABLE IN FOCUSING RESEARCH, PROPHYLAXIS AND TRAINING. IT WILL BE OF DIRECT USE TO OPERATIONAL PLANNERS, FIELD COMMANDERS, AND POTENTIALLY EFFECTED INDIVIDUALS. AT THE END OF THE DEVELOPMENTAL PROCESS IT IS EXPECTED THAT THE PERFECTED SURVEY PROCEDURES WILL BE USED OR APPLIED TO WORK UNITS DEDICATED TO THE ANSWERING OF SPECIFIC QUESTIONS.

DEVELOP AND FIELD TEST SPECIFIC METHODOLOGY FOR DATA COLLECTION AND ANALYSIS FROM ARMY PERSONNEL WHO ARE EXPOSED TO CLIMATIC EXTREMES AND/OR SUSTAINED OPERATIONS DURING FIELD MANEUVERS, SPECIAL TRAINING, OR TRANSMERIDIAN DEPLOYMENTS AND TO RIGOROUS PHYSICAL FITNESS PROGRAMS. METHODOLOGY INCLUDES QUESTIONNAIRES, INTERVIEWS AND BEHAVIORAL OBSER-VATIONS DESIGNED TO OBTAIN SUBJECTIVE AND OBJECTIVE DATA ON ILLNESS AND INJURY DURING FIELD OPERATIONS, AS WELL AS RELEVANT BACKGROUND INFORMATION. THE METHODOLOGY WILL ALSO BE USED IN CONTROLLED LABORATORY EXPERIMENTS WHERE CLIMATIC CONDITIONS ARE MANIPULATED. SURVEY SAMPLING STATISTICS WILL BE APPLIED TO DETERMINE CONFIDENCE LEVEL IN THE OBTAINED SAMPLES. DEVELOPMENT INVOLVES TRAINING OF PERSONNEL AND THE DESIGN, PRETEST, SAMPLE TEST, REVISION AND VALIDATION OF THE SURVEY INSTRUMENTS. DATA OBNTAINED WILL BE DESCRIBED IN TERMS OF PERCENT OR PERCENTILES IN SELECT ARMY SUBPOPULATIONS FOR EACH RELEVANT OR CLEARLY IDENTIFIABLE CLIMATIC CONDITION. WORK UNIT WILL CONSULT WITH MILPERCEN, OTSG'S PATIENT ADMINISTRATIVE DIVISION.

SUPPORTED BY U.S. Dept. of Defense, Army, Medical Research & Development Command, Research Inst. of Environmental Medicine funds n.a.

2.0125,

INFECTIOUS MULTIPLE DRUG RESISTANCE IN ENTEROBACTRIACEAE

S. Falkow, University of Washington, School of Medicine, Dept. of Microbiology, *A-300 Health Sciences Ctr., SC-64, Seattle, Washington* 98195 (DA0B7136)

TO DETERMINE THE GENTIC AND MOLECULAR ORIGIN(S) OF R-FACTORS AND OTHER GENETIC ELEMENTS OF ENTERIC ORGANISMS. TO FURTHER STUDY THE DETERMINANTS OF BACTERIAL VIRULENCE, THEIR EPIDEMIOLOGY, MODE-OF-ACTION AND OTHER FACTORS THAT CONTRIBUTE TO THE DEVELOPMENT OF RESISTANT STRAINS OF ORGANISMS KNOWN TO BE THE CAUSE OF MILITARILY RELEVANT OUTBREAKS OF DIARRHEAL DISEASES.

THE MOLECULAR NATURE AND MODE OF REPLICATION OF R-FACTORS IS TO BE INVESTIGATED. ALSO THE LOCATION OF AND METHOD OF TRANSFER OF THESE R-FACTORS BETWEEN DONOR STRAINS AND RECIPIENT STRAINS IS TO BE STUDIED.

SUPPORTED BY U.S. Dept. of Defense, Army, Medical Research & Development Command, Walter Reed Army Inst. of Research $46,198

2.0126,

THE ROLE OF NEWLY DISCOVERED EXOTOXIN (S TOXIN) IN PSEUDOMONAS AERUGINOSA INFECTIONS

B.H. Iglewski, Oregon State Higher Education System, University of Oregon Health Sciences Center, School of Medicine, Dept. of Microbiology & Immunology, *3181 S.W. Sam Jackson Park Rd., Portland, Oregon* 97201 (DA0J7581)

TO PURIFY AND CHARACTERIZE TOXIN FROM PSEUDOMONAS AERUGINOSA, AND ORGANISM FREQUENTLY INVOLVED IN INFECTIONS FOLLOWING BURNS OR BATTLEFIELD WOUNDS. SPECIFIC EFFORTS WILL BE CONCERNED WITH THE EPIDEMIOLOGY OF SUCH INFECTIONS AND THE PROTECTION OFFERED BY SPECIFIC ANTITOXIN. A LOGICAL OUTCOME OF THESE STUDIES WOULD BE THE DEVELOPMENT OF AN EFFICACIOUS VACCINE TO PROTECT WOUNDED AND/OR BURNED MILITARY PERSONNEL.

CONVENTIONAL EPIDEMIOLOGIC, BIOCHEMICAL AND SEROLOGICAL PROCEDURES WILL BE USED AND MODIFIED AS NEEDED.

SUPPORTED BY U.S. Dept. of Defense, Army, Medical Research & Development Command, Walter Reed Army Inst. of Research $51,494

2.0127,

MILITARY PSYCHIATRY EPIDEMIOLOGY

D.H. Marlowe, U.S. Dept. of Defense, Army, Medical Research & Development Command, Neuropsychiatry Div., *Washington, District of Columbia* 20012 (DA0C6454)

THIS UNIT EXAMINES MILITARY ORGANIZATIONAL, SOCIAL PSYCHOLOGICAL, AND ENVIRONMENTAL FACTORS THAT CREATE RISK FOR AND CONDUCE TO PSYCHIATRIC DISEASE, PSYCHOSOMATIC ILLNESS, BEHAVIORAL DYSFUNCTION AND PHYSICAL ILLNESS AS THEY EFFECT ARMY PERSONNEL AND IMPACT ON CARE GIVING AGENCIES.

THE METHODS OF EPIDEMIOLOGY, INCLUDING RECORDS SURVEILLANCE, POPULATION AND DEMOGRAPHIC ANALYSIS, QUESTIONNAIRE AND FIELD AND COHORT STUDIES AS WELL AS METHODS OF THE PSYCHOLOGICAL AND SOCIAL SCIENCES ARE USED TO DELINEATE ENVIRONMENTS OF RISK FOR PSYCHIATRIC ILLNESS AND PERIODS OF SPECIAL RISK FOR SUCH ILLNESSES AT CRITICAL POINTS IN THE CAREER OF THE SOLDIER.

SUPPORTED BY U.S. Dept. of Defense, Army, Medical Research & Development Command, Walter Reed Army Inst. of Research funds n.a.

2.0128,

MENINGOCOCCUS- BACTERIOLOGICAL, SEROLOGICAL AND EPIDEMIOLOGICAL STUDIES.

H.A. Feldman, State University of New York, Upstate Medical Center, School of Medicine, Dept. of Preventive Medicine, *766 Irving Ave., Syracuse, New York* 13210 (DA0A7318)

THIS STUDY INCLUDES DOCUMENTATION OF THE SULFONAMIDE RESISTANCE OF STRAINS OF MENINGOCOCCUS OBTAINED FROM ALL OVER THE WORLD, DEVELOPMENT OF ADEQUATE SEROLOGIC AND IMMUNOLOGIC METHODS FOR STUDY OF THESE INFECTIONS, THE STANDARDIZATION OF TECHNIQUES FOR USE IN COMPREHENSIVE STUDIES OF MENINGOCOCCAL INFECTIONS, AND A CONTINUING SEARCH FOR NEW DRUGS TO PROVIDE MASS CONTROL OF INFECTIONS. STUDIES OF THIS NATURE PROVIDE TO THE MILITARY THE ABILITY TO BETTER UNDERSTAND THE PATHOGENESIS OF MENINGOCOCCAL MENINGITIS, A DISEASE THAT HAS BEEN COMMONPLACE IN RECRUIT POPULATIONS.

APPROACH - STRAINS OF MENINGOCOCCI ARE OBTAINED FROM MILITARY AND CIVILIAN SOURCES WORLDWIDE. SEROLOGIC TYPING AND CONVENTIONAL ANTIBIOTIC TESTING ARE EMPLOYED. A CONTINUING SEARCH IS MAINTAINED FOR NEW DRUGS AND ANTIBIOTICS TO DETERMINE THEIR IN VITRO EFFECT UPON MENINGOCOCCI. ANY THAT APPEAR TO BE POTENTIALLY USEFUL ARE THEN EVALUATED FURTHER UP THROUGH THE LEVEL OF LIMITED FIELD TRIALS.

SUPPORTED BY U.S. Dept. of Defense, Army, Medical Research & Development Command, Walter Reed Army Inst. of Research $27,069

2.0129,

VECTORS AND NATURAL RESERVOIRS OF OROPOUCHE VIRUS IN THE AMAZON REGION

K.A. Western, Instituto Evandro Chagas, *Belem, Brazil* (DA0B7526)

CONDUCT EPIDEMIOLOGIC STUDIES OF INFECTIOUS DISEASES TRANSMITTED AMONG POPULATIONS ALONG THE TRANS-AMAZON HIGHWAY, WHICH ARE HIGHLY RELEVANT TO MILITARY MEDICINE AND WILL PROVIDE GUIDANCE FOR FUTURE RESEARCH PRIORITIES.

CONVENTIONAL PROCEDURES AND MODIFICATIONS WILL BE UTILIZED.

SUPPORTED BY U.S. Dept. of Defense, Army, Medical Research & Development Command, Walter Reed Army Inst. of Research $15,000

2.0130,

GENESIS OF ARTHROPOD-BORNE VIRAL EPIDEMICS

M.E. Wiebe, Cornell University, Medical Center, Cornell Medical College, Dept. of Microbiology, *1300 York Ave., New York, New York* 10021 (DA0C7272)

THE TECHNICAL OBJECTIVE IS TO TEST THE HYPOTHESIS THAT ENDEMIC OR SYLVATIC STRAINS OF VENEZULELAN ENCEPHALITIS VIRUS CONTAIN A MINORITY VARIANT WITH THE CAPACITY TO PRODUCE MAJOR EPIDEMICS. THERE IS A REQUIREMENT FOR RESEARCH WHICH CAN BE EXPECTED TO PROVIDE KNOWLEDGE ON WHICH TO FORECAST EPIDEMICS OF ARTHROPOD-BORNE VIRAL DISEASES WHICH PRESENT A HAZARD TO MILITARY PERSONNEL. THE APPROACH WILL BE TO SEPARATE THE VIRULENT SUBPOPULATION OF VIRUS FROM AVIRULENT STRAINS OF VIRUS BY THEIR PRESUMED DIFFERENTIAL ATTACHMENT PROPERTIES ON HYDROXYLAPATITE COLUMNS.

SUPPORTED BY U.S. Dept. of Defense, Army, Medical Research & Development Command, Walter Reed Army Inst. of Research $48,533

2.0131,

PARASITIC DISEASES OF MILITARY IMPORTANCE

D.E. Davidson, U.S. Dept. of Defense, Army, Medical Research & Development Command, Walter Reed Army Inst. of Research, *Washington, District of Columbia* 20012 (DA0A6440)

TO STUDY PHYSIOLOGICAL, BIOCHEMICAL, PATHOLOGICAL AND EPIDEMIOLOGICAL ASPECTS OF PARASITIC DISEASES OF MILITARY IMPORTANCE. TO EVALUATE EXISTING TECHNIQUES AND TO DEVELOP NEW TECHNIQUES FOR DIAGNOSIS, PREVENTION, TREATMENT AND CONTROL.

CULTURE SYSTEMS AND ANIMAL MODELS OF PARASITIC DISEASES WILL BE DEVELOPED AND USED TO STUDY THE PARASITES OF INTEREST, THE PARASITIC DISEASE PROCESS, AND THE EFFECTIVENESS OF NEW DIAGNOSTIC, PREVENTIVE AND THERAPEUTIC MEASURES. STUDIES WILL EMPHASIZE BUT WILL NOT BE RESTRICTED TO MALARIA, LEISHMANIASIS, TRYPANOSOMIASIS, AND SCHISTOSOMIASIS.

SUPPORTED BY U.S. Dept. of Defense, Army, Medical Research & Development Command, Walter Reed Army Inst. of Research funds n.a.

2.0132,

VIRAL INFECTIONS OF MAN

W.H. Bancroft, U.S. Dept. of Defense, Army, Medical Research & Development Command, Communicable Disease & Immunology Research Div., *Washington, District of Columbia* 20012 (DA0A6441)

TO DEFINE ETIOLOGY OF ACUTE INFECTIOUS DISEASES OF SPECIAL HAZARD TO MILITARY PERSONNEL, TO DETERMINE AND EVALUATE FACTORS INFLUENCING OCCURRENCE, DISTRIBUTION, SEVERITY AND MEDICAL RESULT OF HUMAN VIRUS INFECTIONS, AND TO DEVELOP MEANS FOR REDUCING DISABILITY DUE TO VIRUS DISEASES.

CONTEMPORARY VIROLOGICAL AND IMMUNOLOGICAL METHODS ARE APPLIED TO DISEASE PROBLEMS OCCURRING IN TROOPS OR IN SUSCEPTIBLE CIVILIAN POPULATIONS IN STRATEGICALLY IMPORTANT AREAS. NEW CONCEPTUAL APPROACHES AND METHODS ARE DEVELOPED AS NEEDED FOR SPECIFIC PROBLEMS.

SUPPORTED BY U.S. Dept. of Defense, Army, Medical Research & Development Command, Walter Reed Army Inst. of Research funds n.a.

2.0133,

BACTERIAL DISEASES OF MILITARY IMPORTANCE

S.B. Formal, U.S. Dept. of Defense, Army, Medical Research & Development Command, Communicable Disease & Immunology Research Div., *Washington, District of Columbia* 20012 (DA0A6443)

STUDIES ON THE ETIOLOGY, ECOLOGY, EPIDEMIOLOGY, PATHOGENESIS, PHYSIOLOGICAL IMMUNOLOGICAL AND DIAGNOSITC ASPECTS OF DISEASES OF MICROBIAL ORIGIN WHICH ARE CURRENT OR POTENTIAL PROBLEMS TO MILITARY FORCES. CURRENT EMPHASIS ON CONTROL OF MENINGOCOCCAL, GONOCOCCAL, PSEUDOMONAS AND STAPHYLOCOCCAL INFECTIONS IN MILITARY FORCES.

DEVELOPMENT OF BACTERIOLOGIC TECHNIQUES FOR STUDY OF VARIOUS INFECTIOUS DISEASES. FIELD STUDIES ON PROPHYLACTIC REGIMENS, SPREAD AND PERSISTENCE OF ORGANISMS IN VARIOUS MILITARY POPULATIONS.

SUPPORTED BY U.S. Dept. of Defense, Army, Medical Research & Development Command, Walter Reed Army Inst. of Research funds n.a.

2.0134,

BIOLOGICAL STUDIES OF INSECT INFECTION AND DISEASE TRANSMISSION

D.J. Gould, U.S. Dept. of Defense, Army, Medical Research & Development Command, Communicable Disease & Immunology Research Div., *Washington, District of Columbia* 20012 (DA0A6514)

DEVELOPMENT OF PHYSIOLOGICAL MEANS OF INTERRUPTING MALARIA TRANSMISSION THROUGH AN UNDERSTANDING OF FACTORS AFFECTING PARASITE INFECTIVITY IN VIVO AND IN VITRO. DEVELOP TEST SYSTEMS FOR STUDYING MECHANISMS UNDERLYING SPOROZOITE INDUCED IMMUNITY FOR THE EVENTUAL PREVENTION AND CONTROL OF MALARIA IN MILITARY TROOPS. DEVELOP MODEL FOR THE TRANSMISSION OF AFRICAN TRYPANOSOMIASIS IN THE LABORATORY AND FOR UTILIZING THE PARASITES IN STUDIES INVOLVING THE IMMUNE RESPONSE.

DETERMINE QUANTITATIVELY SUCH PARAMETERS AS THE MINIMUM NUMBERS OF IMMUNE CELLS REQUIRED TO CONVEY PROTECTION AGAINST PLASMODIUM BERGHEI MALARIA. ISOLATION OF DIFFERENT STAGES OF THE MALARIA PARASITE ON DENSITY GRADIENTS FOR SUBSEQUENT STUDY IN CULTURE SYSTEMS. ESTABLISH A SELF SUSTAINING COLONY OF TSETSE FLIES FOLLOWED BY THE CYCLIC TRANSMISSION OF TRYPANOSOMES BETWEEN INSECT VECTOR AND RODENT HOST. SCREEN VARIOUS VERTEBRATE AND INVERTEBRATE CELL CULTURES FOR THE PROPAGATION AND DIFFERENTIATION OF THE BLOOD STAGHES AND INSECT CYCLE, RESPECTIVELY, OF TRYPANOSOMA RHODESIENSE.

SUPPORTED BY U.S. Dept. of Defense, Army, Medical Research & Development Command, Walter Reed Army Inst. of Research funds n.a.

2.0135,

EPIDEMIOLOGICAL STUDIES OF MILITARY DISEASES

O.C. Dobbs, U.S. Dept. of Defense, Army, Medical Research & Development Command, Preventive Medicine Div., *Washington, District of Columbia* 20012 (DA0B6489)

TO IDENTIFY, DEFINE, AND STUDY KNOWN AND POTENTIAL CAUSES OF DISABILITY IN MILITARY POPULATIONS USING RELEVANT, EXISTING UEPIDEMIOLOGIC TECHNIQUES AND DEVELOPING APPROPRIATE NEW METHODOLOGY. TO APPLY THIS INFORMATION TO THE PREVENTION AND CONTROL OF DISABILITY IN MILITARY POPULATIONS.

CONTEMPORARY EPIDEMIOLOGIC METHODS ARE APPLIED TO CAUSES OF DISABILITY IN MILITARY POPULATIONS. MULTIDISCIPLINARY COLLABORATIVE APPROACHES ARE UTILIZED AND NEW METHODS DEVELOPED AS REQUIRED.

SUPPORTED BY U.S. Dept. of Defense, Army, Medical Research & Development Command, Walter Reed Army Inst. of Research funds n.a.

2.0136,

MECHANISMS OF TRANSMISSION OF HEPATITIS VIRUSES

W.H. Bancroft, U.S. Dept. of Defense, Army, Medical Research & Development Command, Communicable Disease & Immunology Research Div., *Washington, District of Columbia* 20012 (DA0B6513)

TO DEFINE THE EPIDEMIOLOGY OF HEPATITIS IN MILITARY POPULATIONS IN ORDER TO ESTABLISH METHODS FOR REDUCING DISABILITY FROM HEPATITIS. EMPHASIS IS ON DEVELOPING AND APPLYING SENSITIVE AND SPECIFIC METHODS FOR DETECTION OF HEPATITIS VIRUSES/ANTIGENS AND ANTIBODIES TO DETERMINE HOST FACTORS IMPORTANT IN RESISTANCE TO DISEASE AND INFECTION IM MILITARY PERSONNEL.

NEW METHODS FOR IDENTIFICATION AND ANTIGENIC ANALYSIS OF HEPATITIS VIRUSES ARE UNDER DEVELOPMENT. THE IMMUNE RESPONSE OF PATIENTS INFECTED WITH HEPATITIS VIRUSES IS STUDIED TO DEFINE SENSITIVE PARAMETERS OF INFECTION AND TO DEFINE FACTORS CRITICAL IN IMMUNITY. THE EPIDEMIOLOGY OF HEPATITIS B IN MILITARY POPULATIONS IS DEFINED.

SUPPORTED BY U.S. Dept. of Defense, Army, Medical Research & Development Command, Walter Reed Army Inst. of Research funds n.a.

2.0137,

FIELD STUDIES OF RICKETTSIOSES AND OTHER TROPICAL DISEASES

D.L. Huxsoll, U.S. Dept. of Defense, Army, Medical Research & Development Command, Medical Research Unit, *Kuala Lumpur* (DA0B6526)

TO INVESTIGATE THE INCIDENCE OF SCRUB TYPHUS INFECTION IN SELECTED LOCAL AND FOREIGN POPULATIONS, TO RELATE THIS TO THE PREVALENCE OF VECTOR CHIGGERS AND THEIR COMMON RODENT HOSTS, TO DETERMINE THE STRAINS OF R. TSUTSUGAMUSHI CAUSING HUMAN INFECTIONS AND RELATE TO CLINICAL DISEASE, TO DEVELOP IMPROVED SEROLOGICAL METHODS, TO EVALUATE SIMPLE AND EFFECTIVE MEANS OF TREATMENT, TO STUDY THE BASIS FOR IMMUNITY, TO DEFINE VECTOR-RICKETTSIA RELATIONSHIPS, TO DEVELOP A LABORATORY ANIMAL MODEL FOR THE DISEASE, AND TO PRODUCE LABORATORY ANIMALS IN SUPPORT OF THE MISSION. SCRUB TYPHUS IS AN INCAPACITATING DISEASE OF MILITARY IMPORTANCE.

PROVIDES SCIENTIFIC REAGENTS AND EQUIPMENT WHICH CAN BE BEST PROCURED IN THE US FOR SHIPMENT TO AND USE BY WRAIR PERSONNEL IN MALAYSIA FUNCTIONING COLLABORATIVELY WITH MALAYSIAN SCIENTISTS SUPPORTED UNDER USAMRDC GRANT REPORTED ON DA 0A 7413.

SUPPORTED BY U.S. Dept. of Defense, Army, Medical Research & Development Command, Walter Reed Army Inst. of Research funds n.a.

2.0138,

FIELD STUDIES ON OROPOUCHE VIRUS

J.W. Leduc, U.S. Dept. of Defense, Army, Medical Research & Development Command, Medical Research Unit, *APO, Miami, Florida* 34030 (DA0B6528)

CONDUCT STUDIES ON THE ECOLOGY OF OROPOUCHE (ORO) VIRUS TRANSMISSION IN THE AMAZON BASIN IN COLLABORATION WITH THE EVANDRO CHAGAS INSTITUTE. THIS ARBOVIRUS IS THE MOST COMMON CAUSE OF ARBOVIRUS EPIDEMICS IN THE REGION AND COMMONLY RESULTS IN FEBRILE, DEBILITATING ILLNESS. INFORMATION ON THE DYV-DR ORO VE-Z

SUPPORTED BY U.S. Dept. of Defense, Army, Medical Research & Development Command, Walter Reed Army Inst. of Research funds n.a.

2.0139,

TROPICAL AND SUBTROPICAL DISEASE IN MILITARY MEDICINE

H.E. Segal, U.S. Dept. of Defense, Army, Medical Research & Development Command, Medical Component, *Bangkok* (DA0C6465)

TO DEFINE THE ECOLOGY AND BASIC BIOLOGY OF CAUSAL AGENTS OF TROPICAL DISEASES, AND TO STUDY ENVIRONMENTAL VARIABLES THAT MAY AFFECT THE PERFORMANCE OF U.S. SERVICEMEN IN TROPICAL AREAS.

ROUTINE DIAGNOSTIC, EPIDEMIOLOGICAL, SEROLOGICAL, BIOCHEMICAL, MICROBIOLOGICAL, ENTOMOLOGICAL AND PSYCHOLOGICAL PROCEDURES ARE BEING UTILIZED. FIELD STUDIES ARE EMPHASIZED AND ARE SUPPLEMENTED BY APPROPRIATE LABORATORY INVESTIGATIONS.

SUPPORTED BY U.S. Dept. of Defense, Army, Medical Research & Development Command, Walter Reed Army Inst. of Research funds n.a.

2.0140,

MEDICAL FACTORS LIMITING SOLDIER EFFECTIVENESS

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TO IDENTIFY FACTORS IN THE MILITARY ORGANIZATIONAL, SOCIAL, PSYCHOLOGICAL AND PHYSICAL ENVIRONMENT THAT CREATE RISK FOR AND CONDUCE TO PSYCHIATRIC BREAK-

DOWN, BEHAVIORAL DYSFUNCTION, PSYCHOSOMATIC AND PHYSICAL ILLNESS AS THEY IMPACT ON INDIVIDUAL AND UNIT EFFECTIVENESS AND CONSUME HEALTH CARE RESOURCES.

THE METHODS OF EPIDEMIOLOGY, INCLUDING RECORDS ANALYSIS, POPULATION AND DEMOGRAPHIC ANALYSIS, QUESTIONNAIRE AND FIELD AND COHORT STUDIES AS WELL AS OBSERVATIONAL METHODS ARE EMPLOYED TO DEVELOP REQUISITE DATA.

SUPPORTED BY U.S. Dept. of Defense, Army, Medical Research & Development Command, Walter Reed Army Inst. of Research funds n.a.

2.0141,

STUDIES IN THE EPIDEMIOLOGY OF ARBOVIRAL INFECTIONS

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THE OBJECTIVE IS TO STUDY THE NATURAL INFECTION CHAIN FOR ARBORIRUSES OF WESTERN UTAH.

RABBIT SERA WILL BE COLLECTED AT SELECTED SITES IN WESTERN UTAH AND TESTED FOR ANTIBODIES AGAINST THE PREVALENT ARBORVIRUSES OF THE AREA. DATA GENERATED WILL BE USED TO ELUCIDATE NATURAL INFECTION CHAINS AND PARTICULARLY THE RESERVOIR SOURCES OF THE VIRUS- THIS WILL BE ANALYZED IN CONJUNCTION WITH PAST ACCUMULATED ARBORVIRUS DATA.

SUPPORTED BY U.S. Dept. of Defense, Army, Test & Evaluation Command funds n.a.

2.0142,

COLLECTION AND EVALUATION OF MEDICAL INFORMATION

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TO OBTAIN AN HISTORICAL SUMMARY AND CENSUS OF PERSONNEL INVOLVED IN THE UNITED STATES ATMOSPHERIC NUCLEAR WEAPONS TESTING PROGRAM FROM 1945 THROUGH 1962. THIS SUMMARY IS TO BE USED FOR MEDICAL FOLLOW-UP EVALUATIONS TO DETERMINE THE RELATIONSHIP BETWEEN LOW DOSES OF IONIZING RADIATION AND DISEASES.

OBTAIN CUMULATIVE DATA FROM HISTORICAL DOCUMENTS TO COMPILE A COMPLETE HISTORICAL SUMMARY OF ALL ATMOSPHERIC NUCLEAR WEAPONS TESTS. THIS SUMMARY WILL CONTAIN NAMES, IDENTIFYING NUMBERS, SERVICES, RANKS, AND RADIATION DOSES OF ALL PERSONNEL INVOLVED. AFTER COMPLETION, THE SUMMARIES WILL BE MADE AVAILABLE TO SCIENTIFIC ORGANIZATIONS FOR COMPLETION OF EPIDEMIOLOGICAL EVALUATIONS TO DETERMINE IF THERE IS ANY RELATIONSHIP BETWEEN LOW DOSES OF IONIZING RADIATION AND CERTAIN DISEASES.

SUPPORTED BY U.S. Dept. of Defense, Defense Nuclear Agency, Armed Forces Radiobiology Research Inst. funds n.a.

2.0143,

DISTRIBUTION OF PARASITIC DISEASES OF MILITARY IMPORTANCE IN THE PHILIPPINES

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THE OBJECTIVE OF THIS STUDY WILL BE TO OBTAIN DATA ON THE DISTRIBUTION AND PREVALENCE OF PARASITIC DISEASES OF MILITARY IMPORTANCE THROUGHOUT THE PHILIPPINES THAT WILL AID IN THE IMPLEMENTATION OF EFFECTIVE PREVENTIVE PROGRAMS.

BIOMEDICAL SURVEYS WILL BE CONDUCTED THROUGHOUT PHILIPPINE ISLANDS FOCUSING ON THE DISTRIBUTION AND PREVALENCE OF MALARIA AND SCHISTOSOMIASIS. STOOL SPECIMENS, BLOOD SMEARS AND SERA WILL BE COLLECTED AND EXAMINED BY APPROPRIATE PARASITOLOGICAL AND IMMUNOLOGICAL DIAGNOSTIC TECHNIQUES. ALL SURVEY DATA WILL BE COMPUTERIZED SO THAT CURRENT STATUS REPORTS ON PARASITIC DISEASES OF MILITARY IMPORTANCE CAN BE PRODUCED UPON DEMAND. INITIAL EMPHASIS WILL FOCUS ON THE SURVEILLANCE OF DISEASES IN THE SOUTHERN AND CENTRAL PHILIPPINES SINCE LITTLE INFORMATION IS AVAILABLE FOR THESE REGIONS.

SUPPORTED BY U.S. Dept. of Defense, Navy, Naval Medical Research & Development Command funds n.a.

2.0144,

METHODS AND PROCEDURES FOR IMPROVED REPORTING OF OUTPATIENT MEDICAL DATA

A.P. Jones, U.S. Dept. of Defense, Navy, Naval Health Research Center, Environmental & Social Medicine Div., *San Diego, California* 92152 (DN877531)

HEALTH CARE PLANNERS AND MANAGERS NEED ACCURATE DATA ON WORKLOADS, TYPES OF CASUALTIES AND DISEASES TO BE TREATED, UTILIZATION OF MEDICAL PERSONNEL AND BIOMEDICAL RISKS IN THE WORK ENVIRONMENT IN ORDER TO PROVIDE TIMELY PREVENTIVE AND TREATMENT SERVICES. PRESENT OUTPATIENT RECORD SYSTEMS GENERALLY ARE INADEQUATE FOR SUCH PURPOSES. THE PURPOSE OF THIS STUDY IS TO DEVISE AND DETERMINE THE FEASIBILITY OF IMPROVED REPORTING PROCEDURES FOR NAVY SHIPS AND SHORE DISPENSARIES AND TO PROVIDE A BASIS FOR ASSESSING THE SEVERITY AND RISK OF ENVIRONMENTAL HEALTH HAZARDS AS WELL AS OFFERING THE POTENTIAL FOR BETTER MANAGEMENT OF MEDICAL RESOURCES. THE FINAL OBJECTIVE OF THIS WORK UNIT WILL BE TO DEPICT PERSONNEL AND EQUIPMENT REQUIREMENTS. TO DEVISE NECESSARY DATA FORMS, AND TO DEVELOP PROPOSALS FOR REVISION OF EXISTING BUMED DIRECTIVES IN ORDER TO IMPLEMENT COST EFFECTIVE IMPROVEMENTS IN THE EXISTING OUTPATIENT MORBIDITY REPORTING SYSTEM.

A SICK CALL CARD WAS DEVELOPED TO RECORD INDIVIDUAL ILLNESSES AND INJURIES ABOARD DEPLOYED NAVY SHIPS FOR RESEARCH PURPOSES. THIS REPORTING PROCEDURE HAS BEEN EXPANDED AND REVISED AND IS NOW AVAILABLE IN A MACHINE-SCOREABLE FORM THAT PROVIDES ESSENTIAL DEMOGRAPHIC, OCCUPATIONAL, TREATMENT, AND DISPOSITION INFORMATION FOR PREVENTIVE MEDICINE AND EPIDEMIOLOGIC ANALYSES AND RESEARCH. THIS FORM WILL BE FURHTER MODIFIED FOR EXPERIMENTAL EVALUATION AT SHORE-BASED OUTPATIENT FACILITIES. MONTHLY OUTPATIENT MORBIDITY REPORTS AND OTHER MEDICAL REPORTS WILL BE GENERATED ON AN EXPERIMENTAL BASIS.

SUPPORTED BY U.S. Dept. of Defense, Navy, Naval Medical Research & Development Command funds n.a.

2.0145,

DIAGNOSIS, EPIDEMIOLOGY AND TREATMENT OF HEPATITIS B VIRUS INFECTIONS IN SOUTHEAST ASIA

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THE MAJOR OBJECTIVES ARE TO: (1) DETERMINE THE MECHANISMS OF TRANSMISSION OF HEPATITIS B INFECTION; (2) IDENTIFY GROUPS SUITABLE FOR PROPHYLACTIC TRIALS; (3) UNDERSTAND THE FACTORS RELATING HBV INFECTIONS TO THE DEVELOPMENT OF CHRONIC LIVER DISEASE.

THE APPROACH OF THESE STUDIES IS EPIDEMIOLOGIC. THE PREVALENCE OF HEPATITIS B SURFACE ANTIGEN (HBSAG) AND HEPATITIS B SURFACE ANTIBODY (ANTI HBS) ARE STUDIED IN VARIOUS POPULATIONS TO DETERMINE WHAT DEMOGRAPHIC AND GEOGRAPHIC FACTORS ARE ASSOCIATED WITH INFECTION. CONVERSIONS OF ANTIGEN AND ANTIBODY STATUS ARE STUDIED IN VARIOUS POPULATIONS TO DETERMINE THE INCIDENCE OF NEW INFECTIONS AND IDENTIFY THE GROUPS AT HIGHEST RISK.

SUPPORTED BY U.S. Dept. of Defense, Navy, Naval Medical Research & Development Command funds n.a.

2.0146,

HEALTH AND LONGEVITY IN RELATION TO LENGTH OF OCCUPATIONAL EXPOSURE TO THE NAVAL SUBMARINE ENVIRONMENT

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THE AIM OF THIS STUDY IS TO DETERMINE THE HEALTH EFFECTS OF PROLONGED OCCUPATIONAL EXPOSURE TO THE NUCLEAR POWERED SUBMARINE ENVIRONMENT. PARTICULAR ATTENTION WILL BE DIRECTED TOWARD OBTAINING INFORMATION REGARDING MORBIDITY/MORTALITY RELATED TO LOW-LEVEL RADIATION EXPOSURE RECEIVED IN THAT ENVIRONMENT. NEGATIVE FINDINGS WILL DOCUMENT THE SAFETY OF THE NUCLEAR-POWERED SUBMARINE FOR HUMAN HABITATION. POSITIVE FINDINGS ARE EXPECTED TO LEAD TO RECOMMENDATIONS SUCH AS: (A) FURTHER STUDIES TO DETERMINE ETIOLOGY OF DELETERIOUS HEALTH EFFECTS, (B) ASSESSMENT OF EXISTING ENVIRONMENTAL ENGINEERING SYSTEMS ABOARD SUBMARINES, AND (C) ALTERATIONS TO CURRENT PHYSICAL EXAMINATION REQUIREMENTS FOR CURRENT AND PAST SUBMARINE CREW MEMBERS.

THIS RECORD-LINKAGE PROJECT WILL COMPARE DISEASE PREVALENCE AND DISEASE-SPECIFIC MORTALITY RATES TO LENGTH OF SUBMARINE EXPERIENCE AND TO RADIATION EXPOSURE. THE PRINCIPAL DATA BASE WILL BE INFORMATION IN AUTOMATED DATA PROCESSING FILES MAINTAINED IN THE NAVY AND OTHER FEDERAL AGENCIES. IN ORDER TO DEVELOP A LARGE RISK BASE AMONG OLDER PERSONNEL, ATTENTION IS DIRECT TO RETIRED AND FLEET RESERVE PERSONNEL. THIS WORK UNIT WILL BE SUPPORTED BY A CONTRACT WITH YALE UNIVERSITY.

SUPPORTED BY U.S. Dept. of Defense, Navy, Naval Medical Research & Development Command, National Naval Medical Center funds n.a.

2.0147,

THE EPIDEMIOLOGY AND POST-TREATMENT OUTCOMES OF TRAUMA IN NAVAL ENVIRONMENTS

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ACCIDENTAL INJURIES ARE THE LEADING CAUSE OF HOSPITALIZATION AMONG NAVY ACTIVE DUTY PERSONNEL. THESE INJURIES MAKE A SUBSTANTIAL CONTRIBUTION TO MANDAYS LOST FROM THE JOB, DEMANDS FOE HEALTH CARE SERVICES, AND LONG-TERM DISABILITY AND MORTALITY FOR ACCIDENT VICTIMS. THE INTERACTION OF INDIVIDUAL, OCCUPATIONAL, AND ENVIRONMENTAL CHARACTERISTICS AS THEY RELATE TO THE INCIDENCE OF ACCIDENTAL INJURIES WILL BE INVESTIGATED. THE IMPLICATIONS OF AN INJURY-PRODUCING ACCIDENT FOR LENGTH OF HOSPITALIZATION, PROLONGED DISABILITY, PERFORMANCE EFFECTIVENESS, AND CAREER RETENTION OF ACCIDENT VICTIMS ALSO WILL BE INVESTIGATED. BY IDENTIFYNG THOSE POPULATIONS AND WORK SETTINGS WHERE THE RISKS OF TRAUMA ARE GREATEST, IT SHOULD BE POSSIBLE TO RECOMMEND MEANS FOR REDUCING THE NUMBER AND SEVERITY OF ACCIDENT CASUALTIES.

ANALYSES WILL BE CONDUCTED OF MEDICAL AND SERVICE HISTORY DATA FOR ALL NAVY ENLISTEES WHO WERE HOSPITALIZED FOR THE TREATMENT OF ACCIDENTAL INJURIES DURING 1965 THROUGH 1976. THE INCIDENCE OF TRAUMA-PRODUCING ACCIDENTS WILL BE RELATED TO THE VICTIM'S DEMOGRAPHIC AND MILITARY STATUS CHARACTERISTICS, OCCUPATION, JOB EXPERIENCE, AND WORK SETTING. DETAILED ANALYSES OF ORGANIZATIONAL AND ENVIRONMENTAL CIRCUMSTANCES SURROUNDING ACCIDENTAL INJURIES WILL BE POSSIBLE IF NAVAL SAFETY CENTER (NSC) RECORDS ARE USED IN CONJUNCTION WITH INPATIENT REORDS. A FOLLOW-UP STUDY WILL BE MADE OF INJURY VICTIMS TO DETERMINE HOW THE TYPE AND SEVERITY OF TRAUMA IS RELATED TO LENGTH OF HOSPITALIZATON, LONG-TERM

DISABILITY, SUBSEQUENT PERFORMANCE EFFECTIVENESS, AND CAREER RETENTION.

SUPPORTED BY U.S. Dept. of Defense, Navy, Naval Medical Research & Development Command, National Naval Medical Center funds n.a.

2.0148,

THE PHYSIOLOGICAL, BIOCHEMICAL, AND PSYCHOLOGICAL EFFECTS OF 18-HOUR WORK-REST CYCLES DURING A 2-MONTH SUBMARINE PATROL

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MOST TYPES OF PHYSIOLOGICAL AND PSYCHOLOGICAL STRESS ARE REGULARLY ACCOMPANIED BY INCREASED ADRENERGIC NERVOUS SYSTEM (ANS) ACTIVITY. THIS INCREASED ANS ACTIVITY IS REFLECTED QUITE ACCURATED BY AN INCREASED URINARY EXCRETION OF THE CATECHOLAMINES (CA), NOREPINEPHRINE AND EPINEPHRINE. IT IS POSSIBLE THAT CHRONIC ADJUSTMENT AND READJUSTMENT TO 18-HOUR DUTY CYCLES ABOARD SUBMARINES MAY PRODUCE CHANGES IN ANS ACTIVITY AND THUS, CA EXCRETION. CHANGES IN CA LEVELS COULD HAVE A VARIETY OF EFFECTS, SINCE THEY PLAY A ROLE IN CARDIOVASCULAR HOMEOSTATIS AND BEHAVIORAL FUNCTIONING. THE RECENT DEVELOPMENT OF A HIGHLY SENSITIVE TECHNIQUE MAKES IT POSSIBLE FOR THIS PILOT INVESTIGATION TO STUDY THE EFFECT OF WORK-REST CYCLE CHANGES DURING SUBMARINE PATROLS ON ANS ACTIVITY AS REFLECTED BY CA EXCRETION.

URINARY CA WILL BE MEASURED TO ASSESS THE EFFECT OF LONG-TERM CHANGES IN THE WORK-REST CYCLE DURING A RECENT OPERATIONAL SSBN PATROL. URINE SAMPLES WERE OBTAINED FROM 10 VOLUNTEER SUBMARINES EVERY 3 HOURS (INCLUDING THEIR SLEEP PERIOD) FOR 7 DAYS DURING AN EARLY, MID AND LATE PERIOD OF AN 8-WEEK SSBN PATROL. CONTROL (24 HR WORK-REST CYCLE) URINES WERE OBTAINED FROM THE MEN ONE MONTH AFTER THE PATROL. CYCLIC VARIATIONS IN THE CA MEASURES WILL BE RELATED TO ORAL TEMPERATURES, MOOD STATE, AND MEASURES OF SLEEP QUALITY THAT WERE TAKEN CONCOMITANTLY. ADJUSTMENT TO AN 18-HOUR WORK-REST CYCLE WILL ALSO BE CORRELATED WITH SUBMARINE QUALIFICATION, OFF-DUTY TRAINING PERFORMANCE, AND SICK CALL VISITS.

SUPPORTED BY U.S. Dept. of Defense, Navy, Naval Medical Research & Development Command, National Naval Medical Center funds n.a.

2.0149,

PARASITIC DISEASES OF THREAT TO MILITARY OPERATIONS IN THE MIDDLE EAST AND NEARBY AFRICAN STATES

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TO MAP THE DISTRIBUTION OF HUMAN PARASITES IN THE MIDDLE TEAST AND SOME AFRICAN STATES IN ORDER TO IDENTIFY THE AREAS OF RISK TO THE MILITARY, TO FURNISH RELEVANT EPIDEMIOLOGICAL INFORMATION FOR FUTURE PLANNING OF DISEASE PREVENTION AND CONTROL, AND TO DEVELOP AND STANDARDIZE TECHNIQUES FOR FAST RELIABLE MEANS OF DIAGNOSIS AND DETECTION OF OBSCURE CONDITIONS.

PARASITOLOGICAL SURVEYS WILL BE CONDUCTED IN DIFFERENT AREAS OF NEARBY COUNTRIES. STOOL, URINE AND BLOOD SMEARS WILL BE COLLECTED AND EXAMINED UTILIZING STANDARD PARSITOLOGICAL METHODS. SERA WILL BE TESTED BY ESTABLISHED SEROLOGICAL TECHNIQUES TO DETERMINE PRESENT AND PAST EXPERIENCE WITH THE DIFERENT PARASITES OF IMPORTANCE. WHERE APPROPRIATE, INTERMEDIATE HOSTS, VECTORS AND RESERVOIRS HOSTS WILL BE COLLECTED IDENTIFIED AND EXAMINED. MAPS WILL BE PREPARED TO DEPICT THE DISTRIBUTION OF THE IMPORTANT PARASITES AND THEIR RELEVANT EPIDEMIOLOGIC DATA.

SUPPORTED BY U.S. Dept. of Defense, Navy, Naval Medical Research & Development Command, National Naval Medical Center funds n.a.

2.0150,

LONGITUDINAL HEALTH PATTERNS AMONG CAREER NAVAL PERSONNEL

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MORBIDITY STUDIES USED IN MEDICAL PLANNING PROVIDE RATES OF SPECIFIC ILLNESSES AND INJURIES FOR POPULATIONS AT RISK WITHIN A PARTICULAR TIME FRAME, TYPICALLY A YEAR. LESS COMMON ARE INCIDENCE STUDIES OF ILLNESS PATTERNS OVER AN EXTENDED PERIOD OF TIME AS IN AN OCCUPATIONAL CAREER. SINCE PREVIOUS RESEARCH OF LIFE STRESSES AND HEALTH CHANGE SUGGESTS THAT ILLNESSES TEND TO CLUSTER PERIODICALY IN AN INDIVIDUAL'S LIFE, THE OBJECTIVE OF THIS WORK UNIT IS TO DETERMINE MORE PRECISELY THE MANNER IN WHICH SUCH OCCURS AMONG PERSONNEL OVER THE COURSE OF A NAVAL CAREER. SUCH INFORMATION COULD BE OF VALUE IN FORMULATING BETTER PROGNOSTIC GUIDELINES OF DIFFERENT HEALTH PROBLEMS AS WELL AS IN DEVELOPING IMPROVED MEDICAL SCREENING AND OCCUPATINAL HEALTH PROGRAMS AT A TIME DURING WHICH GREATER RELIANCE MUST BE PLACED ON EFFECTIVE CAREER PERSONNEL IN THE NAVY AND MARINE CORPS.

DATA ON ALL HOSPITALIZATIONS, BOARD ACTIONS, AND DEATHS AMONG NAVAL PERSONNEL WILL BE RETROSPECTIVELY ANALYZED FOR A 9-YEAR PERIOD. WITH DEMOGRAPHIC AND SERVICE HISTORY INFORMATION ALSO ON COMPUTER TAPES AT THIS CENTER, INCIDENCE OF SINGLE AND MULTIPLE EPISODES OF ILLNESS OR INJURY WILL BE DETERMINED IN RELATION TO AGE, OCCUPATION, DUTY ASSIGNMENTS, AND SERVICE STATUS CHANGES. SPECIFIC HYPOTHESES WILL BE TESTED THROUGH PROSPECTIVE LONGITUDINAL STUDIES OF COHORT SAMPLES AS IS CURRENTLY IN PROGRESS FOR CARDIOVASCULAR DISEASE, GASTROINTESTINAL, AND PSYCHIATRIC DISORDERS.

SUPPORTED BY U.S. Dept. of Defense, Navy, Naval Medical Research & Development Command, National Naval Medical Center funds n.a.

2.0151,

ARTHROPOD-VECTOR-DISEASE INTERRELATIONSHIPS

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TO INVESTIGATE AND INCREASE KNOWLEDGE OF BLOODSUCKING ARTHROPODS (TICKS, MITES, FLEAS, MOSQUITOES, ETC) KNOWN OR STRONGLY SUSPECTED TO HARBOR AND TRANSMIT VIRAL AND RICKETTSIAL PATHOGENS AND PROTOZOAL AND HELMINTH PARASITES HAZARDOUS TO MILITARY PERSONNEL. IDENTIFY HOSTS AND DEFINE LIFE CYCLES, BIOLOGY, GEOGRAPHIC DISTRIBUTION, AND OTHER EPIDEMIOLOGICALLY IMPORTANT FACTORS.

VERTEBRATES AND BLOODSUCKING ARTHROPODS ARE SYSTEMATICALLY COLLECTED FOR PATHOGEN ISOLATION AND DISEASE TRANSMISSION STUDIES AND FOR EVALUATION OF ECOLOGICAL AND EPIDEMIOLOGICAL FACTORS INFLUENCING DISEASE TRANSMISSION.

SUPPORTED BY U.S. Dept. of Defense, Navy, Naval Medical Research & Development Command, National Naval Medical Center funds n.a.

2.0152,

INFECTIOUS DISEASE RISKS TO TRANSLOCATED PERSONS IN INDONESIA

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TO IDENTIFY IN INFECTIOUS DISEASES IN OUTER ISLANDS OF INDONESIA OF RISK TO IMMIGRANTS WITH PRIOR DISEASE EXPOSURE UNLIKE THAT OF THE NEW ENVIRONMENT. THE STUDY HAS 3 PHASES: (1) BASELINE ASSESSMENT DISEASE AND DISEASE EXPOSURE OF INDIGENOUS AND PREVIOUSLY TRANSLOCATED PERSONS LIVING IN AREAS SELECTED FOR FUTURE TRANSSETTLEMENT (STRESSING INFECTIOUS DISEASES, THEIR ENVIRONMENTAL SOURCES, RESERVOIRS AND VECTORS); (2) ASSESSMENT OF DISEASE EXPERIENCE AMONG TRANSMIGRANT POPULATIONS PRIOR TO THEIR ARRIVAL IN TRANSETTLEMENT AREAS; (3) RE-ASSESSMENT OF DISEASE IN TRANSLOCATED PERSONS AT INTERVALS FOLLOWING IMMIGRATION.

FIELD TEAMS COLLECT HUMAN BLOOD, STOOL, AND SERA SPECIMENS, RODENTS AND THEIR ECTOPARASITES, MOSQUITOES, AND SUSPECTED INTERMEDIATE HOSTS OF DISEASE AT SITES SELECTED FOR FUTURE TRANSSETTLEMENT. PHYSICAL EXAMINATIONS OF STUDY POPULATIONS BY TEAM PHYSICIANS ARE PERFORMED, AND INFORMATION RELEVANT TO THE ECOLOGY AND EPIDEMIOLOGY OF INFECTIOUS AND ENVIRONMENTAL DISEASES IS GATHERED.

SUPPORTED BY U.S. Dept. of Defense, Navy, Naval Medical Research & Development Command, Naticnal Naval Medical Center funds n.a.

2.0153,

ANTIBIOTIC RESISTANT NEISSERIA GONORRHOEAE: DETERMINATION OF PREVALENCE AND SPREAD IN INDONESIA

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TO DETERMINE THE PREVALENCE OF NEISSERIA GONORRHOEAE (N. GC.),ESPECIALLY PENICILLIN RESISTANT STRAINS IN SELECTED MAJOR SEA PORTS OF INDONESIA; DETERMINE THE MINIMUM INHIBITORY CONCENTRATION OF SELECTED ANTIBIOTICS TO N. GC; AND DETERMINE THE AMINO ACID NUTRITIONAL PROFILES OF THESE ORGANISMS FOR USE AS MARKERS IN THE EPIDEMIOLOGIC STUDIES.

SPECIMENS OBTAINED FROM PROMISCUOUS, SEXUALLY ACTIVE POPULATIONS WILL BE CULTURES FOR NEISSERIA SP. AND CHARACTERIZED BIOCHEMICALLY FOR N. GC. AND BETA-LACTAMASE (PENICILLINASE) PRODUCTION. THE MINIMAL INHIBITORY CONCENTRATION (MIC) OF MAJOR USEFUL ANTIBIOTICS WILL BE ASSAYED BY THE AGAR DILUTION METHOD AND AMINO ACID NUTRITIONAL PROFILES WILL BE DONE BY THE METHOD OF CATLIN. ACQUISITION OF SPECIMENS WILL BE ACCOMPLISHED IN CONJUCTION WITH THE INDONESIAN MINISTRY OF HEALTH,M VENEREAL DISEASE CONTROL PROGRAM.

SUPPORTED BY U.S. Dept. of Defense, Navy, Naval Medical Research & Development Command, National Naval Medical Center funds n.a.

2.0154,

IMMUNITY TO FILARIAL WORMS: THE RESPONSE OF HUMANS TO INFECTION.

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IMMUNOLOGY : TO DETERMINE IF (1) TREATMENT OF HUMANS WITH DIETHYLCARBAMAZINE (DEC)FOR BRUGIAN FILARIASIS AFFECT THEIR IMMUNITY TO MICROFILARIAE (MF) AND (2) IF ANTIBODIES TO THE MF STAGES OF WUCHERERIA AND BRUGIA CROSS REACT IN VITRO USING THE ANTIBODY MEDIATED-LEUCOCYTE TOXICITY REACTION., EPIDEMIOLOGY: TO DETERMINE IF MASS CHEMOTHERAPY WITH DEC BREAKS MOSQUITO BORNE TRANSMISSION OF SUBPERIODIC BRUGIA MALAYI AND TO DEFINE THE ROLE OF ANIMALS AS RESERVOIRS OF INFECT FOR MAN.

BASELINE DATA ON THE PREVALENCE AND DENSITY OF CIRCULATION MF, EXPOSURE RATES TO INFECTIVE MOSQUITOES AND THE PREVALENCE OF ANTI-FILARIAL ANTIBODIES IN PEOPLE LIVING IN 2 VILLAGES IN S. KALIMANTAN HAVE BEEN MONITORED FOR 18 MONTHS. THESE PARAMETERS WILL BE MEASURED AGAIN AFTER MASS THERAPY WITH DEC TO DETERMINE THE IMPACT OF THIS TREATMENT OF FILARIAL TRANSMISSION. THE PREVALENCE OF B MALAYI IN ANIMALS WILL BE DETERMINED TO EVALUATE THE IMPORTANCE OF THIS PUTATIVE RESERVOIR OF INFECTION TO MAN.

SUPPORTED BY U.S. Dept. of Defense, Navy, Naval Medical Research & Development Command, National Naval Medical Center funds n.a.

2.0155,

IMMUNE MECHANISMS ASSOCIATED WITH SCRUB TYPHUS RICKETTSIAE.

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THE POTENTIAL AND HISTORICAL THREATS OF SCRUB TYPHUS TO MILITARY OPERATIONS ARE WELL RECOGNIZED. ALTHOUGH NO EFFECTIVE VACCINE IS CURRENTLY AVAILABLE, OUR DEPARTMENT IS ENGAGED IN AN INTENSIVE RESEARCH PROGRAM TOWARDS SUCH A GOAL. THE OBJECTIVE IS TO FULLY INVESTIGATE THE IMMUNE MECHANISMS ASSOCIATED WITH EXPERIMENTAL SCRUB TYPHUS INFECTIONS, SO THAT CANDIDATE VACCINES CAN BE ADEQUATELY EVALUATED IN THE LABORATORY. IN PARTICULAR, THE ROLES OF HUMORAL (ANTIBODY) AND CELL-MEDIATED IMMUNITY (CMI) WILL BE QUANTIFIED. THIS MUST BE ACCOMPLISHED IN ORDER TO MONITOR THE RESPONSES OF CANDIDATE VACCINES.

METHODS TO QUANTIFY BOTH HUMORAL AND CMI RESPONSES TO THE AGENTS OF SCRUB TYPHUS WILL BE SIMULTANEOUSLY DEVELOPED IN BOTH LABORATORY ANIMAL AND IN VITRO EXPERIMENTS. ONCE DEVELOPED THESE METHODS WILL BE USED TO IDENTIFY IMMUNE MECHANISMS ASSOCIATED WITH RECOVERY FROM AND RESISTANCE TO RICKETTSIA TSUTSUGAMUSHI INFECTION. RESULTS OF THESE EXPERIMENTS WILL PROVIDE IMMUNOLOGICAL CRITERIA FOR THE EVALUATION OF SPECIFIC VACCINE ANTIGENS AND EXPERIMENTAL IMMUNIZATION PROCEDURES. INTACT INFECTIOUS ORGANISMS AND PURIFIED CELL WALL FRACTIONS WILL BE CONSIDERED AS POTENTIAL ANTIGENS FOR VACCINE DEVELOPMENT. A CMI-BASED SKIN TEST TO FACILITATE RAPID DIAGNOSIS AND EPIDEMIOLOGICAL STUDIES OF SCRUB TYPHUS WILL BE AN IMPORTANT TOOL FOR THIS WORK.

SUPPORTED BY U.S. Dept. of Defense, Navy, Naval Medical Research & Development Command, National Naval Medical Center funds n.a.

2.0156,

ARBOVIRAL DISEASES IN INDONESIA; EPIDEMIOLOGY AND DISTRIBUTION

J.G. Olson, U.S. Dept. of Defense, Navy, Naval Medical Research Unit #2, *Jakarta Det., APO, San Francisco, California* 96356 (DN877464)

TO IDENTIFY ARTHROPOD-BORNE VIRUSES IN INDONESIA WHICH ARE CAUSING INFECTION IN HUMANS AND ANIMALS AND TO DETERMINE THE RELATIVE IMPORTANCE AND DISTRIBUTION OF EACH AS A CAUSE OF ILLNESS IN MAN.

VIRUS ISOLATIONS WILL BE ATTEMPTED FROM HUMAN CLINICAL SPECIMENS, ANIMAL SERA AND POOLED ARTHROPODS COLLECTED IN INDONESIA. SEROLOGIC EVIDENCE OF ARBOVIRAL INFECTION WILL BE SOUGHT FROM BOTH HUMAN AND ANIMAL SERA USING HAEMAGGLUTINATION INHIBITION AND NEUTRALIZATION TESTS FOR ANTIBODIES AGAINST VIRUSES KNOWN TO BE ACTIVE IN SOUTHEAST ASIA AND THE WESTERN PACIFIC.

SUPPORTED BY U.S. Dept. of Defense, Navy, Naval Medical Research & Development Command, National Naval Medical Center funds n.a.

2.0157,

EXPLORATION OF THE RELATIONS BETWEEN EYE COLOR, SELECTED PHYSIOLOGICAL MEASURES AND INDIVIDUAL NOISE SUSCEPTIBILITY

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To explore the relations between eye color, selected physiological measures and individual noise susceptibility. Identification of any such relationships would have implications toward the prevention of noise-induced hearing loss among naval personnel working in potentially hazardous noise environments.

Examine the extensive audiometric data obtained from subjects in the thousand aviator study and subjects in the control group of the repatriated prisoner of war (RPW) study. From the records of those subjects exhibiting hearing levels of 50 db or greater at 3000, 4000 or 6000 Hz (subject group I) and those subjects exhibiting hearing levels of 25 db or less at 500 through 6000 Hz (subject group II), determine eye color, percent body fat, systolic and diastolic blood pressures (sitting and supine), serum uric acid, cholesterol, and triglycerides. Conduct appropriate statistical analyses to determine possible relations between individual noise susceptibility, eye color and the various physiological measures. If findings warrant, develop a research plan to conduct selected tests on those subjects returning to Pensacola for medical follow-up as part of the thousand aviator and RPW/control group studies.

SUPPORTED BY U.S. Dept. of Defense, Navy, Naval Medical Research & Development Command, National Naval Medical Center funds n.a.

2.0158,

AMEBIASIS IN ASIA: DIAGNOSIS, EPIDEMIOLOGY AND IMMUNOLOGY OF ENTAMOEBA HISTOLYTICA

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AMEBIASIS, INTESTINAL OR EXTRAINTESTINAL, CAN BE A DIAGNOSTIC PROBLEM IN MILITARY AS WELL AS CIVILIAN MEDICAL PRACTICE. THE OBJECTIVE OF THIS STUDY IS TO IMPROVE UPON THE CLASSICAL METHODS OF DETECTING INFECTIONS OF ENTAMOEBA HISTOLYTICA; TO OBTAIN INFORMATION ON THE PREVALENCE AND DISTRIBUTION OF THE PARASITE AND THE DISEASE BY STOOL AND SEROLOGIC EXAMINATIONS; AND TO STUDY THE ANTIGENICITY OF STRAINS OF THE PARASITE IN ORDER TO REFINE IMMUNOLOGIC METHODS OF DIAGNOSIS.

CONVENTIONAL AS WELL AS NEWER METHODS OF STOOL EXAMINATIONS WILL BE USED TO DETECT E. HISTOLYTICA IN SPECIMENS FROM SYMPTOMATIC AND ASYMPTOMATIC INDIVIDUALS. STRAINS OF THE PARASITE WILL BE ISOLATED IN CULTURE AND THE ANTIGENICITY OF EACH ANALYSED BY IMMUNOELECTROPHORESIS (IEP) AND 2-DIMENSIONAL ELECTROPHORESIS (2D-IEP). HIGHLY ANTIGENIC COMPONENTS WILL BE USED FOR DEVELOPING MORE SENSITIVE SEROLOGIC TESTS FOR DIAGNOSIS AND SEROEPIDEMIOLOGICAL STUDIES. NEWER METHODS, SEROLOGIC AND STOOL, WILL BE USED IN THE DIAGNOSIS OF INTESTINAL AND EXTRAINTESTINAL AMEBIASIS IN THE PHILIPPINES.

SUPPORTED BY U.S. Dept. of Defense, Navy, Naval Medical Research & Development Command, National Naval Medical Center funds n.a.

2.0159,

EVALUATION OF NAVY ORAL HEALTH PROGRAMS

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THE PREVALENCE OF ORAL DISEASES CAUSED BY BACTERIAL PLAQUES ON THE TEETH IS VIRTUALLY 100%. THE OBJECTIVE OF THIS STUDY IS TO IMPROVE THE MANAGEMENT OF MANPOWER AND FISCAL RESOURCES NEEDED TO CARE FOR THESE DISEASES BY ASSESSING SEVERITY OF DISEASES, INCIDENCE OF NEW LESIONS, IDENTIFICATION OF PERSONNEL WITH HIGH RISK OF DENTAL EMERGENCIES, AND DEMONSTRATION OF THE COST-EFFECTIVENESS OF NEW PREVENTIVE AND TREATMENT PROGRAMS OF PLAQUE CONTROL.

LONGITUDINAL AND CROSS-SECTIONAL CLINICAL DATA WILL BE COLLECTED TO EVALUATE THE DENTAL AND ORAL HEALTH OF NAVAL PERSONNEL. EPIDEMIOLOGICAL, DENTAL PUBLIC HEALTH, STATISTICAL, AND DATA PROCESSING METHODS WILL BE EMPLOYED TO MONITOR THE EFFECTIVENESS AND COST BENEFIT OF EXISTING AND PROPOSED PROGRAMS OF THE NAVY PREVENTIVE DENTISTRY EFFORT.

SUPPORTED BY U.S. Dept. of Defense, Navy, Naval Medical Research & Development Command, National Naval Medical Center funds n.a.

2.0160,

A MORBIDITY FORECAST MODEL FOR OPERATIONAL DEPLOYMENTS

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THE OPERATIONAL READINESS AND EFFECTIVENESS OF COMBAT SHIPS DEPEND UPON THE PHYSICAL AND MENTAL FITNESS OF THE CREW. IN ORDER TO PLAN ADEQUATE MEDICAL SUPPORT FOR FLEET OPERATIONS, IT IS IMPORTANT TO IDENTIFY PERSONNEL AND SITUATIONAL FACTORS THAT INCREASE THE RISK OF MORBIDITY OR IMPAIRED EFFECTIVENESS AND TO DEVELOP A MODEL FOR PREDICTING FLEET UNITS AND CREW ELEMENTS AT GRESTEST RISK FOR ILLNESS AND INJURY DURING DEPLOYMENT PERIODS. THE ASSOCIATED COST IN MAN-DAYS LOST AND PERSONNEL TURNOVER, AND THE ADEQUACY OF PREVENTION AND HEALTH CARE ABOARD SHIP.

DATA FROM A PREVIOUS STUDY OF 20 COMBAT SHIPS WERE UED TO ESTABLISH THE PARAMETERS OF A MORBIDITY FORECAST MODEL TO PREDICT CASUALTIES DURING OPERATIONAL DEPLOYMENTS. THE FOLLOWING PARAMETERS ARE INCLUDED: (1) AGE, PHYSICAL CHARACTERISTICS, AND CLASS OF SHIP; (2) MISSION AND TECHNOLOGY (WEAPONS SYSTEMS); (3) PERSONNEL CHARACTERISTICS; (4) OPERATIONAL SCHEDULE (GIOGRAPHY AND SEASON, DEPLOYMENT PHASES AND DURATION, SPECIFIC PORTS VISITED), (5) HABITABILITY CHARACTERISTICS OF WORK ENVIRONMENT, AND (6) ORGANIZATIONAL FACTORS (CLIMATE AND MANPOWER UTILIZATION). THE SECOND PHASE OF THE STUDY MEASURED ENVIRONMENTAL CONDITIONS, PERSONNEL VARIABLES, ORGANIZATIONAL FACTORS, AND OPERATIONAL ACTIVITIES FOR A SAMPLE OF 7 AMPHIBIOUS ASSAULT SHIPS AT THE START OF DEPLOYMENTS TO THE WESTERN PACIFIC U SING MODIFIED TEST INSTRUMENTS AND PROCEDURES DEVELOPED PREVIOUSLY.

SUPPORTED BY U.S. Dept. of Defense, Navy, Naval Medical Research & Development Command, National Naval Medical Center funds n.a.

2.0161,

FILARIASIS IN INDONESIA. CLINICAL AND EPIDEMIOLOGIC FEATURES RELATED TO RISK, PREVENTION AND TREATMENT OF DISEASE

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TO DEFINE CLINICAL AND EPIDEMIOLOGIC FEATURES OF FILARIASIS IN SELECTED REPRESENTATIVE SITES IN INDONESIA; TO DETERMINE THE GEOGRAPHIC DISTRIBUTION OF FILARIASIS IN INDONESIA; TO IDENTIFY VECTORS, THEIR BEHAVIOR AND ECOLOGIC REQUIREMENTS AND, TO FORMULATE GUIDELINES OF PREVENTION, CONTROL AND MANAGEMENT OF DISEASE. TO DOCUMENT PARASITOLOGIC AND CLINICAL RESPONSES TO STANDARD TREATMENT WITH DIETHYLCARBAMAZINE IN PERSONS INFECTED WITH THE VARIOUS SPECIES OF INDONESIAN FILARIA, INCLUDING THE TIMOR FILARIA.

INTENSIVE STUDIES WILL BE CONTINUED OF FILARIASIS IN SMALL, CAREFULLY DEFINED POPULATIONS AT UNDISTURBED FOCI OF TRANSMISSION. THIS INCLUDES DEMOGRAPHIC, PARASITOLOGIC, CLINICAL, HUMAN BEHAVIOR AND VECTOR DATA COLLECTIONS. DOCUMENTATION OF PARASITOLOGIC AND CLINICAL RESPONSES TO STANDARD TREATMENT WITH DIETHYLCARBAMAZINE WILL BE CONTINUED BY MONITORING INDONESIAN MINISTRY OF HEALTH TREATMENT PROGRAMS.

SUPPORTED BY U.S. Dept. of Defense, Navy, Naval Medical Research & Development Command, National Naval Medical Center funds n.a.

2.0162,

ANIMAL INFLUENZA VIRUSES AND THEIR POSSIBLE ROLE IN HUMAN INFLUENZA EPIDEMIOLOGY

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TO INVESTIGATE TYPE A INFLUENZA VIRUSES IN FERAL AND DOMESTIC ANIMALS IN ORDER TO ASSESS THE ROLE OF THESE VIRUSES IN THE ORIGIN OF NEW OR RECURRENT INFLUENZA SUBTYPES. THE STUDIES WILL BE CARRIED ON IN THE WESTERN PACIFIC INCLUDING THE INDONESIAN AND PHILIPPINE ARCHIPELAGOES, AN AREA OF THE WORLD RICH IN FAUNA AND FROM WHICH RECENT NEW SUBTYPES OF HUMAN INFLUENZA HAVE EMERGED.

SPECIMENS FROM ANIMALS WILL BE TAKEN IN CONJUNCTION WITH STUDIES INVESTIGATING THE ECOLOGY OF ARBOVIRUSES IN INDONESIA

AND THE PHILIPPINES. SWABS OF THE CLOACA AND THE RESPIRATORY TRACT IN BIRDS AND OF THE RESPIRATORY TRACT OF MAMMALS WILL BE TAKEN AND ISOLATION OF VIRUSES ATTEMPTED FROM THEM. ISOLATIONS WILL BE ATTEMPTED IN EMBRYONATED CHICKEN EMBRYOS OR EGG-BIT CULTURES AS WILL AS A CANINE KIDNEY-CELL-LINE. HEMAGEL DIFFUSION, AND NEURAMINIDASE INHIBITION TESTS. RECORDS OF LOCATION, SPECIES, DATA, SEX, AGE, AND SOURCE WILL BE KEPT AND ANALYZED THROUGH THE NAMRU-2 BIOSTATISTICS DEPARTMENT. SUMMARY STATISTICS AND DETAILED LISTS OF ANIMALS SAMPLED AND RESULTS WILL BE SENT TO THE WHO COLLABORATING CENTER FOR THE ECOLOGY OF INFLUENZA VIRUSES IN ANIMALS FOR INCLUSION IN THE SHO DATA BASE ON THIS SUBJECT.

SUPPORTED BY U.S. Dept. of Defense, Navy, Naval Medical Research Unit #2 funds n.a.

2.0163,

SEAFARERS AS AN INDEX OF PARASITIC DISEASES OF THE INDONESIAN ARCHIPELAGO

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TO DETERMINE WHETHER INTER-ISLAND SEAFARERS LIVING ALONG THE NORTH COAST OF WEST JAVA MIGHT SERVE AS AN INDICATOR GROUP OF PARASITIC IDSEASES OF A LARGER GEOGRAPHIC AREA.

SMALL COMMUNITIES OF NATIVE SEAFARERS AND THEIR FAMILIES LIVING ALONG WITH NORTH COAST OF JAVA WILL BE SELECTED AS POTENTIAL INDEX POPULATIONS. THESE SEAFARERS USE SAIL-POWERED PRAUS TO TRADE ALONG THE COASTLINES OF THE MORE THAN 1,000 INHAABITED ISLANDS OF INDONESIA. APPROXIMATELY 100 SEAFARERS AND THEIR FAMILIES WILL BE EXAMINED FOR PROTOZOAN AND HELMINTH PARASITES BY STANDARD LABORATORY METHODS. PARASITIC DISEASE PATTERNS WILL BE RELATED TO SPECIFIC EPIDEMIOLOGIC MARKERS, ESPECIALLY ENVIRONMENTAL AND GEOGRAPHIC EXPOSURES, AND PREDICTION MODELS OF INFECTIOUS DISEASE RISK WILL BE DEVELOPED. PARTICULAR ATTENTION WILL BE PAID TO CHLOROQUINE RESISTANT STRAINS OF MALARIA, TREMATODE INFECTIONS AND FILARIASIS SINCE THESE HAVE FOCALLY DISTINCT GEOGRAPHIC DISTRIBUTION.

SUPPORTED BY U.S. Dept. of Defense, Navy, Naval Medical Research Unit #2 funds n.a.

2.0164,

DETECTION OF HYDATID DISEASE IN RESIDENTS OF LINDU VALLEY, CENTRAL SULAWESI, INDONESIA

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TO DETERMINE THE PREVALENCE OF ECHINOCOCCOSIS IN HUMAN INHABITANTS OF LINDU VALLEY, CENTRAL SULAWESI, USING SEROLOGIC METHODS AND TO DETERMINE THE EPIDEMIOLOGY OF HYDATID DISEASE IN THE LINDU VALLEY BY EXAMINING DEFINITIVE AND INTERMEDIATE HOSTS.

APPROXIMATELY 400 INDONESIAN CIVILIANS LIVING ALONG THE SHORE OF LAKE LINDU WILL BE REGISTERED AND THEIR RELATIONSHIP WITH DOGS FOUND INFECTED WITH ECHINOCOCCUS GRANULOSUS DETERMINED. SERUM SPECIMENS WILL BE OBTAINED AND EXAMINED FOR ECHINOCOCCAL ANTIBODIES BY THE INDIRECT HEMNAGGLUTINATIONA DN BE SCREENED FOR ECHINOCOCCAL INFECTION. DOGS WILL BE PURGED AND STOOLS COLLECTED AND INDIVIDUALLY EXAMINED FOR E. GRANULOSUS. A SURVEY OF NATURALLY INFECTED INTERMEDIATE HOSTS WILL BE CONDUCTED.

SUPPORTED BY U.S. Dept. of Defense, Navy, Naval Medical Research Unit #2 funds n.a.

2.0165,

EVALUATION OF THE ELISA TEST FOR THE SERODIAGNOSIS OF ORIENTAL SCHISTOSOMIASIS

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TO EVALUATE THE NEWLY DESCRIBED ENZYME-LINKED IMMUNOSORBENT ASSAY (ELISA) IN THE SERODIAGNOSIS OF SCHISTOSOMIASIS JAPONICA, TO APPLY THE TEST TO STUDIES ON THE SEROEPIDEMIOLOGY OF SCHISTOSOME INFECTIONS IN THE FAT EAST, AND TO DETERMINE THE SPECIFICITY AND SENSITIVITY OF ANTIGENS OF VARIOUS STAGES OF THE PARASITES.

LABORATORY ANIMALS WILL BE EXPOSED TO INFECTIONS WITH SCHISTOSOMA JAPONICUM OR IMMUNIZED WITH ANTIGENS FROM VARIOUS STAGES OF THE PARASITE. SERA WILL BE COLLECTED FROM THE ANIMALS AND TESTED AGAINST CERCARIAL, EGG, SCHISTOSOMULA AND ADULT WORM ANTIGENS. ONCE THE TECHNIQUES ARE ESTABLISHED AND FOUND TO BE SATISFACTORY, SERA FROM PATIENTS IN THE PHILIPPINES WILL BE COLLECTED AND TESTED AND CORRELATIONS MADE BETWEEN TEST RESULTS INFECTION AND DISEASE. THE TEST WILL BE ADAPTED TO MICROMETHODS AND SERA FROM PEOPLE IN ENDEMIC AREAS WILL BE COLLECTED AND SEROEPIDEMIOLOGICAL SURVEYS DONE TO DETERMINE THE PREVALENCE OF SCHISTOSOMIASIS.

SUPPORTED BY U.S. Dept. of Defense, Navy, Naval Medical Research Unit #2 funds n.a.

2.0166,

STUDIES ON THE ASSOCIATION OF SCHISTOSOMIASIS AND MALIGNANCY, WITH PARTICULAR EMPHASIS ON SCHISTOSOMAL POLYPOSIS OF THE COLON

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Schistosomiasis poses an extraordinary threat to military personnel in endemic areas. Infection is easily acquired and results in both early morbidity and the possibility of very long-term service connected illness. The purpose of this study is to investigate the possible association of intestinal schistosomal polyposis and carcinoma of the colon.

OBJECTIVES: (1) To study the available statistics on cancer of the colon in Egypt and its association with Schistosoma mansoni (and polyposis). To take biopsy of polyps at various intervals; to study the incidence of malignancy in patients treated with repetitive courses of niridazole compared to those treated with tartar emetic and untreated patients. (3) Leukocyte typing for determining whether these polyp patients are genetically different from patients with S. Mansoni elsewhere. (4) To study the bladder cancer association to urinary schistosomaisis by blood and urine examination by various immunological testing procedures.

SUPPORTED BY U.S. Dept. of Defense, Navy, Naval Medical Research Unit #3 funds n.a.

2.0167,

DISEASES OF MILITARY RELEVANCE: THE INTERACTION OF HEPATITIS B AND SCHISTOSOMIASIS

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HEPATITIS B AND SCHISTOSOMIASIS PRESENT A CHALLENGE TO MILITARY OPERATIONS IN DEVELOPING COUNTRIES BECAUSE OF THEIR PREVALENCE AND THE ABSENCE OF PROPHYLACTIC VACCINES OR DRUGS. SINCE DUAL INFECTIONS WOULD BE EXPECTED TO OCCUR FREQUENTLY IN PERSONNEL DEPLOYED IN THESE AREAS, THE INTERACTION BETWEEN THE TWO DISEASES MUST BE DELINEATED. IT IS IMPERATIVE TO DETERMINE THE EFFECT OF SCHISTOSOMIASIS ON HEPATITIS B CARRIAGE RATES SINCE CARRIERS ARE AN IMPORTANT RESERVOIR OF DISEASE AND TO DETERMINE THE CLINICAL MORBIDITY ASSOCIATED WITH DUAL INFECTION. THIS STUDY ADDRESSES BOTH ISSUES: THE PREVALENCE OF HEPATITIS B CARRIERS WILL BE ESTABLISHED IN POPULATION SUBGROUPS WITH VARYING DEGREES OF SCHISTOSOMIASIS; AND THE 2 YEAR MORBIDITY OF DUAL INFECTION WILL BE COMPARED WITH THAT OF EITHER DISEAS E ALONE.

THE STUDY INVOLVES TWO RURAL EGYPTIAN VILLAGES WHOSE MALE INHABITANTS ARE REGULARLY SCREENED BY OTHER INVESTIGATORS AT 6 MONTH INTERVALS FOR HEPATITIS B SURFACE ANTIGEN AND ANTIBODY. LIMITED PHYSICAL EXAMINATION AND URINE AND STOOL EXAMINATIONS WILL BE PERFORMED ON ALL THESE MALE INDIVIDUALS TO ESTABLISH THE PRESENCE AND INTENSITY OF SCHISTOSOMIASIS IN THE VILLAGERS. THIS DATA WILL THEN BE COMPARED WITH THE PREVIOUSLY OBTAINED SEROLOGICAL DATA. FIFTY VILLAGERS WITH INTESTINAL SCHISTOSOMIASIS, 50 WITH HEPATITIS B ANTIGENEMIA AND 50 WITH BOTH CONDITIONS WHO CONSENT TO ANNUAL HOSPITALIZATION FOR IN DEPTH CLINICAL EVALUATION WILL BE FOLLOWED FOR 2 YEARS IN ORDER TO ASSESS THE RESPECTIVE CLINICAL MORBIDITY OF THE 3 DISEASE STATES.

SUPPORTED BY U.S. Dept. of Defense, Navy, Naval Medical Research Unit #3 funds n.a.

2.0168,

MAGNITUDE OF THE BUBONIC PLAGUE THREAT IN THE ARAB REPUBLIC OF EGYPT

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DOCUMENTED, SPORADIC OUTBRAKES OF PLAGUE STRUCK EGYPT AS LATE AS 1974, AND IN 1976, SOME CASES WERE SUSPECTED TO HAVE OCCURRED IN THE SUEZ AREA. THIS DISEASE IS PERPETUATED IN NATURE AS WILD OR SYLVATIC PLAGUE, I.E., ENDEMIC FOCI OF INFECTED ANIMALS. A STUDY IS REQUIRED TO EVALUATE THE PLAGUE HAZARD TO U.S. MILITARY PERSONNEL IN THE ARAB RUEPUBLIC OF EGYPT; THIS MAY BE ACCOMPLISHED BY: (1) DETERMINING THE GEOGRAPHIC AREA WHERE PLAGUE MIGHT BE A PROBLEM, (2) DETERMINING WHICH RODENT SPECIES ARE HARBORING THE DISEASE, (3) DETERMINING THE EXTENT OF SYLVATIC PLAGUED IN THE EGYPTIAN RODENT POPULATION.

WILD ANIMALS, BOTH FROM INHABITED AND NON-INHABITED AREAS, ARE BEING TRAPPED ALIVE IN LOCALITIES KNOWN OR SUSPECTED TO HAVE PLAGUE. BLOOD IS COLLECTED AND EXAMINED USING THE PASSIVE HEMAGGLUTINATION TECHNIQUE FOR YERSINIA PESTIS (PLAGUE ANTIBODIES). THE RESULTS OF THIS STUDY WILL IDENTIFY ENDEMIC FOCI AND WILL ESTIMATE THE PREVALENCE OF DISEASE IN THE NATIVE RODENT POPULATION.

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2.0169,

MORBIDITY FORECAST MODEL FOR COLD WEATHER OPERATIONS

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THE OPERATIONAL EFFECTIVENESS OF NAVY AND MARINE CORPS PERSONNEL IN COLD ENVIRONMENTS DEPENDS UPON THE PHYSICAL AND MENTAL FITNESS OF THE TROOPS, THE OPERATIONAL OBJECTIVES, AND OTHER SITUATIONAL AND ENVIRONMENTAL FACTORS. IN ORDER TO PLAN COLD WEATHER OPERATIONS, IT IS IMPORTANT TO IDENTIFY THE PERSONEL AND SITUATIONAL FACTORS THAT INCREASE THE RISK OF MORBIDITY OR IMPAIRED EFFECTIVENESS AND TO DEVELOP A MODEL FOR PREDICTING ILLNESS AND COLD INJURY AND THE ASSOCIATED COSTS IN MAN-DAYS LOST.

THE FEASIBILITY OF USING AFTER-ACTION MEDICAL REPORTS FROM PREVIOUS MARINE CORPS COLD WEATHER EXERCISES TO ESTABLISH A MORBIDITY FORECAST MODEL TO PREDICT NON-EFFECTIVE DAY LOSSES DUE TO COLD MORBIDITY WILL BE EVALUATED. ADDITIONAL SOURCES OF SIMILAR DATA WILL BE IDENTIFIED AND APPRAISED WITH RESPECT TO THEIR CONTRIBUTION TO A MORBIDITY FORECAST MODE. PRELIMINARY MULTIVARIATE ANALYSES WILL BE CONDUCTED ON THESE DATA TO IDENTIFY VARIOUS PREDICTORS ASSOCIATED WITH MEDICAL PROBLEMS FOUND IN COLD WEATHER EXERCISES/OPERATIONS.

SUPPORTED BY U.S. Dept. of Defense, Navy, Naval Submarine Medical Research Lab. funds n.a.

2.0170,

SYMPOSIUM ON HEALTH ASPECTS OF NONIONIZING RADIATION

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THIS SYMPOSIUM IS DESIGNED TO BRING TOGETHER CLINICIANS AND OTHER PERSONNEL INVOLVED IN THE DELIVERY OF HEALTH CARE IN THE INDUSTRIAL (INCLUDING MILITARY) AND PUBLIC SECTORS FOR THE PURPOSE OF IN-

FORMING THEM OF THE LATEST ASPECTS OF THE EFFECTS OF MICROWAVES ON HUMAN HEALTH.

THE ENVIRONMENTAL PROTECTION AGENCY WILL CONTRIBUTE THE MAJOR PORTION OF THE SUPPORT FOR THIS SYMPOSIUM. ALL SPEAKERS ARE INVITED AND THE PROGRAM IS STRUCTURED INTO SECTIONS TO COVER SEVERAL TOPIC AREAS: SECTION 1, A REVIEW OF PHYSICAL ASPECTS OF MICROWAVES AND THEIR MEASUREMENT IN RELATION TO MAN. SECTION 2, P RESENT TRENDS IN RESEARCH ON BIOMEDICAL EFFECTS. SECTION 3, EPIDEMIOLOGICAL APPROACH AND SOME FINDINGS. SECTION 4, CLINICAL APPLICATIONS OF MICROWAVES. SECTION 5, PUBLIC ISSUES AND STANDARDS.

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2.0171,

EPIDEMIOLOGICAL STUDIES ON RICKETTSIAL INFECTIONS

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THESE CLINICAL AND FIELD STUDIES OF ECTOPARASITE-BORNE DISEASES ARE TO IMPROVE THE MEANS FOR CONTROL, PREVENTION AND TREATMENT OF RICKETTSIAL INFECTIONS WHICH ARE ENDEMIC IN AFRICA, THE MIDDLE EAST AND ASIA. EMPHASIS IS PLACED ON THE ECOLOGY, PATHOGENESIS AND TREATMENT OF MURINE TYPHUS.

THE RESERVOIRS AND MODE OF TRANSMISSION OF MURING TYPHUS ARE BEING INVESTIGATED IN A VARIETY OF HABITATS IN BURMA, PAKISTAN, AUSTRALIA AND THE MIDDLE EAST. THE STUDIES IN ETHIOPIA WERE TERMINATED FOR POLITICAL REASONS. PARTICULAR ATTENTION IS PAID TO STUDIES TO DETERMINE IF INFECTED FLEAS HARBOR THE CAUSATIVE AGENT (RICKETTSIAE) AFTER THE RODENT HOST BLOOD HAS BEEN DIGESTED. THE WORK INCLUDES DEVELOPMENT OF TECHNIQUES FOR RAPID DETECTION OF RICKETTSIAL INFECTIONS IN FLEAS AND MAMMALS.

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2.0172,

EXERCISE TOLERANCE OF DIVERS WORKING AT DIFFERENT DIVE DEPTHS

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THE UNITS OF EXERCISE TOLERANCE OF DIVERS WORKING IN THE WATER AT VARIOUS DEPTHS IS NOT KNOWN, THE COMBINATION OF STATIC LUNG LOADING, HIGH GAS DENSITY AND INCREASED AMBIENT PRESSURE IN THE IMMERSED DIVER HAS PROFOUND EFFECTS ON THE DIVER'S MAXIMUM WORK CAPACITY. RESEARCH UNDER THIS CONTRACT IS EXPECTED TO DEFINE THE ACCEPTABLE STATIC LOAD LIMITS FOR THE MOST COMMON DIVER WORK POSTURES. SUCH INFORMATION IS IMPORTANT FOR THE IMPROVED DESIGN OF UNDERWATER BREATHING APPARATUS.

RESEARCH WILL BE CARRIED OUT TO DETERMINE THE EFFECTS OF STATIC LUNG LOADING ON CARDIORESPIRATORY FUNCTION IN SUBMERGED, EXERCISING SUBJECTS AT INCREASED BAROMETRIC PRESSURES. SUBJECTS WILL INITIALLY BE STUDIED IN A SITTING POSITION, EXERCISING ON AN UNDERWATER BICYCLE ERGOMETER, AT DEPTHS OF 15, 60, 120 AND 190 FSW WHILE BREATHING AIR. THE IMPOSED STATIC LUNG LOADS WILL RANGE BETWEEN 20 AND -20 CM H20 WITH REFERENCE TO THE PRESSURE AT THE SUPRASTERNAL NOTCH. MEASUREMENTS WILL INCLUDE MINUTE VENTILATION, TIDAL VOLUME, VITAL CAPACITY, HEART RATE, ECG, ESOPHAGEAL PRESSURE AND POST-WORK VENOUS LACTATE CONCENTRATIONS. SEPARATE DIVES WILL BE CARRIED OUT TO MEASURE PULMONARY FUNCTION PARAMETERS.

SUPPORTED BY U.S. Dept. of Defense, Navy, Office of Naval Research $204,693

2.0173,

ENVIRONMENTAL HAZARDS WORKSHOP

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TO INVESTIGATE THE CAUSE AND EFFECTS OF ENVIRONMENTAL HAZARDS.

THREE CONFERENCES, ALONG WITH THEIR SUPPORTING WORKSHOPS, WILL BE HELD TO INVESTIGATE THE CAUSE AND EFFECTS OF VARIOUS ENVIRONMENTAL HAZARDS. THESE CONFERENCES ARE TITLED: (1) HEALTH EFFECTS OF ASBESTOS EXPOSURE; (2) HEALTH EFFECTS OF HALOGENATED AROMATIC HYDROCARBONS; (3) PUBLIC CONTROL OF ENVIRONMENTAL HEALTH HAZARDS.

SUPPORTED BY U.S. Dept. of Defense, Navy, Office of Naval Research funds n.a.

2.0174,

EPIDEMIOLOGY OF SCRUB TYPHUS

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THE FINAL OBJECTIVE IS PREVENTION OF SCRUB TYPHUS. SUBSETS ARE DEFINING THE ROLE OF CELL-MEDIATED IMMUNITY (CMI) DETERMINING PAST AND CURRENT INFECTION WITH PRECISION AND ACCURACY, AND CHARACTERIZING THE CAUSATIVE ORGANISM BIOCHEMICALLY.

THREE MAJOR LINES OF STUDY ARE FOLLOWED. THE FIRST IS APPLICATION OF CURRENTLY AVAILABLE METHODS FOR QUANTIFICATION OF CMI TO A MOUSE MODEL OF SCRUB TYPHUS. A SECOND APPROACH INVOLVES ANALYSES OF SEROLOGICAL SPECIMENS FROM PATIENTS AND PRESENTLY HEALTHY POPULATIONS, AND IMPROVEMENT OF SEROLOGIC TECHNIQUES USING ANTIGENS FROM RELATED ORGANISMS, INCLUDING ROCHALIMAEA QUINTANA AND THE AGENT OF LEGIONNAIRES' DISEASE. FINALLY, BIOCHEMICAL TECHNIQUES ARE USED FOR PURIFICATION OF ANTIGENS AND FOR UNRAVELLING METABOLIC PATHWAYS FOR THESE RICKETTSIAE AND RELATED BACTERIA.

SUPPORTED BY U.S. Dept. of Defense, Uniformed Services University of the Health Sciences funds n.a.

2.0175,

STATISTICAL SURVEY OF MILITARY MORBIDITY DATA

P.F. Van Peenen, U.S. Dept. of Defense, Uniformed Services University of the Health Sciences, Dept. of Preventive Medicine & Biometrics, *Bethesda, Maryland* 20014 (DD700007)

TO ANALYZE EXISTING MILITARY MORBIDITY DATA IN ORDER TO IDENTIFY UNUSUAL DISEASE RATES AND SUBPOPULATIONS MOST AT RISK, AND TO COMPARE SUCH STATISTICS AMONG THE UNIFORMED SERVICES.

EXISTING DATA BASES FOR MILITARY MORBIDITY STATISTICS ARE IDENTIFIED. SELECTED SUMMARIES FROM THESE BASES ARE ANALYZED TO DETECT TRENDS, AND/OR UNUSUAL PATTERNS. GROUPS CONSIDERED AT HIGH RISK, PARTICULARLY IF OCCUPATIONALLY-RELATED, ARE STUDIED IN DETAIL TC DETERMINE RESPONSIBLE FACTORS.

SUPPORTED BY U.S. Dept. of Defense, Uniformed Services University of the Health Sciences funds n.a.

2.0176,

UNITED STATES URANIUM REGISTRY

B.D. Breitenstein, Hanford Environmental Health Foundation Inc., *P.O. Box 100, Richland, Washington* 99352 (EY-76-C-1837)

The objectives of the U. S. Uranium Registry are to: (1) characterize the exposure of workers to uranium or to radon and its daughters in the front end of the uranium fuel cycle (mining, milling, conversion, enrichment and fuel fabrication); (2) describe and evaluate the efficacy of methods in use in production facilities for monitoring such exposure and, also, radionuclide deposition, including air sampling, urinary bioassay, and lung and whole-body counting; (3) organize the procurement of tissue specimens at autopsy of former workers and conduct the analysis of such specimens to develop d- ta on the deposition, translocation and distribution of uranium in human tissues; (4) survey the status of studies of the health of workers exposed to uranium, radon and its daughters, and confounding nonradiologic hazards in various stages of the fuel cycle, and review relevant literature; and (5) recommend a program of epidemiologic studies to repair important deficiencies in the existing worker health data base and conduct such studies that may be authorized.

Activities of the Registry are carried out by means of a collaborative effort between the Hanford Environmental Health Foundation (HEHF) and the Pacific Northwest Laboratory (PNL) with over-all management by HEHF. Objectives (1) and (2), the characterization of exposure, monitoring and dosimetry in work environments, is accomplished by field visits to relevant facilities of teams consisting of PNL radiological and HEHF industrial hygiene personnel. Field visits to numerous uranium facilities have been accomplished. A review of the regulatory structure of different stages of the cycle and the impact of regulatory policies on personnel protection is nearing completion. The autopsy program is conducted by HEHF contacting companies and their workers and arranging for ultimate donation of the tissues of cooperating workers to the Registry; the analyses will be performed by PNL. An autopsy program will be started at the National Lead Company of Ohio as soon as OMB approval of forms is received. The review of health studies and epidemiologic literature is in progress and is conducted by a team of HEHF and PNL epidemiologists. New studies have not been proposed as yet.

Results to date consist only of a draft progress report of the field studies of facilities relating to objectives (1) and (2).

SUPPORTED BY U.S. Dept. of Energy funds n.a.

2.0177,

DETERMINATION OF NORMAL AND HYPERNORMAL CONCENTRATIONS OF ENERGY-RELATED TRACE ELEMENT POLLUTANTS IN THE HUMAN BODY USING TEETH AS AN INDICATOR

L.G. Stang, U.S. Dept. of Energy, Brookhaven National Lab., Dept. of Medicine, *Upton, New York* 11973 (4021)

The immediate goals are to develop and demonstrate a practical, simple, rapid, and inexpensive method for determining and monitoring traces of potentially toxic energy-related elements in the human body. Utilizing this method, concentrations of such elements will be determined in statistically large numbers of individuals with known case histories in order to define existing baseline concentrations of these elements. This will also provide quantitative data needed for determining the relationship between increases above this baseline for given element and parameters (measured by others) such as the health of the individual, the ambient concentration of the element, and occupational factors relevant to energy technology. A longer-range goal is to determine trace element concentrations in deceased populations and compare the results with those from living groups to measure the extent, if any, to which present baseline concentrations for particular elements may already be higher than normal (as determined from the dental remains of individuals who lived prior to environmental pollution from energy-related sources), and to measure the present rates at which these baselines are increasing. The significance of this work is that it develops a convenient basis for indicating the human impact of many energy-related potential environmental pollutants for which even the normal body concentration is unknown.

SUPPORTED BY U.S. Dept. of Energy funds n.a.

2.0178,

UNITED STATES TRANSURANIUM REGISTRY

B.D. Breitenstein, Hanford Environmental Health Foundation Inc., *P.O. Box 100, Richland, Washington* 99352 (EY-76-C-1837)

The objective of the USTR is to protect the interests of workers, employers and the public by serving as a national focal point for the acquisition and provision of precise information about transuranics in humans. This is accomplished by the study of the distribution and concentration of transuranics in man through analysis of autopsy tissues of occupationally exposed workers; the evaluation of the estimates of body and/or lung burdens made during the life of an occupational worker for comparison with those based on the analysis of tissues obtained after death; seeking histopathologic changes in autopsy tissues that might be attributed to the effects of transuranics; and the study and comparison of findings in animal experiments with transuranics and those in human beings who have transuranic depositions.

The approach of the Registry program relies entirely upon securing samples of various organs at autopsy of occupationally exposed personnel. In order to obtain the greatest benefit it is necessary to identify the maximum number of occupationally exposed transuranium workers, past and present; obtain medical and health physics releases; secure pre-arranged autopsy permission and at autopsy secure appropriate tissue samples for pathological examination and analyses of transuranium element content. The organs are selected according to whether the estimated deposition at the time of death is greater or less than 50% of the maximum permissible systemic burdens as listed in ICRP publication II. Prosectors have been identified and are used to assist the pathologist in obtaining the desired samples and to assure proper identification and to prepare additional histological slides. Also, the prosectors verify weights, trim and prepare samples for processing by the analytical laboratories.

The USTR has 849 valid autopsy releases through 1979. There have been 136 autopsies obtained, of which 89 autopsy analyses have been completed. In addition, there are 6 consents for whole body donations. Currently there is one whole body donations. Currently there is one whole body donor in analysis. This is an important case because it is the first whole body analysis from an occupationally exposed worker who was estimated to have more than a maximum permissible body burden of americium.

The DOE operating sites which have been actively participating include Hanford, Rocky Flats, Los Alamos Scientific Lagor (Text Truncated - Exceeds Capacity)

SUPPORTED BY U.S. Dept. of Energy funds n.a.

2.0179,

GASIFIERS IN INDUSTRY--UMD PROJECT: POLLUTANT CHARACTERIZATION

K.E. Cowser, U.S. Dept. of Energy, Oak Ridge National Lab., Central Management Office, *P.O. Box X, Oak Ridge, Tennessee* 37830 (2943)

The objective of this program is to implement an environmental and health, monitoring and testing program at the University of Minnesota at Duluth Gasifier Project. Process streams, plant effluents, and the working environs will be characterized chemically and physically by on-line and in-plant sample collections, measurements, and monitoring. Data developed will be used to guide subsequent bioassays and ecological testing of samples, to correlate possible worker exposures, and to assess the potential health and environmental impacts of this demonstration facility.

SUPPORTED BY U.S. Dept. of Energy funds n.a.

2.0180,

SAFETY PLANNING FOR POPULATIONS NEAR NUCLEAR INSTALLATIONS

C.V. Chester, U.S. Dept. of Energy, Oak Ridge National Lab., Health Physics Div., Emergency Technology Section, *P.O. Box E, Oak Ridge, Tennessee* 37830

Consequences of accidental releases of radioactive materials from facilities in the nuclear fuel cycle are analyzed. The primary objective of the work is identifying methods of reducing the impact on the civilian population. Emergency measures after the release as well as changes in the facilities to reduce the probability and magnitude of a release are studied and recommendations made.

RESULTS: Inhalec dose and deposition from catastrophic accidents to stored spend fuel elements and surface-sited, high-level waste tanks have been estimated. The dose and deposition from released material are calculated using real-time varying meteorological data. Underground siting of LWR plants is being studied.

SUPPORTED BY U.S. Dept. of Energy, Div. of Technology Overview Integrated Assessment funds n.a.

2.0181,

LONG-TERM MORTALITY STUDY OF WORKERS OCCUPATIONALLY EXPOSED TO ELEMENTAL NICKEL AT THE OAK RIDGE GASEOUS DIFFUSION PLANT

E.A. Thompkins, Oak Ridge Associated Universities Inc., *Box 117, Oak Ridge, Tennessee* 37830 (KY-01-02-01-4)

The objective is to evaluate the health effects of handling nickel powder and to help in determining whether a recent NIOSH proposal to reduce tolerable airborne nickel levels by a factor of 200 is necessary with regard to elemental nickel. The project includes an epidemiologic study of ORGDP workers exposed to nickel with an examination of environmental exposures and associated industrial hygiene monitoring.

SUPPORTED BY U.S. Dept. of Energy, Oak Ridge National Lab. funds n.a.

2.0182,

OCCUPATIONAL HEALTH PROBLEMS IN FOSSIL ENERGY DEVELOPMENT

Unknown, Flow Industries Inc., *21414 68th Ave. S., Kent, Washington* 98031

Technical assistance is being provided to assure that possible health and safety problems associated with innovative fossil fuel technologies are identified and dealt with. Pilot plant programs and activities were reviewed. Available literature and data were reviewed to assess the toxic, carcinogenic, and other hazardous components for which standards or data exist. Site visits were made to energy research centers and pilot plants. The results will be used to recommend approaches to occupational health. A manual workbook for health and safety matters in fossil energy plants is being prepared. Investigation of existing occupational health and safety activities has included acquisition of published and unpublished materials, development and distribution of a questionnaire, and site visits. Two reports have been submitted. One report concludes that existing programs tend to stress safety more than health and to emphasize compliance and control of hazards. Consequently, most health and safety data currently available are not ideal for epidemiological surveillance. The other report describes possible methods of linking data, of follow-up for mortality studies, and of constructing work histories or exposure data. In the second phase, methods for epidemiological linkage of data were developed. The specific problems of linking morbidity indicators with work or exposure patterns were addressed. It was found that potential health problems could be categorized into three causal types: general industrial, coal related, or associated with high-temperature and high-pressure processes. Each hazard level was related to levels of program control in four main health and safety activities. From this, recommendations were developed for recordkeeping, for health and medical programs, and for industrial hygiene practices. A detailed outline for health and safety workbook has been submitted.

SUPPORTED BY U.S. Dept. of Energy, Office of Fossil Energy funds n.a.

2.0183,

CHROMOSOME STRUCTURE AND FUNCTION

L.L. Deaven, U.S. Dept. of Energy, Los Alamos Scientific Lab., Cellular & Molecular Biology Group, *P.O. Box 1663, Los Alamos, New Mexico* 87544 (000219)

The transition of normal cells into the malignant state is frequently accompanied by increased variability in chromosome number and structure. Treatment of in vitro cell cultures with clastogenic agents can also result in clonal populations with altered karyotypes. Whether karyotype instability is cause or an effect of malignant transformation its general association with transformed phenotypes makes it a relevant end point for energy-related toxicants. We are examining energy-related pollutants of the shale oil industry for their clastogenic properties and for their potential to transform cells into clonal populations with altered karyotypes. Initial studies utilize known components of oil shale applied to in vitro Chinese hamster cells (line CHO). These results are then related to complex mixtures of materials generated by oil shale extraction. Materials with clastogenic potential, as determined by the CHO studies, will then be applied to human lymphocytes and/or fibroblasts in vitro. Materials which are clastogenic or which induce elevated levels of sister chromatid exchange at relatively high concentration will then be tested at expected environmental and/or physiological levels. Eventually, when available, selected individuals with known exposures will be examined for chromosome damage in peripheral lymphocytes.

BIBLIOGRAPHIC REFERENCES: Tobey, R.A., L.L. Deaven and M.S. Oka, Kinetic Response of Cultured Chinese Hamster Cells to Treatment with 4'-(9-Acridinyl)-Amino Methanesulphom-m-Anisidide-HCl (m-AMSA Chloride), J. Natl. Can. Inst., in press, 1978.

SUPPORTED BY U.S. Dept. of Energy, Office of Health & Environmental Research funds n.a.

2.0184,

ANALYSIS OF THE HUMAN HEALTH AND ECOLOGICAL CONSEQUENCES OF PLUTONIUM AND OTHER TRANSURANICS

J.W. Healy, U.S. Dept. of Energy, Los Alamos Scientific Lab., *P.O. Box 1663, Los Alamos, New Mexico* 87544 (000899)

As a fuel for breeder reactors, plutonium promises to extend the uranium resources by many times and could be important in the coming energy shortage. However, public concern over its carcinogenicity has caused difficulties in such use and, in some cases, questions have been raised which were difficult to answer because the data available had not been collated and made available in a useful form. This project provides analysis of existing information to give summaries of the present data important to a given objective. It is anticipated that eventually these reviews and conclusions will be incorporated into an analysis of the total health hazards from the use of plutonium. A second objective is to provide a body of trained people to answer DOE problems involving the health effects of plutonium. A critical review of available data revealed the importance of differing experimental techniques and an increased uptake of these elements compared to plutonium. A detailed review of the first draft of an EPA standard on plutonium in soils was made at the request of DOE which revealed many technical and sociological difficulties that were discussed with EPA personnel, as well as transmitted to DOE in letters. A limit for shallow earth burial of materials contaminated with transuranic elements is being derived currently.

SUPPORTED BY U.S. Dept. of Energy, Office of Health & Environmental Research funds n.a.

2.0185,

MOLECULAR PERTURBATIONS IN MAN CAUSED BY ENERGY-RELATED POLLUTANTS

N.G. Anderson, U.S. Dept. of Energy, Div. of Biological & Medical Research, *9700 S. Cass Ave., Argonne, Illinois* 60439 (002454)

The objective is to develop and validate new techniques for measuring the carcinogenic, mutagenic, and toxic effects of energy-related pollutants on human populations. The new technique of protein gene product (PGP) mapping allows most of the estimated 30,000 to 50,000 PGPs (human cell building blocks) to be seen analytically. Different cells characteristically contain different sets of PGPs. In cancer the PGP population of a cell changes, and PGP mapping raises the possibility of early cancer detection, cancer typing, and assessment of therapy effectiveness. PGP mapping also detects about 1/3 of amino acid substitutions resulting from mutations and makes possible measurement of the background mutation rate in man, the detection of changes in that rate, and the detection of genetic disease-causing mutations in individuals. Toxic agents cause living cells to leak PGPs and other cell constituents. With PGP mapping, cell type markers may be identified and used as indicators of specific organ damage. Commercially available, clinically useful ISO-DALT mapping system is expected in three years. Commercial sales of systems and products evolved from this program are now over 100 million dollars per year (zonal centrifuges, vaccine centrifuges, centrifugal analyzers, vaccines, reagents, etc.).

BIBLIOGRAPHIC REFERENCES: Anderson, N.G., The Future of Clinical Chemistry, Am. J. Med. Tech. 44: 233-237 (1978). Anderson, N.G., Construction of Tygon Manifolds and Connectors, Anal. Biochem. 86: 337-338 (1978).

SUPPORTED BY U.S. Dept. of Energy, Office of Health & Environmental Research funds n.a.

2.0186,

HEALTH EFFECTS IN THE PETROLEUM INDUSTRY

E.L. Alpen, University of California, Central Office, Lawrence Livermore Lab., *P.O. Box 808, Livermore, California* 94550 (002692)

There exists a large population of individuals who are routinely exposed to low levels of volatile hydrocarbons during their occupationally related activities in the petroleum industry. Although it has been known for many years that some of these compounds are carcinogenic, and that they may also cause other unrelated injury to organ systems, little or no specific attention has been paid to analyses of disease rates among these workers. There are, as yet, poorly defined reports that there is an elevated cancer mortality rate in Contra Costa County in California, a major refining center. We are proposing to study the epidemiology of a number of disorders,

concentrating at first on cancer and cardiovascular and respiratory disorders among refinery workers. The study would be based in the beginning on the Contra Costa population.
SUPPORTED BY U.S. Dept. of Energy, Office of Health & Environmental Research $220,000

2.0187,
IVEP-HEALTH EFFECTS
L. Anspaugh, University of California, Central Office, Lawrence Livermore Lab., *P.O. Box 808, Livermore, California* 94550 (RPIS-2336)
The objective is to determine potential health effects associated with the development of geothermal resources, with emphasis on the Imperial Valley. Work will be carried out through a subcontract with the California Department of Health to (1) examine available effluent data and health effects data to determine relevant damage functions or to specify needed effects research; (2) establish a system for the rapid reporting of mortality and morbidity in Imperial County; (3) review occupational health programs and provide recommendations; and (4) conduct special surveys to determine the public's perception of odor annoyance and health problems. The results expected are: (1) predictive assessment of health effects from geothermal resource development; (2) early warning system to detect actual health effects should they occur; and (3) quantitative surveys of odor annoyance due to hydrogen sulfide.
SUPPORTED BY U.S. Dept. of Energy, Office of Health & Environmental Research funds n.a.

2.0188,
EVALUATION OF CARBON MONOXIDE IN BLOOD SAMPLES FROM THE SECOND HEALTH AND NUTRITION SURVEY
E.P. Redfor, University of Pittsburgh, Graduate School, *1028H Cathedral of Learning, Pittsburgh, Pennsylvania* 15213 (007590)
This is a continuation of a study of carbon monoxide (CO) in the blood of human subjects participating in the Second National Health and Nutrition Survey (HANES II), a detailed study of health indicators in sample populations of many communities throughout the US. The purpose of this aspect of the survey is to evaluate the levels of blood carboxyhemoglobin in over 6,000 normal individuals of all ages in typical US communities, from whom accurate histories and clinical studies are available. Two main results are anticipated from this work. First, values from nonsmokers will indicate the extent to which absorption of CO from community air pollution is present in the US. Second, the data will provide an objective measure of current inhalation exposure to tobacco smoke in smokers, an important addition to clinical evaluation of health effects from smoking.
SUPPORTED BY U.S. Dept. of Energy, Office of Health & Environmental Research funds n.a.

2.0189,
US URANIUM REGISTRY
B.D. Breite, Hanford Environmental Health Foundation Inc., *P.O. Box 100, Richland, Washington* 99352 (003182)
The U.S. Uranium Registry will provide centralized collection and analysis of data on the exposure and estimated deposition of uranium and radon daughters among exposed workers and investigate the effects of these nuclides on the health and mortality of workers in the uranium mining, milling, enrichment, and fuel fabrication industries. Insufficient attention has been devoted to the study of the health of workers exposed to uranium in the nuclear industry. The mining and further processing of uranium will increase as a result of the current emphasis on nonproliferation nuclear cycles. This expansion of the uranium industry, estimated in 1976 as a 25-fold increase in uranium mining and milling and a 15-fold increase in fuel fabrication facilities, increases the urgency of defining as thoroughly as possible the potential health effects that might be anticipated in various segments of the industry. The results of the activities included in the Uranium Registry could be a major contribution to setting standards for exposure of workers to uranium. It can also assist in the identification of work assignments or process steps that are major sources of uranium exposures of workers and, therefore, should be given high priority for the development of control procedures.
SUPPORTED BY U.S. Dept. of Energy, Office of Health & Environmental Research funds n.a.

2.0190,
STATISTICAL HEALTH EFFECTS STUDIES
Unknown, Hanford Environmental Health Foundation Inc., *P.O. Box 100, Richland, Washington* 99352 (003255)
No summary has been provided to the Smithsonian Science Information Exchange.
SUPPORTED BY U.S. Dept. of Energy, Office of Health & Environmental Research funds n.a.

2.0191,
HUMAN HEALTH AND ENERGY PRODUCTION
D. Grahn, U.S. Dept. of Energy, Div. of Biological & Medical Research, *Chicago, Illinois* (000811)
Causes of death in man are sensitive to socio-economic, cultural, occupational and general environmental pollutant variables. This project is therefore designed to identify the contribution of each factor to the age and cause of death, to quantify its effect and to develop predictive models for impact analysis of energy facility sites and regions of resource development. The models should permit reevaluation of other cause-effect studies of air pollution and human health and the development of a rational cost-benefit analysis of health effects vs. effluent control technology. The study will utilize existing data bases such as the U.S. vital statistics, census data, commercial and industrial activity data. Standard methods of demographic and life-table analysis will be employed to isolate specific relationships between health effects and socio-economic, etc., factors. The methods of multiple regression and factor analysis will also be employed. Wherever possible we will use data bases existing in our own and other DOE facilities. Major factors such as education, income, occupation, migration account for 30% to 60% of variation in age standardized death rate. Demographic projection models have been developed to estimate effects of radioactive and non-radioactive pollutants on life expectancy, cause and rate of mortality.
SUPPORTED BY U.S. Dept. of Energy, Office of Health & Environmental Research funds n.a.

2.0192,
EPIDEMIOLOGICAL STUDIES OF SPECIFIC DISEASES, DEVELOPMENTAL AND METABOLIC PROCESSES AND OTHER PHYSIOLOGICAL EFFECTS
L. Allen, Radiation Effects Research Foundation, *5-2 Hijiyama Pk., Hiroshima 730, Hiroshima, Japan* (000426)
No summary has been provided to the Smithsonian Science Information Exchange.
SUPPORTED BY U.S. Dept. of Energy, Office of Health & Environmental Research funds n.a.

2.0193,
BIOMEDICAL AND ENVIRONMENTAL EFFECTS OF ELECTRICAL STORAGE SYSTEMS
A. Lindenbaum, U.S. Dept. of Energy, Div. of Biological & Medical Research, *9700 S. Cass Ave., Argonne, Illinois* 60439 (002855)
The primary purposes of this program are to: (a) assess the needs for health-effects research in (nonhuman) biological systems, and (b) propose a research plan for resolving public and occupational health-related issues emanating from the battery program. Major health-related issues will be identified, along with uncertainties and gaps in knowledge. The assessment will be conducted through five tasks: (1) provide information on state-of-the-art, with particular emphasis on toxic substances to be employed in new battery technologies soon to reach commercial applications; (2) evaluate the environmental impact of these substances; (3) review and evaluate existing information on metabolism, toxicity, and medical problems related to chemicals of concern; (4) evaluate occupational and public health hazards and consider regulatory factors that may affect research needs; and (5) identify needs for health-effects research. Based on this assessment, research plan will be preparad toward resolving special health- and environmental-related problems so identified.
SUPPORTED BY U.S. Dept. of Energy, Office of Health & Environmental Research funds n.a.

2.0194,
STUDY OF FEASIBILITY OF DETECTING EFFECTS OF LOW-DOSE RADIATION IN SHIPYARD WORKERS
G.M. Matanoski, Johns Hopkins University, School of Hygiene & Public Health, Dept. of Epidemiology, *615 N. Wolfe St., Baltimore, Maryland* 21205 (007960)
The objective is to initiate a study to determine the feasibility of establishing an appropriate population of nuclear and non-nuclear shipyard workers for a study of the long-term effects of low-level radiation.
SUPPORTED BY U.S. Dept. of Energy, Office of Health & Environmental Research funds n.a.

2.0195,
U.S. TRANSURANIUM REGISTRY OF DOE CONTRACTOR AND LICENSEE EMPLOYEES
J.A. Nororo, Hanford Environmental Health Foundation Inc., *P.O. Box 100, Richland, Washington* 99352 (000409)
The U.S. Transuranium Registry was established in 1968 to study the internal deposition of transuranic elements in workers occupationally exposed to these substances. An important aspect has been to compare transuranic deposition estimates made during life with tissue distribution and concentration in autopsy specimens. Investigation of the health status, longevity and causes of death among transuranic workers is also a goal of the registry. Fourteen thousand transuranium workers have been identified at DOE contractor and NRC licensee plants; 855 prearranged autopsy permissions have been obtained and 66 autopsies completed. In general, smaller systemic and larger lung depositions of plutonium have been found than were predicted by antemortum health physics estimates. Efforts are in progress to increase participation in the USTR by sites employing transuranic workers, and to improve autopsy procedures and tissue preparation.
SUPPORTED BY U.S. Dept. of Energy, Office of Health & Environmental Research funds n.a.

2.0196,
METABOLISM AND EFFECTS OF INTERNALLY DEPOSITED RADIONUCLIDES AND TRACE ELEMENTS
A.F. Stehney, U.S. Dept. of Energy, Argonne National Lab., *9700 S. Cass Ave., Argonne, Illinois* 60439 (000302)
The objective is to determine the long-term effects of radium, thorium, and other internal emitters in humans. Epidemiological and clinical studies of human beings who have been occupationally or iatrogenically exposed to intake of alpha-emitting radionuclides will be undertaken. Medical and dosimetric data are obtained by study of living persons and autopsy material and from medical records. The principal end-points are mortality by cause, neoplasms, and pathological changes in bone and lung. Whole body counting (in vivo), radiochemistry, and microscopic techniques are employed. Expected results include identification of diseases associated with internally deposited radionuclides and determination of quantitative relationships between dose and effect. These results are needed for assessment of risk from radionuclides in nuclear fuel cycles.
BIBLIOGRAPHIC REFERENCES: Polednak, A.P., A.F. Stehney and R.E. Rowland, Mortality Among Women First Employed Before 1930 in the U.S. Radium Dial-Painting Industry: A Group Ascertained from Employment Lists, Amer. J. Epidemiology 107(3): 179-195 (Mar 1978).
SUPPORTED BY U.S. Dept. of Energy, Office of Health & Environmental Research funds n.a.

2.0197,
DOSE REASSESSMENT FOR POPULATIONS ON RONGELAP AND UTIRIK FOLLOWING EXPOSURE TO FALLOUT FROM THE BRAVO INCIDENT (MARCH 1, 1954)
J.R. Naidu, U.S. Dept. of Energy, Brookhaven National Lab., *Upton, New York* 11973 (3010)
Incidences of thyroid nodules, benign and malignant, in the exposed populations of Utirik and Rongelap have indicated critical differences in correspondence between nodule incidence and thyroid dose for the two populations. The estimated external dose received from the time fallout began to the time of evacuation shows that the Rongelap population received an external dose (175 rads) which was about thirteen times that for the Utirik population (14 rads), and the thyroid dose was about ten times larger, whereas the incidence of thyroid nodules in the two

populations were not significantly different. A preliminary study has indicated that the critical area of investigation that could shed light is the period during fallout and evacuation for both the islands. In addition, the fact that the Utirik population returned within 120 days following evacuation, whereas the Rongelap population returned only after three years, requires that we look closely at the Utirik population in terms of a longer period, both internal and external. Further studies would, therefore, have to concentrate on the re-examination of all available data in reports issued by various agencies during that period, consultations with uncertainty, and using appropriate computer programs to analyze the data. The end result will enable us to look for correlations between the incidence of thyroid nodules and the reassessed dose estimates.

SUPPORTED BY U.S. Dept. of Energy, Office of Health & Environmental Research funds n.a.

2.0198,

SOMATIC CELL CHROMOSOME CHANGES IN HUMANS EXPOSED TO 239-PLUTONIUM AND 222-RADON

W.F. Brandom, University of Denver, School of Arts & Sciences, Dept. of Biological Sciences, *2115 S. University Blvd., Denver, Colorado* 80210 (7049)

The objective of our study was to determine whether a biological response related to estimated physical doses could be observed in uranium miners' or plutonium workers' cells. If a biological dose-response was observed, the somatic cell chromosome test could provide biological indicator of a toxicological problem and supplement other indications for setting permissible radiation protection standards. The test system used was the prevalence of chromosome aberrations (dicentrics, rings, inversions, translocations, and deletions) in peripheral blood lymphocytes of controls and uranium miners and plutonium workers, plotted against estimated physical radiation doses. Biological respones in the relative prevalence of chromosome aberrations are observed in uranium miners' and plutonium workers' cells. The analysis to date indicates that estimated lung burdens in the plutonium workers are more significant in affecting lymphocyte chromosomes than current estimated systemic burdens. In the future, it is expected that somatic cell chromosome aberration frequencies will be used in conjunction with physical dosimetric measurements to screen other populations exposed to low levels of ionizing radiation.

SUPPORTED BY U.S. Dept. of Energy, Office of Health & Environmental Research funds n.a.

2.0199,

ASSESSMENT AND CONTROL OF NON-NUCLEAR AIR CONTAMINANTS

A.J. Breslin, U.S. Dept. of Energy, Office of Health & Environmental Research, Environmental Measurements Lab., *376 Hudson St., New York, New York* 10014 (001785)

Methods are developed for assessing and reducing exposures to man from hazardous air contaminants arising from energy production.

SUPPORTED BY U.S. Dept. of Energy, Office of Health & Environmental Research funds n.a.

2.0200,

EXPOSURE TO EXTERNAL INTERNAL & RADIATION - LOW-LEVEL PLUTONIUM, TRANSPLUTONIUM & FISSION PRODUCTS & OTHER ELEMENTS STUDIES

C.W. Mays, Utah Higher Education System, University of Utah, School of Medicine, Dept. of Anatomy, *1400 E. 2nd S., Salt Lake City, Utah* 84112 (000445)

The objectives are: (1) evaluation of the retention, distribution and dosimetry of internally deposited radionuclides; (2) prediction of the radiation risk to humans from occupational and environmental exposure; (3) safe removal of radionuclides from the body; and (4) assistance to US DOE and other organizations on questions of the risk to man from radiation, especially plutonium.

BIBLIOGRAPHIC REFERENCES: Mays, C.W., Risk to Bone from Present 224-Ra Therapy, in Biological Effects of 224-Ra: Benefit and Risk of Therapeutic Application, Mulle and Ebert (eds.), Matinus Nijhoff Medical Division, The Hague/Boston, 1978. Rossi, H.H., and C.w. Mays, Leukemia Risk from Neutrons, Health Physics 34, 1978.

SUPPORTED BY U.S. Dept. of Energy, Office of Health & Environmental Research funds n.a.

2.0201,

HEALTH AND MORTALITY STUDY

E. Tompkins, Oak Ridge Associated Universities Inc., *Box 117, Oak Ridge, Tennessee* 37830 (002493)

The objective of the DOE health and mortality study is to evaluate, on a continuing basis, the disability and mortality experience of persons with a history of employment in selected installations associated with the nuclear industry. The primary purpose of the study is to determine if such employment histories are associated with an increase in age- and sex-specific mortality in general, or with an increase in age- and sex-specific mortality due to selected causes of death. Some determinant factors to be studied are: the adequacy of comparison populations to predict the expected mortality experience of the defined study population; the type, level, and dose rate of radiation exposure of the study population; and the length of time elapsed from first employment in a nuclear industry to morbidity and mortality.

SUPPORTED BY U.S. Dept. of Energy, Office of Health & Environmental Research funds n.a.

2.0202,

THE INFLUENCE OF LATE RADIATION EFFECTS ON THE IMMUNOLOGIC PARAMETERS OF AGING

T. Makinodan, University of California, Los Angeles Campus, School of Medicine, *2025 Zonal Ave., Los Angeles, California* 90024 (007591)

Special emphasis will be placed on the development of methods which can be applied to the study of monozygotic and dizygotic twins where both were exposed, where neither were exposed, and where only one was exposed to radiation. Preliminary studies will be carried out with Hiroshima immigrants who immigrated to the U.S. before 1940 and their Japanese-American descendants in the Los Angeles area. This proposal includes provisions for assisting in the development of competent investigators and laboratory facilities at the Radiation Effects Research Foundation (RERF) in Hiroshima and Nagasaki.

SUPPORTED BY U.S. Dept. of Energy, Office of Health & Environmental Research funds n.a.

2.0203,

ASSESSMENT AND CONTROL OF RADIOACTIVE AIR CONTAMINANTS

A.J. Breslin, U.S. Dept. of Energy, Office of Health & Environmental Research, Environmental Measurements Lab., *376 Hudson St., New York, New York* 10014 (000732)

The exposure of man or woman and his or her environment to airborne radioactive substances is studied in terms of the successive steps from sources via environmental pathways to ultimate sites of deposition, including the respiratory tract. Particular attention is being given to public exposure to background radon and radon daughters. The long range objectives of these investigations are to improve capabilities to assess, monitor, and control contaminants in public and occupational environments.

SUPPORTED BY U.S. Dept. of Energy, Office of Health & Environmental Research funds n.a.

2.0204,

DETERMINATION OF PLUTONIUM IN MAN

J.F. McInroy, U.S. Dept. of Energy, Los Alamos Scientific Lab., *P.O. Box 1663, Los Alamos, New Mexico* 87544 (000380)

This project will establish statistically significant measurements of the base-line concentrations of environmental plutonium in the general population of geographic areas of interest to the DOE, monitor those areas where the base line has been established to determine if changes have occurred, measure the tissue distributions of plutonium in occupationally exposed workers, determine the particle size distribution of plutonium oxide aerosols in tissues of occupationally exposed workers, and evaluate the histological effects of deposited plutonium on the tissues of exposed workers. Methods utilized include collecting organs of interest from autopsies; recording pertinent epidemiological information; analyzing quantitatively for plutonium and normalizing the results to a concentration value; and statistically evaluating the distributions.

SUPPORTED BY U.S. Dept. of Energy, Office of Health & Environmental Research $325,000

2.0205,

MEDICAL STUDIES OF THE PEOPLE OF THE MARSHALL ISLANDS ACCIDENTALLY EXPOSED TO FALLOUT

R.A. Conard, U.S. Dept. of Energy, Brookhaven National Lab., *Upton, New York* 11973 (000032)

The primary objective is the determination of the lifetime effects of fallout radiation on the Marshallese who were accidentally exposed to radioactive fallout on March 1, 1954. Medical surveys of these people are conducted at quarterly intervals, and an unexposed Rongelap population is examined for comparison. The surveys, carried out jointly by Brookhaven National Laboratory under the auspices of the Department of Energy, and the Trust Territory of the Pacific Islands, are of great importance in view of the development in this population of growth impairment in some exposed children, thyroid lesions, and one case of acute leukemia.

BIBLIOGRAPHIC REFERENCES: Conard, R.A., Summary of Thyroid Findings in the Marshallese 22 Years After Exposure to Radioactive Fallout, Radiation-Associated Thyroid Carcinoma, L. DeGroot (ed.), pp. 241-257, Grune and Stratton, New York, 1977.

SUPPORTED BY U.S. Dept. of Energy, Office of Health & Environmental Research funds n.a.

2.0206,

INDOOR AIR POLLUTION EPIDEMIOLOGY STUDY

C.D. Hollowell, University of California, Berkeley Campus, Lawrence Berkeley Lab., *Berkeley, California* 94720 (001866)

The broad goals of this project are: (1) to characterize indoor air pollution; (2) to identify the important sources, abundance, and fate of indoor air pollutants; (3) to study the abatement of indoor air pollutants; (4) to characterize exposures of the occupants to the important air pollutants; (5) to study the health and welfare effects; and (6) to assess the impact of various energy-conservation strategies on indoor air quality. The epidemiological work will concentrate on the nitrogen oxides, with careful attention being paid to all other air pollutant species which can be characterized. Results of the study indicate that levels of gaseous and respirable particulate air pollutants in the indoor environment frequently exceed the levels commonly found in the outdoor urban air. Levels of CO and NO/sub 2/ were found to exceed existing and recommended ambient air quality standards. Such findings indicate a potential impact of combustion-generated indoor air pollution on human health, and if borne out by further work they may ultimately have a large impact on energy conservation strategies for buildings, on the future design of epidemiological studies, and on the need for more stringent control of air pollution from indoor combustion sources.

SUPPORTED BY U.S. Dept. of Energy, Office of Health & Environmental Research $82,000

2.0207,

DOSIMETRY FOR HUMAN EXPOSURE

G.D. Kerr, U.S. Dept. of Energy, Oak Ridge National Lab., *P.O. Box X, Oak Ridge Operations Office, Oak Ridge, Tennessee* 37830 (00801)

The objectives of these studies are to improve the physical dosimetry of human radiation exposures and the assessment of radiation exposure risks to man. Total cancer risks from mixed neutron and gamma-ray exposures are being investigated using data from animal studies and data from human epidemiological studies. These studies will provide an improved basis for making sound judgments regarding radiation protection against neutrons at current fission power reactors and future fission power reactors. Mathematical models and computer codes are developed to investigate radiation dose--biological effect relationships. Extensive use is made in these studies of the vast medical and epidemiological studies of the Japanese atomic-bomb survivors which constitute the most extensive source of data on the latent effects of human exposure to gamma rays and neutrons. The studies have provided the first accurate assessment of dose to bone marrow and risk of leukemia from neutron exposures. Estimates of other cancer risks from neutrons will be made, and estimates of total risk of leukemia and other cancers will be used to review the adequacy of current radiation protection criteria and monitoring practices for neutrons.

BIBLIOGRAPHIC REFERENCES: Kerr, G.D., Estimates for Organ Dose to the Japanese Atomic-Bomb Survivors, Oak Ridge National Laboratory Report ORNL-5436, 1978. Kerr, G.D., Japanese War-

time Nuclear Effort: A Cover-Up, Science 200: 486 (1978).
SUPPORTED BY U.S. Dept. of Energy, Office of Health & Environmental Research funds n.a.

2.0208,
EVALUATION OF INTERNALLY DISTRIBUTED KRYPTON-85 AS A HEALTH HAZARD
S.H. Cohn, U.S. Dept. of Energy, Brookhaven National Lab., *Upton, New York* 11973 (001373)
The emission of krypton-85 (Kr-85) from nuclear reactors constitutes a potential radiation hazard to an exposed population. The hazard is due not only to external radiation but also to internal radiation following exposure to and inhalation of the gas. To evaluate the degree of the internal radiation hazard, it is necessary to know several biological parameters of behavior of Kr-85 in human beings. Estimation of radiation dose requires that the rate of reaching tissue equilibrium concentrations of Kr-85 be determined. The objective of this study is to determine the partition coefficients for Kr-85 into human tissues as well as their saturation and desaturation rates. It is proposed to measure these biological parameters in up to 15 normal healthy subjects after inhalation of tracer amounts of Kr-79. The BNL whole body counter will be used to follow the uptake, distribution and excretion of the inhaled Kr-79. The pharmacokinetics of Kr-79 will be examined by computer analysis based on respiratory parameters of each individual. Dosimetry data were used to better define the radiation hazard from the fission product Kr-85. Since Kr is known to be soluble in body fat, the effect of adiposity on the uptake and retention of Kr-79 was evaluated in subjects representing a wide range of body fat.
SUPPORTED BY U.S. Dept. of Energy, Office of Health & Environmental Research funds n.a.

2.0209,
STATISTICAL HEALTH EFFECT STUDIES
E.S. Gilbert, U.S. Dept. of Energy, Battelle Pacific Northwest Lab., *P.O. Box 999, Richland, Washington* 99352 (002131)
The objectives of this project are: (1) to evaluate the effects of chronic, low-level radiation exposures on human populations; and (2) to develop adequate statistical and epidemiological methodologies for assessing available data on chronic low-level exposures. Our tasks include analysis of the Hanford mortality data, expanding the Hanford mortality base to include J.A. Jones construction workers, developing and adapting statistical and epidemiological procedures for analyzing chronic low-level exposures, and critically evaluating other studies and opinions concerning human risks from chronic exposures.
SUPPORTED BY U.S. Dept. of Energy, Office of Health & Environmental Research $110,000

2.0210,
COAL-RELATED DISEASE DETECTION
K. Hubner, Oak Ridge Associated Universities Inc., *Box 117, Oak Ridge, Tennessee* 37830 (001928)
It is proposed to study occupational diseases associated with the coal industry, particularly chronic lung diseases. The methods used will be nuclear medical procedures to evaluate subtle and obvious changes in lung function and cytologic techniques on sputum, to evaluate premalignant changes and to detect early malignancy. Emphasis will also be placed on chronic obstructive pulmonary disease. In addition to work on black lung disease the program will examine methods of detecting minimal effects on workers exposed to polynucleated aromatic hydrocarbon in an operational coal liquefaction pilot plant. The possibility of using cytogenetic technology will be investigated. The potential for using positron emitters with a computerized transaxial tomograph will be investigated.
SUPPORTED BY U.S. Dept. of Energy, Office of Health & Environmental Research funds n.a.

2.0211,
EPIDEMIOLOGICAL STUDY OF PLUTONIUM WORKERS
J.H. Stebbings, U.S. Dept. of Energy, Los Alamos Scientific Lab., Health Div., *P.O. Box 1663, Los Alamos, New Mexico* 87544 (001879)
Past and present plutonium workers from major United States nuclear installations will be followed to determine age-specific mortality rates from all major causes of death, with special emphasis upon cancer. Dose-response relationships will be estimated using systemic body burden data from urine tests. The study population, approximately 20,000 individuals, will include all workers with estimated body burdens above one nanocurie, random samples of exposed workers with lesser or no body burdens, and random samples of non-exposed workers from the same installations. A subset of 8000 workers will be actively followed and questionnaire studies of personal risk factors and of morbidity from cancer, cardiovascular, chronic respiratory, and other chronic diseases will be carried out. Related studies in progress include a clinical study of 26 Manhattan District Project workers, studies of cancer incidence and mortality in residents of Los Alamos, New Mexico, and a preliminary follow-up study of mortality in the most highly burdened plutonium workers.
SUPPORTED BY U.S. Dept. of Energy, Office of Health & Environmental Research funds n.a.

2.0212,
ASSESSMENT OF HEALTH EFFECTS OF ENERGY SYSTEMS
M. Goldman, University of California, Davis Campus, School of Medicine, Dept. of Medicine, *Davis, California* 95616 (002923)
Assessment of risks to health from energy-related pollutants are required to meaningfully estimate the environmental cost/risk/benefit tradeoffs involved in development of energy resources and production technologies. The risk assessment program at the Radiobiology Laboratory utilizes three levels of effort: (1) acquisition and storage of relevant data, (2) gathering of mathematical and statistical methods useful in assessing risks, and (3) analysis of data using existing methods or by new techniques. Emphasis will be placed on determining the validity of models relative to pollutant exposure modalities (e.g., single, acute exposures vs. chronic exposures). Emphasis will also be placed on assessing decremental effects on health other than mortality and tumorigenesis. Our literature review of health effects of pollutants from fossil-fuel power generation (published as an annotated bibliography) made clear that the available animal data, needed to scale effects to humans, are not always in the best form. Such data will require extensive effort before they can be properly utilized to assess risks. We have chosen the coking industry as a surrogate for future planned coal conversion plants. The similarities between fugitive emissions, characterization and monitoring are significant and germane to new conversion methods. This research will build on the experimental data base and models evolved to relate to information obtained on coke oven workers and their health status following high level exposures to develop models for lower level exposure assessment to possible impacted members of the general population.
SUPPORTED BY U.S. Dept. of Energy, Office of Health & Environmental Research funds n.a.

2.0213,
DETERMINATION OF 239-PU CONCENTRATIONS IN NEW YORK CITY AUTOPSY TISSUE SAMPLES
M. Eisenbud, New York University, School of Medicine, Dept. of Environmental Medicine, *550 1st Ave., New York, New York* 10016 (7156)
Now that the methodology for the assay of plutonium in tissue samples has been developed to optimum state-of-the-art accuracy and precision, we propose to continue making these measurements at an accelerated rate during the coming year. Our proximate goal is the determination of the Pu-239/Pu-240 concentrations in the bone, lymph nodes, lung, liver and kidney of each of 50 cases of accidental death occurring in residents of the New York City area. In addition to measurement of plutonium and stable calcium in these samples, we will attempt to determine, in a limited subset of these samples, the content of other manmade and natural radionuclides when sample size permits. These other alpha emitters in order of priority include Am-241, Th-(alpha emitters) and, when possible, Pb and Po-210. From this information, and from the trace metal contents previously determined, we hope to examine models relating source terms to body burden thereby providing estimates of the variation of internal burdens of these materials as a function of their content in the environment. In addition, we will be able to examine transport models of these materials in the environment and their metabolism and kinetics in the body. Finally, we wish to establish accurate baseline values for these radionuclides in the body to act as a reference point for assessing the impact of increased sources of intake. Analysis of fallout plutonium is essential in defining those parameters used to estimate the transfer of plutonium from the environment to humans. In order to assess the temporal change in Pu alpha content of human tissues, additional tissue samples may be collected during the year.
SUPPORTED BY U.S. Dept. of Energy, Office of Health & Environmental Research funds n.a.

2.0214,
RESEARCH ON HUMAN GENETICS IN ICELAND
S. Fridriksson, Iceland Genetical Committee, *Reykjavik, Iceland* (006208)
The Icelandic demographic data are being used for various hereditary and social studies. The data consist of some 313,000 birth records covering the whole nation from 1840 as well as marriage records, the national registry, and death records. A large number of individuals have been manually linked into families. A program for arranging all the data on an IBM 370 Model 30 computer has been proposed. To the demographic data are added various information about the individual, such as blood groups, various proteins, diseases and disabilities, and cause of death. Karyotypes of over 900 individuals have also been analyzed. In a collaborative effort by various institutes, 135 first-cousin marriage families have been analyzed for chromosome linking of various genetic markers and possible inheritance of various characteristics. A study of familiality of breast cancer was continued and an investigation was started on a possible family aggregation of ischemic disease in Iceland. A study of assortative mating was carried out in relation to intelligence as indicated by mean score achieved at final examination from elementary school. Furthermore, the relation between mean scores of parents and children was investigated and the relation between intelligence and mental health was studied by comparing these records with the psychiatric register.
SUPPORTED BY U.S. Dept. of Energy, Office of Health & Environmental Research funds n.a.

2.0215,
ERDA HEALTH STUDY, CHRONIC RADIATION EXPOSURE - CORRELATION OF RADIATION EXPOSURE WITH BIOLOGICAL EFFECT
C.W. Kirklin, Hanford Environmental Health Foundation Inc., *P.O. Box 100, Richland, Washington* 99352 (000408)
This project is to determine the long-range effect of low-level long-term occupational radiation exposure on man. The Department of Energy Richland Location (DOE-RL) Contractors employees' health, radiation exposure, and job assignment records have been compiled and organized in a data file dating from 1944. This, with other data, is being studied to develop relationships between radiation exposure and mortality. Data accumulation includes (1) employee identification data, (2) employment history, (3) sibling control groups, (4) occupational radiation exposure (internal and external), (5) medical x-ray exposure, (6) medical examination data, (7) environmental exposure other than radiation, and (8) mortality data.
SUPPORTED BY U.S. Dept. of Energy, Office of Health & Environmental Research funds n.a.

2.0216,
PROPOSAL FOR PARTIAL SUPPORT OF THE SUBCOMMITTEE ON THE GEOCHEMICAL ENVIRONMENT IN RELATION TO HEALTH
W. Petrie, National Academy of Sciences, *2101 Constitution Ave. N.W., Washington, District of Columbia* 20037 (007411)
No summary has been provided to the Smithsonian Science Information Exchange.
SUPPORTED BY U.S. Dept. of Energy, Office of Health & Environmental Research funds n.a.

2.0217,
SIMS THREE YEAR STUDY ON STATISTICS AND ENVIRONMENTAL FACTORS IN HEALTH
D.L. Thomsen, Society for Industrial & Applied Mathematics, *97 Parish Rd. S., New Canaan, Connecticut* 06840 (007134)
SIMS will continue to coordinate the study with respect to publication and communication and will also maintain appropriate liaison with the review panel, the first meeting of which was held October 1976 together with members of the Columbia and Stanford groups. The object of the Columbia University group

is to develop statistical methods and models for describing the effects of the environment, measured by pollution and weather variables, on respiratory diseases. Work in the following areas is underway: alternatives to multiple regression, time series models, methods for detecting clusters of cases, measuring pollution levels for an entire geographic area, and the association between air pollution and mortality. The Stanford University group has been investigating the time and space variability of pollutant concentrations. Topics of investigation have included maximum concentration of a pollutant concentration time series as related to the maximum of a subseries, spatial autocorrelation of station measurements, interpolation of pollutant concentrations between monitoring stations, and relation of geographic distribution of a mortality or morbidity index to the distribution over the same geographic region of an index of air pollution.

SUPPORTED BY U.S. Dept. of Energy, Office of Health & Environmental Research funds n.a.

2.0218,

ASSESSMENT OF HEALTH EFFECTS RELATED TO SURFACE OIL SHALE RETORTING

Unknown, U.S. Dept. of Energy, Laramie Energy Technology Center, *Laramie, Wyoming* (003260)

No summary has been provided to the Smithsonian Science Information Exchange.

SUPPORTED BY U.S. Dept. of Energy, Office of Health & Environmental Research funds n.a.

2.0219,

REVIEW OF INTERNAL EMITTER RESEARCH

W.J. Bair, U.S. Dept. of Energy, Battelle Pacific Northwest Lab., *P.O. Box 999, Richland, Washington* 99352 (002717)

This proposal is for bibliographic and personal interview research and writing of a definitive general history of internal emitter toxicology research programs (including all radionuclides) from the beginning of the major effort in the early 1940's to the present.

SUPPORTED BY U.S. Dept. of Energy, Office of Health & Environmental Research $27,000

2.0220,

INHALATION HAZARD TO URANIUM MINERS

F.T. Cross, U.S. Dept. of Energy, Battelle Pacific Northwest Lab., *P.O. Box 999, Richland, Washington* 99352 (000393)

The objective is to determine the agents or combinations of agents and their levels that are responsible for the high incidences of severe respiratory disease such as pneumoconiosis, emphysema, and carcinoma that are reaching epidemic proportions in uranium miners. Experimental studies have resulted in pulmonary fibrosis, severe emphysema, and bronchiolar-alveolar and squamous carcinoma in rodents and beagle dogs that receive daily exposures to radon daughters and uranium ore dust, with and without concomitant cigarette smoking. Continuing studies are designed to: (1) define the possible contributing pathogenic roles of uranium ore dust and cigarette smoking; (2) provide reliable data to relate exposure dose to absorbed dose; (3) determine effects of altered dose-rate on carcinogenesis; and (4) measure the relative effectiveness of altered radon daughter attachment fractions and ratios upon induction of severe respiratory disease to determine whether the working level concept may not be both inadequate and dangerous in evaluation of inhalation hazards of present and future uranium mining operations.

SUPPORTED BY U.S. Dept. of Energy, Office of Health & Environmental Research $675,000

2.0221,

MARSHALLESE NATIVES AT RONGELAP - RADIOLOGICAL STUDIES

R.A. Conard, Holmes & Narver Inc., *828 S. Figueroa St., Los Angeles, California* 90017 (000472)

This program provides logistical and other support to the Brookhaven National Laboratory for medical surveys of the Marshallese who were accidentally exposed to fallout radiation in 1954. The BNL program provides for the medical and radiological examinations of the residents of Bikini, Rongelap, and Utirik. Support includes transportation between Hawaii and the Marshall Islands, subsistence support for a doctor stationed at Kwajalein, and the logistical effort necessary to move selected Marshallese to the continental east coast for more extensive medical exams.

SUPPORTED BY U.S. Dept. of Energy, Office of Health & Environmental Research funds n.a.

2.0222,

EPIDEMIOLOGY OF MAGNETIC EFFECTS ON HUMANS

T.F. Budinger, University of California, Berkeley Campus, Lawrence Berkeley Lab., *Berkeley, California* 94720 (2688)

The objective of the project is to determine the effects, if any, of the stationary and alternating magnetic and electric fields produced by controlled thermonuclear reactors, high-voltage transmission lines, magnetic energy storage systems and magnetohydrodynamic systems. This is an epidemiological study of 2000 scientists and technicians who have been exposed to high fields for substantial cumulative exposures.

SUPPORTED BY U.S. Dept. of Energy, Office of Health & Environmental Research $125,000

2.0223,

HEALTH AND MORTALITY STUDY

W.A. Bigler, Monsanto Research Corp., *P.O. Box 32, Miamisburg, Ohio* 45342 (000474)

Justification for this program is based on the desire of the Division of Biomedical and Environmental Research to enlarge the scope of their existing epidemiological study of lifetime health and mortality experience of employees of DOE contractors. This project was initiated in June, 1964, to establish the relationships, if any, between mortality patterns and levels of radiation exposures. The extension of this project to include all DOE contractor facilities is needed for studying the presence or absence of any lasting biological effects on human populations of the low level occupational radiation exposures received by atomic energy workers over long periods of time. Mound Laboratory maintains the essential personnel and radiation exposure records suitable for contribution to this study.

SUPPORTED BY U.S. Dept. of Energy, Office of Health & Environmental Research funds n.a.

2.0224,

RADIOACTIVITY STUDIES

M.E. Wrenn, New York University, School of Medicine, Dept. of Enivironmental Medicine, *550 1st Ave., New York, New York* 10016 (006065)

We will concentrate on metabolic studies of the bone-seeking radionuclides, Am-241, Cm-244, Pb-210, and Po-210 in hopes of defining the extent to which radon and radon daughter exposures contribute to the increased magnitude of uranium mining hazards. Topics in this category include: (1) measurement of the disposition and retention of Pb-210 body burdens in former uranium miners, (2) establishment of a uranium miner study group for epidemiological measurements relating adverse health effects to radiation exposure, (3) provocative chelation techniques (EDTA) for measuring Pb-210 in former uranium miners and in adult baboon, and lastly (4) Pb-210 metabolism in the adult male baboon. Health risks from future nuclear technology including breeder-type reactors which both utilize and generate potentially toxic, alpha-emitting bone-seeking actinides such as Pu, Am, and Cm will be studied.

SUPPORTED BY U.S. Dept. of Energy, Office of Health & Environmental Research funds n.a.

2.0225,

URANIUM MINER LUNG CANCER STUDY

Saccomano, St. Marys Hospital & Medical Center, *7th St. & Patterson Rd., Grand Junction, Colorado* 81501 (006089)

This proposal is a continuation of Contract No. E(11-1)-1826 on the uranium miner studies and embraces the following projects: (1) continuation of sputum collection and collection of lungs from deceased miners; (2) predictive analytical study of sputum samples taken from individual miners over several years; (3) the uranium miners lung study; (4) collection of material from uranium miners known to have cancer of the lung into a tumor registry; (5) manual on pulmonary cytology; (6) regression study of sputum cytological findings in uranium miners who showed marked atypical squamous cell metaplasia and have quit smoking cigarettes, mining, or both; and (7) adjoining doctors Huth and Profio on the development of ultraviolet fiberoptic bronchoscope which will be used with the Mayo Clinic group in the localization of early cancer of the lung. In addition, although not supported by the Department of Energy, a study on the effects of vitamin A derivative (13-CIS retinoic acid) is being conducted.

SUPPORTED BY U.S. Dept. of Energy, Office of Health & Environmental Research funds n.a.

2.0226,

STUDIES OF PARTICIPANTS IN NUCLEAR TESTS

S. Jablon, National Academy of Sciences, *2101 Constitution Ave. N.W., Washington, District of Columbia* 20037 (007985)

NAS will conduct studies to determine whether former Smoky participants leukemias are occurring excessively. The study is intended to verify the findings on Smoky participants and to determine whether these findings relate specifically to the population present at Smoky or to all tests.

SUPPORTED BY U.S. Dept. of Energy, Office of Health & Environmental Research funds n.a.

2.0227,

ASSESSMENT OF BIOMEDICAL AND ENVIRONMENTAL COST OF ENERGY SYSTEMS

L.D. Hamilton, U.S. Dept. of Energy, Brookhaven National Lab., *Upton, New York* 11973 (000756)

This program aims at developing a systematic overview of biomedical and environmental costs of energy production and use. All forms of energy are being considered. Starting with a compilation of residuals from the energy system, the various pathways to man are traced. This task entails definition of transport mechanisms including chemical conversions and various links through the biosphere to man. An evaluation is then made of effects. The initial focus is on biomedical effects and environmental effects on animals, crops, other vegetation, and on land, known to affect man. This evaluation relies on available information; epidemiological data, field and laboratory studies carried out on appropriate animals and vegetation, and basic biomedical research designed to elucidate molecular and cellular mechanisms underlying biological responses to various residuals. By taking account of the magnitude of energy flow through the system and of the population exposed, total effects are calculated. The basic framework of the evaluation is provided by the national energy system models and data base in use and under development by the Brookhaven National Laboratory (BNL) Energy Systems Analysis Group (ESAG). That work provides a significant resource for this program and a means of integrating the results of the program into national energy policy analysis.

SUPPORTED BY U.S. Dept. of Energy, Office of Technology Impacts, Div. of Technology Assessments funds n.a.

2.0228,

ESTABLISHMENT OF THE HIGH RISK POPULATION LABORATORY

R.F. Heber, University of Wisconsin, Madison Campus, Mental Retardation Research & Training Center, *1815 University Ave., Madison, Wisconsin* 53706

OBJECTIVES: Establishment of a High-Risk Population Category (Milwaukee Project) is a longitudinal study of the prevalence of mental retardation in a depressed urban area and the effects of a comprehensive rehabilitation program in preventing mental retardation.

METHODOLOGY: 1. The high-risk population laboratory was established with the aid of a door-to-door survey conducted in an area of metropolitan Milwaukee which had been previously identified as having an extremely high prevalence of retardation. 2. All members of the survey family, both children and adults, received an individual intellectual appraisal in addition to receiving several experimental learning and language tests. In addition, extensive data was obtained on family, social, education, and occupational history and status. 3. From this population pool samples are selected with the characteristics required by the individual studies being undertaken by the 'high risk' population laboratory. 4. The population laboratory survey, over a period of a year, contacted all women residents in the area at the time of child birth. All family members were subsequently individually evaluated when the mother was suspected of retardation on the basis of post delivery intellectual screening. This has made accesible a substantial number of mentally retarded young adults and their offspring.

FINDINGS TO DATE: The data derived from the project during the current grant period further extends previously reported data which indicated that the high prevalence of mental retardation found among disadvantaged population group is accounted for, largely, by relatively small proportions of the population involved. (This research approach was initially established as a unique focus of the research program of the Center when little knowledge was available about the relationship of poverty to mental retardation.) Based upon this accumulated data, results show that the use of comprehensive rehabilitation of high risk families, families with a high prevalance of mental retardation, must be deemed a successful approach to the prevention of mental retardation. Families have been followed for over ten years. The children of the treated group show no retardation and in fact no child at ten has an IQ below 85, compared to the control where 60 percent are below 85. (Text Truncated - Exceeds Capacity)

SUPPORTED BY U.S. Dept. of Health & Human Services, Office of Human Development Services, National Inst. of Handicapped Research $131,243

2.0229,

LONG TERM COMMUNITY-WIDE EPIDEMIOLOGICAL PROJECT (CHILDREN)

S.G. Kellam, University of Chicago, School of Medicine, Dept. of Psychiatry, *5801 S. Ellis Ave., Chicago, Illinois* 60637 (P50 MH 30938-020012)

This project is part of a broader program (MH 30938).

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Alcohol Drug Abuse & Mental Health Admin., National Inst. of Mental Health funds n.a.

2.0230,

HOMOCYSTINURIA - METHIONINE METABOLISM IN MAMMALS

S.H. Mudd, U.S. Dept. of Health & Human Services, Public Health Service, Alcohol Drug Abuse & Mental Health Admin., National Inst. of Mental Health, Alkaloid Biosynthesis Section, *Bethesda, Maryland* 20014 (Z01 MH 00936-16 LGCB)

A survey of the health status of parents and grandparents of cystathionine synthase deficient patients is being continued. The aim is to determine whether heterozygotes for this genetic defect are at increased risk for coronary artery disease. By appropriate physician contact we have now been able to obtain responses from more than 190 families with homocystinuric patients, 113 with new-mutation achondroplastic dwarfism, 125 with hyperphenylalaninemic, and 35 with cystinotic children. Most of the information has been entered in a computer and a preliminary analysis carried out. This preliminary analysis suggests that the questionnaire approach has yielded valid data since the findings in the control groups are reasonable in comparison with data obtained in more elaborate epidemiological studies. It appears, also, that interpretation of the data will be made more rigorous by (a) addition of further control families (b) documentation of the ages at which initial coronary attacks occurred in fathers who have had non-fatal attacks of this kind, and (c) obtaining approximate years of birth and death for grandparents for whom such dates are not known exactly. Efforts to obtain such information are now underway.

BIBLIOGRAPHIC REFERENCES: Mudd, S.H., Ebert, M.H., and Scriver, C.R.: Labile methyl group balances in the human: the role of sarcosine. Metabolism, in press, 1979. Mudd, S.H.: Diseases of sulfur metabolism: implications for the methionine-homocysteine cycle, and vitamin responsiveness. Ciba Foundation Symposium 72: Biology of Sulfur, in press, 1979.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Alcohol Drug Abuse & Mental Health Admin., National Inst. of Mental Health funds n.a.

2.0231,

THE OFFSPRING OF SCHIZOPHRENICS - MARKERS OF A SCHIZOPHRENIC DISPOSITION

R.O. Reider, U.S. Dept. of Health & Human Services, Public Health Service, Alcohol Drug Abuse & Mental Health Admin., National Inst. of Mental Health, Laboratory of Psychology & Psychopathology, *Bethesda, Maryland* 20014 (Z01 MH 00476-08 LPP)

This study of children of schizophrenics is based on data from an NINCDS study of pregnancy and delivery conditions in a large group of women, which included psychological and neurological tests on the offspring, studied until age 8. We have found that: (1) There were more fetal deaths among the offspring of schizophrenics. (2) The IQ scores of the surviving offspring of schizophrenics appear to be more related to adverse perinatal factors than do IQ scores for the controls. (3) The behavior of the surviving male offspring of schizophrenics was more often rated as hyperactive or immature at age 7 than was the behavior of controls. These offspring also had more soft neurological signs, especially abnormal hand-arm coordination.

BIBLIOGRAPHIC REFERENCES: Rieder, R.O., Nichols, P.L. The offspring of schizophrenics III. Archives of General Psychiatry 36: 665-674, 1979.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Alcohol Drug Abuse & Mental Health Admin., National Inst. of Mental Health funds n.a.

2.0232,

CHILDREN AND FAMILIES VULNERABLE TO MENTAL DISORDERS

L.C. Wynne, University of Rochester, School of Medicine & Dentistry, Dept. of Psychiatry, *601 Elmwood Ave., Rochester, New York* 14627 (P01 MH 22836-08)

The major overall objective of this program is to study families with children believed to have varying degrees of risk for later mental disorder as well as for intermediate outcomes (assessed in terms of degrees of competence versus psychiatric dysfunction). Risk for dysfunction in these children is based upon the diagnosis of a serious mental disorder that has required hospitalization in at least one parent; alternative risk indices based upon deviant family communication patterns also are being studied and can be compared with parental diagnosis as a risk variable. The vulnerability of the children was assessed during the initial evaluations with psychophysiologic measures, psychological tests, and clinical studies, both current and historical.

During the past year, 34 families participated (or are now involved in) our 3-year followup. This brings the total followup to 94 families as of 9/1/79. Five additional families who had move out of town were located and have agreed to participate in any feasible manner. Thus far 88 percent of the 113 families contacted have agreed to participate in the followup. During the coming year, analysis of data from the initial evaluation and the completion of followup data collection will occupy major attention in this program. Analysis and interpretation of data across substudies are now of special interest. For example, study of the relationship between diagnostic data about the parents will be compared with family interaction measures as predictors of school performance, child psychophysiologic indices, and psychological test measures of the children.

BIBLIOGRAPHIC REFERENCES: Wynne, Lyman C., Family Interaction: An Alternative Starting Point for Evaluating Risk of Psychosis, in Anthony, E.J., Koupernik, C., and Chiland, C. (eds.), The Child and his Family: Vulnerable Children, Vol. 4. New York: Wiley Interscience, 1978, pp. 293-302. Wynne, Lyman C., Knotted Relationships and Communication Deviance, in Berger, M (ed.), Beyond the double bind. New York: Brunner/Mazel, 1978, pp. 177-187.

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2.0233,

STUDY OF CHILDREN AND GRANDCHILDREN OF PATIENTS WITH DEPRESSIVE ILLNESS

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It is the long range purpose of this project to determine the frequency of affective disorders in the children of adults with unipolar and bipolar depressive illness, and to identify biological makers of a genetically transmitted predisposition to affective disorders, and to study the interaction between genetic predisposition and environmental factors in children with affective disorders. Our present project is refined replication of our pilot project reported last year. The major changes involve the inclusion of two control groups as well as a blind interviewer and rater.

BIBLIOGRAPHIC REFERENCES: McKnew, D.H. Jr., Cytryn, L., Efron, A.M., Gershon, E.S., and Bunney, W.E. Jr.: Offspring of patients with affective disorders. Brit. J. Psychiatry 134: 148-152, 1979.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Alcohol Drug Abuse & Mental Health Admin., National Inst. of Mental Health funds n.a.

2.0234,

A BEHAVIOR PROFILE FOR CHILD PSYCHOPATHOLOGY AND SOCIAL COMPETENCE

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The purpose of the research is to develop a standardized behavioral profile for child psychopathology and social competence to be used for research on etiology, treatment effects, epidemiology, and prognosis, as well as for clinical purposes. Parents of disturbed and normal children fill out a behavior checklist describing their child's behavior problems and strengths. Data from the checklists are factor analyzed to identify items that group together within various age and sex groups. The factors are employed as scales of the behavior profile. Empirically obtained distributions of scales on each score provide norms with which the scores of individual children can be compared, and behavior profiles obtained on the same child at different times can be used to assess changes in behavior.

BIBLIOGRAPHIC REFERENCES: Achenbach, T.M. The Child Behavior Profile: I. Boys aged 6-11. J. Consult. Clin. Psychol., 1978, 46. 478-488. Achenbach, T.M., and Edelbrock, C.S. The Child Behavior Profile: II. Boys aged 12-16 an girls aged 6-11 and 12-16. J. Consult. Clin. Psychol., 1979, 47, 223-233.

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2.0235,

BEHAVIORAL PROBLEMS AND COMPETENCIES OF CLINIC-REFERRED AND NONREFERRED CHILDREN

T.M. Achenbach, U.S. Dept. of Health & Human Services, Public Health Service, Alcohol Drug Abuse & Mental Health Admin., National Inst. of Mental Health, Developmental Psychology Laboratory, *Bethesda, Maryland* 20014 (Z01 MH 00263-03 LDP)

In order to compare the behavioral problems and competencies reported for clinic-referred and nonreferred (normal) children, a survey of 1300 randomly selected parents in the Washington, D.C. area was conducted. Home interviewers administered the Child Behavior Checklist to parents of 50 boys and 50 girls at each age 4 through 16. The results have been compared with parental reports of problems and competencies for clinically referred children matched to the nonreferred children for age, sex, socioeconomic status, and race in order to provide a unique epidemiological baseline for research on child psychopathology and the effectiveness of various treatments.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Alcohol Drug Abuse & Mental Health Admin., National Inst. of Mental Health funds n.a.

2.0236,

A STUDY OF AFFECTIVE DISORDERS AMONG OLD ORDER AMISH

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The objectives are to clarify selected issues related to the causation and classification of affective disorders (manic-depressive illnesses). The primary focus is on the genetic basis for bipolar and unipolar forms of depressive illness. The research setting is the Old Order Amish community of Lancaster County, Pennsylvania. This is a homogeneous, endogamous (inbred) group, where total genealogical assessment is possible, making it uniquely suited for identification and control of genetic variables.

There is full ascertainment (period prevalence) of cases of mental disturbances for the three-year period, 1977-1979. A Board of five psychiatrists provides independent diagnoses of the clinical case materials, using the Research Diagnostic Criteria. Confirmed instances of primary affective disorders serve as probands for the bipolar and unipolar samples.

The present emphasis is on SADS-L interviewing of all first degree relatives of bipolar probands to develop extended pedigrees with multiple cases of illness. Several of these informative pedigrees will be selected for linkage analysis by studying blood types, color blindness and other known genetic loci.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Alcohol Drug Abuse & Mental Health Admin., National Inst. of Mental Health $22,872

2.0237,

SEX DIFFERENCES IN MORBIDITY AND HEALTH ACTIONS

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Health surveys repeatedly show that females have higher rates of illness, disability days, and health services use than males. Numerous hypotheses have been proposed to explain the sex differences. They involve health attitudes and beliefs, social roles, social stress. health reporting behavior, life style behaviors, and genetic factors. The purpose of this research is to determine how social and social psychological factors affects reports of symptoms, disability, and other curative health actions, and how these factors explain sex differentials. The basic research design is: A sample of white adults in the Detroit metropolitan area keep health diaries for six weeks. Each day, respondents record information about all symptoms experienced, the perceived severity of those symptoms, restricted activity due to symptoms, medical or dental attention (for symptoms or for preventive reasons), medicine use (for symptoms or preventive reasons), communications with peers and kin about symptoms, mood, and events of the day which were unusual. Two interviews occur--one before the diary period to measure the main predictors, and one at the end of the diary period for retrospective health information and for reactions to the diary task. The Daily Health Records provide the main dependent variables for analysis; the Initial Interview provides the main predictors. Some important innovations of the research are: the use of a health diary among males and persons of low socioeconomic status; self-response (no proxy reports allowed); reports of all symptoms experienced, not just those which prompt some curative action; daily entries in the diaries rather than entries only on symptomatic days; and extensive information on lay communications and medicine use.

BIBLIOGRAPHIC REFERENCES: Verbrugge, L.M. Female illness rates and illness behavior: testing hypotheses about 1979 sex differences in health. Women and Health, 4(1), Spring, 61-79. Verbrugge, L.M. Health diaries. Medical Care, forthcoming. 1979.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Alcohol Drug Abuse & Mental Health Admin., National Inst. of Mental Health $149,863

2.0238,

THE EPIDEMIOLOGY OF DEPRESSION IN NORMAL CHILDREN

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The primary objective of this phase, II, of the proposed research is to determine the prevalence of symptoms of depression in a normal population of children. A secondary goal is to study certain hypothesized antecedents of childhood depression. Accomplishment of the first objective will be through the application, epidemiologically, of peer nomination inventory of depression to a representative sample of elementary school children. This technique was developed and standardized in Phase I of the research and was shown to be psychometrically sound. The second objective will be accomplished by means of individual, precoded, interviews with samples of mothers whose children were classified as depressed and nondepressed. Data will also be gathered from self-ratings and school records. For the epidemiological data, the prevalence of depression, identified by a cutoff score developed in Phase I, will be presented for various categories of children. The prevalence of separate symptoms of depression occurring in the normal and pathological ranges will also be presented. Analyses of the interview data will be by discriminant function and multiple regression.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Alcohol Drug Abuse & Mental Health Admin., National Inst. of Mental Health $112,487

2.0239,

MEASUREMENT PROBLEMS IN PSYCHIATRIC EPIDEMIOLOGY

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The objective of the research is to examine the role of response error (trait desirability, need for social approval, response acquiescence) in field studies of the prevalence of psychiatric impairment. Data will be acquired by household interview using a stratified sample (N equals 1,350) with optimal allocation by socioeconomic status and ethnicity. The sampling frame to be used is the almost 8,000 respondents interviewed in 1974 in Alameda County, California by the Human Population Laboratory for Epidemiologic Studies. Ethnicity is defined using ethnic heritage, e.g., Blacks, Mexican American, and Anglos. Response tendencies will be studied in relation to two psychiatric screening instruments: the Center for Epidemiologic Studies Depression Scale (CES-D) and the Psychiatric Epidemiology Research Interview (PERI). Data analysis will focus on the magnitude and direction of error introduced by response tendencies in contrasting sex, socioeconomic status, and ethnic groups. For example, how much variance in symptom scores are attributable to response tendencies as compared to sex, socioeconomic status, and ethnicity. A second focus is on the effects of response bias on the sensitivity/specificity of the CES-D and the PERI in contrasting ethnic, sex, age, and income groups. One-two weeks after being interviewed initially by lay interviewers, respondents will be re-interviewed by clinical psychologists using the Schedule for Affective Disorders and Schizophrenia.

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2.0240,

STRESSFUL LIFE EVENTS, SOCIAL SUPPORT AND ILLNESS

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The causal relations among stressors, social support and illness will be examined in a longitudinal study. The primary purpose is to ascertain the intervening effect of social support between stressors (stressful life events) and illness (both physical and psychiatric disturbances). However, the design will allow us to examine the alternative models in which the stressors may serve as intervening variables or the illness may play a primary causal role in the occurrences of stressors and the erosion of social support.

In our current project, a representative sample (N equals 1100) of adults from a tri-city area (Albany-Schenectady-Troy, which is also a Census SMSA area) were studied in order to construct reliable and valid measures of social support and to test a number of hypotheses regarding the relationships among stressors, social support and illness. The cross-sectional data yielded a number of reliable and valid scales of social support (e.g., instrumental support, expressive support, durability of a confidant and neighborhood and community satisfaction) and showed that these scales contributed significantly to the variation of psychiatric (especially depression) symptoms (as measured by the CES-D and Gurin scales). These relations held, even when sociodemographic and stressors were taken into account. The proposed study will conduct two follow-ups on the same respondents. The three-wave design provides a most rigorous analysis of the causal patterns among stressors, social support and illness. Also included in the design will be measures of history of illness, health help-seeking behavior, and a psychological factor (locus of control).

For analyses, the generalized least squares with instrumental variables approach (GLS-IV) and the structural equation modelling approach will be utilized.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Alcohol Drug Abuse & Mental Health Admin., National Inst. of Mental Health $202,267

2.0241,

WHO-NIMH STUDY OF DETERMINANTS OF MENTAL DISORDERS

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WHO and NIMH are conducting a collaborative cross-cultural study of psychosocial determinants influencing course and outcome of severe mental disorders, especially schizophrenia. This program is a replication and successor to the International Pilot Study of Schizophrenia (IPSS). This application for a Supplement grant application is intended to make possible continuity of data collection for the period from January to June, 1980, midway in a two-year study of administrative incidence of schizophrenia in a defined catchment area.

Comparative studies in Rochester and Hawaii are being conducted to carry out the U.S. role in the WHO program. The Rochester Field Research Center is participating in the modification and development of a series of instruments for diagnosis, study of life events, and the study of familial prognostic indicators. Computerized linkage between the Psychiatric Register and the Cancer Register is in progress. Comprehensive epidemiologic study of the administrative incidence of essentially all cases of schizophrenia of less than three months' duration is taking place, with the application of all of the various research instruments for the prediction and assessment of course and outcome. The methods for assessing the families of these patients include the Camberwe Family Interview for studying 'Expressed Emotion' and several alternative shorter methods for assessing family communication, emotional interaction, and perceptions of illness. Ethnographic comparisons are also a component of this collaborative program.

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2.0242,

PRENATAL EXPOSURE TO HORMONES IN MAN AND ANIMAL

J.M. Reinisch, Rutgers the State University of New Jersey, New Brunswick Campus, School of Arts & Sciences, Dept. of Psychology, *Old Queens Bldg., New Brunswick, New Jersey* 08903 (R01 MH 30676-03)

The overall objective of this research is to identify the long term effects resulting from prenatal exposure to steroidal hormones in humans. The foci of these studies are the synthetic estrogen diethylstilbestrol (DES), which has been related to a rare form of vaginal cancer in young women and girls as well as genital abnormalities in male offspring; and the synthetic progestin 19-nor 17-alpha-ethinyltestosterone (19NET), the most androgenic and potent of the synthetic progestins causing masculinization of the external genitalia in approximately 18 percent of exposed female offspring. An attempt is being made to identify and elucidate the sequelae of exposure to DES and 19NET on the offspring of mothers administered these preparations during pregnancy. Evaluation is designed to test the possible effects on cognitive abilities, personality/temperament, brain lateralization, motor performance, and IQ in comparison to unexposed siblings. Parallel studies employing stringent experimental procedure and comparative methodology with mice, in which the control of dosage and timing schedules as well as the random assignment of subjects to groups is possible, are designed to produce precise deliniation of the effects of DES and 19NET on behavior and aspects of physiology. Further, the study of the laboratory animal permits the administration of hormone regimes which closely approximate those given humans, thereby enabling results from these experiments to be used both to generate suggestions for new avenues of inquiry in the research with humans as well as to assist in the interpretation of the data generated from the human subjects.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Alcohol Drug Abuse & Mental Health Admin., National Inst. of Mental Health $41,816

2.0243,

PHYSICAL VIOLENCE IN AMERICAN FAMILIES

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Continued analysis of data on a nationally representative sample of 2,143 families is proposed. Work to date has provided the most accurate (and in some cases the only) incidence rate statistics on physical violence between family members, including, child-abuse, wife-beating, husband-beating, violence by children toward each other, and violence by children towards parents. Further analysis is needed because the work to date has been largely descriptive analyses of incidence data and analysis of two-variable relationships, and because a number of important issues are still to be investigated. Eleven needed analyses are described. Examples of the questions which these are designed to answer are: (I) What is the relationship between the balance of power between husband and wife and the use of physical violence? How is this affected by such factors as the social class of the couple, and the degree to which the wife is economically independent of the husband? (2) What accounts for group differences in rates of family violence? Among the group differences to be studied (because work to date shows important differences) are the region of the country, socioeconomic status, and race. (3) Is involvement in a primary group community of friends and kin associated with a lower level of family violence, and why? (4) We have found a strong relationship between growing up in a violent family and being violent to one's spouse and children. What about those who do not follow this pattern? Do they have family patterns which will suggest ways to break the generation to generation cycle of violence? The importance of finding answers to questions such as these stems from the extremely high violence rates demonstrated by this project. This adversely affects the quality of family life and is part of the explanation to the high level of violence in the society. There is clearly a need for continued research which can suggest policies to reduce family violence.

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2.0244,

LONG-TERM EPIDEMIOLOGICAL STUDY OF BEHAVIOR DISORDERS

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The current literature implies that childhood symptoms of hyperkinesis (or minimal brain dysfunction) are predictive of adult maladjustment. Most of the follow-up research in this area has been conducted on specialty clinic populations, located mostly in urban centers. This has produced a skewed sample with regard to most behavioral and clinical measures. Since 1966 we have followed 501 children then in the second grade representing all of the second grade children in a collection of rural and suburban schools. Signs of hyperkinesis in the early years reliably identified a population at risk for maladjustment, both social and academic, in the ninth grade and recently again in the twelfth. More extensive analyses have confirmed and amplified these results.

We now propose to conduct extensive personal interviews with each subject in our study. The interviews would cover the social, occupational, legal and psychiatric status of our subjects. We then plan to relate the interview data to performance in second, fourth, and fifth grade. These results will enable us to trace the course of the hyperkinetic syndrome and to suggest ways of identifying subjects at risk early in life, thus permitting therapeutic intervention before problems become acute.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Alcohol Drug Abuse & Mental Health Admin., National Inst. of Mental Health $133,160

2.0245,

MENTAL HEALTH OF THE POOR BLACK ELDERLY

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The purpose of this study is to identify factors associated with maintenance and change of mental health in poor, urban black elderly using a longitudinal approach.

A panel of 150 black men and women over 60 years of age are being contacted at short, regular intervals for repeated psychological, social, and physiological measurements, including a yearly medical check-up, for a period of three years. The project is being carried out in Newark, New Jersey. The longitudinal nature of the project is optimized by including in the sample surviving members of a study on the mental health of the black aged by the same investigators. Personal and social data on this group are available for 1972 and 1974, and many of the measurements are being repeated in the current research.

Eighty two persons from the previous panel are participating in the longitudinal study and data have been obtained on changes in health and health care needs, housing and income, relations with family and friends and general outlook on life since they were last seen in 1974. Information has also been collected on the deceased members of the panel, including living conditions prior to death, situation surrounding death, cause and place of death. Correlates of mortality and survivorship are being investigated.

A new sample has been drawn from the same area to bring the current panel to 150 persons. Variables considered include physical and mental health, life styles, self-concept, life satisfaction and morale, depression, social interaction and isolation, use of available services, environmental conditions, family and friendship networks, need and use of short term and long term care facilities. Analysis of the data will pay particular attention to changes that occur with time.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Alcohol Drug Abuse & Mental Health Admin., National Inst. of Mental Health $232,366

2.0246,

EPIDEMIOLOGIC STUDY OF BEHAVIOR PROBLEMS IN CHILDREN

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This proposal represents the continuation of a series of epidemiologic studies on the natural history of behavior problems in preschool children living as permanent residents on Martha's Vineyard Island, seven miles off the coast of Massachusetts. Two studies are proposed. The first is an etiologically oriented investigation into the determinants of behavior problems in three year old children. Stressful life events in parents and in the children themselves, and temperamental characteristics of children are the two principal groups of variables hypothesized to determine the presence of behavior problems. An interview method developed by Brown is used to measure the impact of life events, and parent questionnaires designed by Carey are used to examine the temperaments of children. The dependent variable, behavior problems, is determined from a parent interview, the Behavior Screening Questionnaire of Richman and Graham, and from direct observation of the children in a play paradigm.

The sample for this study is the total population of children, aged 0-3 years, arranged in sequential age cohorts. Parents are interviewed once a year up to and including the child's third birthday to collect data on the independent variables. Parents and the children are separately interviewed near the child's third birthday to determine the behavior adjustment of the children.

The second study is a 4 year follow-up of children seen as part of the preliminary, prevalence study in 1978. One hundred families will be recontacted to conduct parent and child interviews. In addition, school reports will be obtained. The methods for this study are adopted from the Isle of Wight project reported by Rutter, et. al.. Data from this work will be linked with data from the prevalence study to determine the incidence and duration of behavior problems in young children, and the predictive validity of the behavior assessment methods used in that study. The significance of these studies relates to the primary and secondary prevention of psychiatric disorder in children.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Alcohol Drug Abuse & Mental Health Admin., National Inst. of Mental Health $87,577

2.0247,

GENETIC STUDIES OF DEPRESSIVE DISORDERS

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Using epidemiologic techniques, we will: 1. investigate the role of genetic factors and modes of genetic transmission in subtypes of depressive disorders by segregation and linkage studies of pedigrees; 2. develop more precise genetic models and apply these new as well as existing models to the data; 3. develop more precise clinical definitions of the familial manifestations of mood disorders; 4. explore the relationship between a variety of social and clinical characteristics of probands and morbid risk of psychiatric disorder in their relatives.

The probands will be selected from four distinct populations and will include a broad spectrum of affective illness (bipolar, severe unipolar, less severe unipolar depressives) and a matched nonpsychiatric normal control group. Approximately four first-degree relatives and a spouse will be interviewed per proband, including the relatives of the normals. Additional information will be collected by family history. Information for determining the diagnosis of relatives and probands will be obtained by detailed structured interview (Schedule for Affective Disorders and Schizophrenia) and will be applied to precise diagnostic criteria (Research Diagnostic Criteria). Identical methodology and diagnostic criteria will be applied to all probands, relatives, and population subjects. About 60% of the interviews have been completed. Reliability between raters and validity of the instruments have been established, and many computer programs required for data analysis have been completed.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Alcohol Drug Abuse & Mental Health Admin., National Inst. of Mental Health $187,788

2.0248,

SOCIAL STRESS, SOCIAL SELECTION & PSYCHIATRIC DISORDERS

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One of the most persistent issues in psychiatric epidemiology centers on social class: Are rates of some types of psychiatric disorder higher in lower social classes because of greater social stress; or are rates higher because genetically predisposed persons are selected into or fail to rise out of lower class environments? The long term goal of the present research is to use a quasi-experimental strategy to test these contrasting social stress-social selection explanations. The strategy involves comparisons of advantaged and disadvantaged ethnic groups with social class controlled, and tests of related predictions concerning group differences in the types and magnitudes of stressful life events experienced. The present study is pilot study designed to determine the feasibility of implementing the quasi-experiment in Israel.

There are two main reasons for this choice of research setting: First, the quasi-experimental strategy requires an open society in which ethnic assimilation is taking place. Second, study of the processes involved and their consequences can best be accomplished when a well kept Population Register and Psychiatric Register are available. Israel, probably uniquely, meets both sets of requirements.

The long term goal is to compare relatively disadvantaged African and Asian Jews with relatively advantaged Jews of European origin in investigations of large samples of adult subjects. Comparisons would be made of true rates of schizophrenia, affective psychosis, antisocial personality, alcoholism or drug addiction, and neurosis, as well as for certain types of empirically derived symptom clusters. The measuring instruments would consist of the Psychiatric Epidemiology Research Interview (PERI) and Spitzer et al.'s SADS. The purpose of the present two year pilot study is to translate, test and calibrate these instruments which were developed in the United States in the different sociocultural setting of Israel. These tests are being conducted in interviews with 200 subjects sampled from different ethnic groups in Jerusalem and 240 psychiatric patients from the same ethnic groups.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Alcohol Drug Abuse & Mental Health Admin., National Inst. of Mental Health $78,804

2.0249,

PREPUBERTAL DEPRESSION - PHARMACOLOGY AND GENETICS

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In our pilot work we have shown that a group of children fitting RDC criteria for major depressive disorder in adults, can be identified by structured interview. We propose to study in these children psychobiological parameters which are known to be relevant to adult depressive illnesses. This will be done in order to: 1) Validate the diagnosis of prepubertal depressive illness and 2) Establish its relationship to adult depressive illnesses. In order to meet this objective we will carry out three interrelated studies: Study I is a double blind placebo controlled study of imipramine, coupled with studies of drug bioavailability. Study II is a genetic family study, comparing the prevalence of affective disorder and alcoholism in families of probands and controls. Study III is a long-term follow up of index children and controls.

In an interlocking application being submitted simultaneously three other parameters are to be studied: sleep, endocrine and MHPG excretion.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Alcohol Drug Abuse & Mental Health Admin., National Inst. of Mental Health $174,903

2.0250,

MEDICAL CONTEXTS AND SEQUELAE OF DOMESTIC VIOLENCE

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The methodology of complete case review of medical records has been tested in a pilot study of domestic assaults upon women. This study points toward a 'battered woman syndrome' which may be as distinct and identifiable as the 'battered child syndrome'. The results indicate inter-relations between battering and subsequent child abuse, suicide attempts, physical disease and mental illness.

In the present study, the medical records of a sample of women treated for injuries in the emergency room, mothers of battered children, and women who attempt suicide will be abstracted and computerized.

The objective of this research is to refine case-identification techniques, to further characterize the population of battered women by describing the prevalence, clinical symptomatology and physical and mental health contexts and sequelae of battering and to specifically investigate battering among two high risk groups isolated in the pilot study: mothers of battered children and women who attempt suicide. The computerized medical record abstraction will also be used to identify present patterns of the medical treatment of battered women and to estimate the effect of intervention upon the course of the battering syndrome.

BIBLIOGRAPHIC REFERENCES: Medicine and Patriarchal Violence: The Social Construction of a Private Event Evan Stark, Anne Flitcraft, M.D. and William Frazier, M.D. International Journal of Health Services, Vol. 9, No.4, August 1979 (in press).

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Alcohol Drug Abuse & Mental Health Admin., National Inst. of Mental Health $137,005

2.0251,

NIMH COLLABORATIVE PSYCHOBIOLOGY DEPRESSION PROGRAM

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The overall purpose of the NIMH-CRB Program is to investigate clinical, genetic, biological and psychosocial aspects of the nature and etiology of depression and the affective disorders. The proposed investigation will employ clinical psychopathological and genetic-familial methods in a sample of over 1000 patients overall in the collaborative projects.

The grant proposes two major sets of studies, clinical psychopathology and genetic and family studies. The basic hypotheses common to these studies is that the affective disorders are heterogeneous as regards etiology, clinical features and response to treatment. Precisely defined homogeneous nosological classes validated by multiple external correlates will facilitate identification of risk factors for epidemiological studies and verification of hypotheses as to etiology and pathogenesis.

Goals set for this current year of the study include hiring and training of personnel, inclusion of subjects into the study, 6-month, 12-month, 18-month and 24-month follow-up evaluations of patients already included, continued co-ordination of the follow-up phase for the entire study, and preliminary analyses of the 6-month and 12-month follow-up data.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Alcohol Drug Abuse & Mental Health Admin., National Inst. of Mental Health $273,649

2.0252,

PROFILE - BLACK MALES AT RISK TO LOW LIFE EXPECTANCY

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Vital statistics list homicide as the leading or second most frequent cause of death for black American males between the ages of 15 and 29. The homicide rate is ten times higher for black than white men, and has contributed to a decline in the life expectancy of black men between 1960 and 1970. Yet little is known about these men who die of homicide, for vital statistics records only such limited information as age, occupation, and marital status of the deceased.

The long term goal of ths research project is to contribute to the literature on black homicide and to encourage consideration by policy makers as to how to increase the life expectancy and quality of life of black men in the United States.

The present research, originally funded for two years beginning June 1, 1976, is intended to provide a profile of black men at risk of dying young. The men are located in Nashville, Tennessee, and range in age from 18 to 35. The study groups were selected on the theory that homicide victims and perpetrators are not greatly dissimilar (hence 150 convicted felons of homicide are included), and on the theory that, had circumstances been slightly different, assault victims who survive might indeed have died (hence 150 assault victims). A third comparison group of 200 subjects is being selected from a random sample of households. These 500 men are being administered questionnaires inquiring into their social origins and institutional contexts, and three psychological tests from which ratings are being derived.

Central to the research is collaboration with a panel of local policy makers and behavioralists who will review findings of the research and guide the development of the intervention and policy proposals which emerge from the profile.

The original grant underestimated the tremendous effort and resources required to locate and interview the designated research subjects and as a consequence data collection is behind schedule. Two years of additional funding are requested to make possible the preparation and analysis of these data, and the write-up of the profile and policy recommendations.

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2.0253,

SHETLAND - THE EFFECTS OF RAPID CHANGE ON MENTAL HEALTH

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It is rare that one can study the effect which rapid industrial development will have on a rural, homogeneous, and isolated population. Such an opportunity is now present in the Shetland Isles. Large quantities of oil were discovered in the North Sea and starting in 1978, oil will be piped to Shetland for stoage, processing, and transport. This industrial development probably will bring about significant social change on islands where the people have lived simply and peacefully for centuries. Since major oil developments were not underway until 1976, Shetland lended itself well to a planned study of a prospective and longitudinal nature and in 1975, we initiated the baseline phase of just such a long-term research project.

It is our hypothesis that the industrialization and subsequent rapid social change will have a deleterious effect on the islanders' way of life (social organization) and their health (and mental health).

This present three year renewal grant proposal is a request for funds that will allow us to test our hypothesis and complete the analysis, interpretation and reporting to data comparing baseline and three year follow-up data.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Alcohol Drug Abuse & Mental Health Admin., National Inst. of Mental Health $59,848

2.0254,

CLINICAL RESEARCH CENTER STUDY OF AFFECTIVE DISORDERS

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Depression is the most common disabling psychiatric illness and the source of enormous human suffering. Depressive symptoms can be identified in over half of all patients seen in psychiatric practice and it is well known that only a small proportion of those suffering milder forms of depression ever seek medical attention. That depressive features are almost inevitably present in the wake of adverse life situations is accepted as part of the human condition. Depressive symptoms, however, also occur in association with chronic illnesses or as sequelae of both acute and chronic illnesses and injuries, and are often observed in individuals who abuse alcohol, other central nervous system depressants, or narcotics. The Department of Psychiatry (WPIC) of the University of Pittsburgh Medical School in collaboration with the Department of Psychology has proposed the establishment of a MHCRC to investigate the etiology, epidemiology, and treatment of affective disorders. The proposed MHCRC would provide the essential structure and fiscal support to realize the potential for an integrated, multidisciplinary program of investigation, research training, and clinical service. The proposed research program is organized around four major themes: life-span studies of the phenomena of depression (children to the elderly), social and psychological factors in depression, biologic factors in the etiology of depression, and prevention and maintenance treatment studies in affective illness. It should be emphasized, however, that each of the specific proposed investigations is likely to cut across several areas, and thus will provide some of the basis for the communication and collaboration which is fundamental to the MHCRC's goal. Twenty-five specific projects designed to study various facets of depressive illness are detailed in the proposal. All of these projects are either underway or in the preliminary stages of pilot investigation. In addition, a series of new programs of investigation is outlined (including studies in assessment, epidemiology, genetics, clinical psychopharmacology, neurochemistry, psychosocial factors, and neuroendocrinology) which would be developed under the aegis of the proposed MHCRC.

BIBLIOGRAPHIC REFERENCES: Kupfer, D.J., Spiker, D.G., Coble, P.A., McPartland, R.J.: Amitriptyline and EEG sleep in depressed patients I: drug effect. Sleep 1:149-159, 1979. Kupfer, D.J., Coble, P.A., Kane, J., Petti, T., Conners, C.K.: Imipramine and EEG sleep in children with depressive symptoms. Psychopharmacology 60:117-123, 1979.

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2.0255,

CLINICAL RESEARCH CENTER FOR STUDY OF MAJOR PSYCHOSES

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A multidisciplinary study of the major psychoses was initiated in Nov. 1977. Approximately 100 psychotic patients are evaluated each year with the Present State Examination, a detailed psychiatric history and family history schedule, and longitudinal assessment of clinical change using instruments such as the Schedule for Affective Disorders Change scale. The patients are also studied with a variety of biochemical, neuroendocrine and neurophysiological measures. At intervals of at least one year, follow-up interviews will be collected. Specific research projects include: 1) comparison of various criteria for the diagnosis of schizophrenia; 2) stability of acute symptoms upon readmission; 3) comparison of symptoms, history, response to lithium of patients with schizoaffective illness, affective illness and schizophrenia; 4) H-reflex recovery curve as a function of psychiatric diagnosis; 5) prolactin and growth hormone response to apomorphine; 6) neuroleptic blood levels as a predictor of clinical response and correlate of serum

prolactin levels; 7) platelet and plasma monoamine oxidase activity in schizophrenia; 8) dose-response curves for effects of neuroleptics on serum prolactin levels and H-reflex in schizophrenics and controls; 9) serum DBH activity in psychotic depression; 10) effect of tricyclic anti-depressants on rat plasma prolactin levels following low dose or high dose 5-hydroxytryptamine; 11) super-sensitivity to serotonin agonists induced by para-dilorophenylalanime; 12) ability of dopamine agonists to decrease rat plasma prolactin levels; 13) effect of alpha-methyl-paratyrosine and monoamine oxidase inhibitors on serum prolactin levels in man.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Alcohol Drug Abuse & Mental Health Admin., National Inst. of Mental Health $212,840

2.0256,

INCEST AND FAMILY SEXUAL ABUSE

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This study intends to investigate the nature and incidence of sexual abuse in non-clinical population of college students. A specific goal is to determine what demographic and family characteristics tend to make respondents most vulnerable to childhood victimization. Another goal is to assess what factors contribute most to the trauma potential of the reported experiences.

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2.0257,

EPIDEMIOLOGY OF RECENTLY BEREAVED WOMEN

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This study has two major purposes: (1) to see if there are adverse physical and mental health effects associated with bereavement of sexagenarians; and (2) to identify factors associated with amelioration or aggravation of these health effects.

A prospective epidemiologic study is proposed of women 65 to 70 years of age; a group at high risk of becoming widowed. They will be interviewed before this event takes place and will be followed for two years after the death of the spouse. The major focus will be to study the health effects of this event, both physical and psychiatric and the factors that may mediate between the event and the effects. Data will be gathered from all of the women in this age group who are still married at the time of interview. Questions will concern health, social support systems, functioning, life satisfaction, and depression. As each woman becomes widowed, she will be matched to three non-widowed women, and they will be followed for a two year period. Each one will be interviewed five times (every 6 months) in addition to the baseline interview. Comparison will be made between the widowed and non-widowed and differences among the widow will be examined.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Alcohol Drug Abuse & Mental Health Admin., National Inst. of Mental Health $116,235

2.0258,

EPIDEMIOLOGICAL GENETICS AND FAMILY STUDY

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The major psychiatric disorders are both common and familial. Affected individuals tend to have immediate relatives who suffer the same type of disorder and many generations of a kindred may contain affected individuals. For some illnesses such as schizophrenia and the major affective disorders, there is evidence that both genes and environment are important. Our Center includes theoretical and clinical approaches to understanding this important phenomenon. New methods are being developed for the measurement of early environmental factors and the way in which genetic and environmental factors interact to produce disorders is also being studied. Projects which improve methods for the assessment of early family environment; a study of the genetics of pre-senile and senile Alzheimer's dementia; and several theoretical projects whose goal is the development of new statistical approaches to gene-environment interactions are included. In addition there is a core of essential personnel who offer guidance to other Center members. New Projects are being developed and will be submitted for approval.

An important Center activity is the participation of many professionals from diverse disciplines in an educational and training program. The result has been an exciting, intellectual environment and the creation of new approaches to an age old problem.

BIBLIOGRAPHIC REFERENCES: Reich, T., Rice, J., Cloninger, C.R., Wette, R., James, J. The use of multiple thresholds and segregation analysis in analyzing the phenotypic heterogeneity of multifactorial traits. Ann. Hum. Genet. 42:371-390, 1979. Suarez, B.K., Rice, J., and Reich, T. The generalized sib pair IBD distribution: Its use in the detection of linkage. Ann. Hum. Genet. 42:87-94, 1979.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Alcohol Drug Abuse & Mental Health Admin., National Inst. of Mental Health $302,220

2.0259,

PSYCHOLOGICAL DISTRESS AND HELP-SEEKING BEHAVIOR

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The purpose of this research is to analyze data that have already been collected on the experience of psychological distress, recognition of the need for help with emotional problems and help-seeking for emotional problems. These data will be linked to other data on the same respondents that were collected prior to the data on psychological distress. Sociodemographics, sociomedical indicators, and data on social supports and health orientations are included in the earlier data set. Taken together, these data sets permit two types of analyses. First, descriptive analyses of the distributions of psychological distress, recognition of need for help with emotional problems will be undertaken. Secondly, predictive analyses of the determinants of the recognition of need for help with emotional problems and help-seeking will be conducted.

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2.0260,

ANOREXIA NERVOSA - PREVALENCE, DETERMINANTS, TREATMENT

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The prevalence of anorexia nervosa will be determined by using height and weight data and scores on an eating attitudes test (EAT) from a sample of 8,000 students. Individuals whose data suggests eating disorder will be clinically interviewed to confirm the diagnosis. Similar data will be obtained from all students attending ballet schools (N equals 400) in order to determine whether anorexia nervosa is increased in adolescents who must focus increased concern on body size.

Patients with anorexia nervosa have previously been shown to display disturbances in body image and interoception. At present, little is known about the development and long term stability of these disturbances. Subjects with anorexia nervosa, obesity and controls will undergo perceptual testing weekly for 4 weeks. Personality, eating habits, weight and menstrual function will be assessed through the study period in order to more fully understand the perceptual disturbances.

While much speculation has focused on the role of the family in the development of anorexia nervosa, there has been no systematic study of this area. Parents of anorexic patients and controls will be studied in terms of their body perceptions, personality, attitudes to eating and weight and their interrelationships on the course of the disorder.

There is agreement that weight restoration is an important aspect of the treatment of anorexia nervosa. However, after weight is regained the role of further therapies is not known. After impatient weight restoration, anorexic patients (N equals 60) will be randomly assigned to different treatment groups (family therapy, individual supportive psychotherapy or referral back to family doctor). Measures of clinical change in the patient, her family and perceptions will be taken yearly for 3 years.

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2.0261,

TYPOLOGY OF VIOLENT DEATH

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The goal of the proposed study is to develop a typological description of individuals who die violent deaths: accident, suicide and homicide. The typological description will be based upon the premise that violent death occurs as a result of a complex interaction among a) environmental influences, b) personal characteristics and c) the occurance of stressful life events. As such, violent death is conceptualized as a multidimensional, multidetermined phenomenon.

Traditionally, past research has focused on the study of a single mode of violent death, as if each mode were unrelated to others. Another problem has been the choice of populations to study. Despite the fact the minority group persons are known to be disproportionately involved in violent death, little scientific knowledge exists concerning the interaction between racial and ethnic group status and violent death. The proposed study will address these two deficits, particularly the racial and ethnic group dimensions, by focusing on a representative sample of all persons who die violent deaths during a three year study period in three urban cities. Of particular interest is the Spanish-heritage population as it is dispersed throughout the Southwest United States. Thus, collection of data will occur in Los Angeles, Denver, and Albuquerque on the basis of a) environmental data based on 974 census tract areas in these three cities, b) individual subject-victim data based on a 'dimensions' evolved from a) above and c) stressful life event data and other psychological data forthcoming from interviews with significant others. Cluster analysis will be employed to develop a social area analysis of the three cities and person cluster analysis will result in a typology of victims of violent death. These person-types, or groupings of persons based on their relation to census tract variables, will be the basis of other comparative analyses. The potential importance of the proposed work is chiefly in its promise of providing a valuable description of violent death, not only to enhance our basic understanding of these phenomena but such a typology also would aid in locating and identifying prevention services.

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2.0262,

EPIDEMIOLOGY OF DEPRESSION IN TWO URBAN POPULATIONS

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Proposed is collaborative secondary analysis of data banks acquired in large scale psychiatric epidemiological investigations of two samples of the New York City population: 1. The twenty-year follow-up of the Midtown Manhattan Study panel (N equals 695) interviewed in 1954, at age 20-59 and again in 1974, at age 40-79. 2. The cross-sectional study of a city-wide geriatric sample (N equals 447), age 65 plus, conducted in 1975 by the Department of Geriatric Research (DGR) in the New York State Psychiatric Institute.

Primary focus will be on comparisons of the 'old old' (72-79), the new elderly (65-71), with their juniors in the Midtown Longitudinal Study (MLS) panel, their seven kinds of morbidity outcomes, including depressive manifestations, present at 1974 follow-up. A large series of their potential social and existential predictors (antecedents) of morbidity identified at four different stages of the life history from the pre-adult onward will be statistically evaluated, using a number of multivariate methods.

Points in the DGR sample of substantive and methodological congruence with those of the geriatric segment of the MLS panel will be analyzed for (1) similarities and differences that may enlarge epidemiological knowledge, (2) relevance for collaborative designing, instrumentation and implementation of a terminal follow-up of the Midtown panel in 1984.

The analyses will also be targetted toward estimating future service needs in the urban geriatric population, and toward providing guidelines for planning preventive measures to reduce the high rates of a series of geriatric morbidities.

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2.0263,

VULNERABILITY FOR DEPRESSION

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The purpose of this proposal is to complete data collection and data analysis for an epidemiological pilot study on a community sample of approximately 1500 persons. The basic goal is to test hypotheses about the antecedents for depression, i.e. to identify factors which characterize people who are likely to become depressed in the future. Most of the Ss have already been assessed on a wide range of measures. They will be followed for one year during which time their depression level will be monitored on a monthly basis. Clinical assessments will be done on subjects who become depressed during the course of the study. Comparisons will be made between the latter and a control group of Ss who do not become depressed. Groups will be further divided into those who do and those who do not have a previous history of depression. While the data will be used to test substantive hypotheses, the major goal is to test the over-all methodology prior to launching a larger longitudinal, prospective epidemiological study of depression.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Alcohol Drug Abuse & Mental Health Admin., National Inst. of Mental Health $6,609

2.0264,

HOME SLEEP DIAGNOSIS FOR THE AGED

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Epidemiological data suggest that, especially among the aged, sleep complaints predict several percent of all deaths. Use of sleeping pills is associated with further increases in mortality. Nevertheless, we do not know the prevalence of objective sleep disorders among the elderly, the causal mechanisms of sleep disorders in mortality, or the balance of benefits and risks in long-term use of prescription hypnotics. We lack this crucial knowledge although 10-30% of our population complains of insomnia or uses prescription hypnotics. It has been difficult to study sleep problems scientifically due to a lack of convenient, inexpensive recording metnods. This study will pioneer and evaluate a home and ambulatory diagnostic approach for sleep disorders among the elderly. Further, we will estimate the nature and prevalence of sleep disorders among the elderly in the San Diego Community. With the validation of home recording methods, the cost of scientifically diagnosing sleep disorders can be reduced by about 90%. Three home sleep recordings and one laboratory sleep polysomnogram will be made on each of 240 elderly volunteers. Reliability of measurement of sleep time and reliability of diagnosis will be evaluated between home and laboratory recordings and between sequential home recordings. Home recording techniques will be applied in future experiments to determine the true prevalence of sleep disorders, their role in population mortality, and the benefits and risks of hypnotic drugs.

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2.0265,

LOCAL ECONOMY, STRESS AND MENTAL HEALTH

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The purpose of this project is to investigate the relationship between changes in the structure of the economy of a local community and the impact which that has on the utilization of mental health services. The present project carries out its task by building statistical models to investigate the relationships extant in a very extensive data set containing information on a wide array of mental health service users in Fitchburg, Massachusetts, and in depth information on the changing structure of the local economy. The data set used extends back over a period of 27 years and contains information gathered monthly. In addition to exploring the primary relationship between economic change and mental health service utilization, the project looks at the secondary but equally important matter of the ways in which the mental health service system itself reacts to changing utilization patterns. This is accomplished by the use of data on the number and discipline of mental health professionals working at the local mental health center. This data too is gathered on a monthly basis.

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2.0266,

EPIDEMIOLOGY OF DEPRESSION AMONG AMERICAN INDIANS

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This project is a proposal to study the epidemiology of the spectrum of depressive reactions in American Indian cultures. Since there is substantial evidence that cultural differences among American Indian tribes significantly effect behavior patterns and depressive reactions, this study is designed to compare the epidemiology of depression in a major southwestern tribe, the Papago, and a tribe of the northern plains, the Oglala Sioux. The research will be sponsored by the Department of Psychiatry at the University of Oregon Health Sciences Center in affiliation with the White Cloud Center for Mental Health Research and Development for American Indians. Selected staff members of the White Cloud Center, who have developed active collaboration with the Indian communities, will become project staff through the affiliation between the White Cloud Center and the UOHSC.

The research proposal involves utilization of the Psychiatric Epidemiology Research Interview (PERI). This instrument will be pretested in the Indian communities with a lexicon development of the individual subscales. After cultural sensitization of the PERI, research application will be made to five index and one community subject group. The five index groups include patients from the medical clinic, mental health clinic, law enforcement probation service, alcohol treatment program, traditional Indian medicine men. Special consideration will be given to prevent an overprediction of psychiatric illness from high subscale scores that reflect psychophysiologic distress to physical illness.

The data analysis will provide a description of the epidemiology of the spectrum of depressive reactions in these American Indian cultures with consideration for depressive responses in physical illness, stress reactions, primary psychiatric illness, antisocial behaviors, substance abuse, and special cultural syndromes.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Alcohol Drug Abuse & Mental Health Admin., National Inst. of Mental Health $57,295

2.0267,

EPIDEMIOLOGY OF PSYCHIATRIC NEED AND PRIMARY CARE

D. Mechanic, Rutgers the State University of New Jersey, New Brunswick Campus, Graduate School of Social Work, *Old Queens Bldg., New Brunswick, New Jersey* 08903 (R01 MH 33940-01)

This project examines the effects of psychological disorder and social need on patterns of medical care utilization, physician disposition of patient problems, treatments provided, and processes of referral to psychiatric services. Three samples were surveyed in a population area that was substantially rural but served by a single large multispecialty group practice: a sample of 1026 persons representative of the community population, 114 patients in this population seeking psychiatric care, and 316 Medicaid recipients residing in the same geographic area. Data from patient interviews have been merged with information from medical and pharmaceutical records for the 12-month period following interview. Psychological disorder, social need, sociodemographic characteristics, and group structure variables are used as predictors of patterns of utilization of medical and psychiatric services, disposition and referral by primary care practitioners to specialized psychiatric services, prescription of psychoactive drugs by primary care physicians and psychiatrists, and use of nonprescription drugs. Patterns are examined in relationship to various financial arrangements for services including prepaid group practice and fee for service, and whether the patient receives medical care from the centralized clinic or from its satellites. A major focus of the study is the way in which management of psychological disorder and social need by the mainstream medical care system affects patterns of subsequent utilizattion of medical resources and patient outcomes.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Alcohol Drug Abuse & Mental Health Admin., National Inst. of Mental Health $56,561

2.0268,

NIMH-CRB PSYCHOBIOLOGY DEPRESSION PROGRAM - CLINICAL

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The proposed new investigations will employ clinical psychopathological and genetic-familial methods in a sample of over 1,000 patients. Our efforts thus far have resulted in clarification of issues regarding classification, diagnosis, and etiology of affective disorders.

Psychopathological and genetic methods have been refined, especially those methods pertinent to testing the validity of nosologic classes. The results from our Pilot Clinical Study of 150 inpatients provide information as to frequency and intensity of symptoms and relative diagnostic occurrence of major nosologic classes within the affective disorders. Further progress in testing of hypotheses requires comprehensive and complex designs for studying large samples of patients, relatives and normals.

This research grant application proposes two major sets of studies - clinical psychopathology studies and genetic and family studies. The basic hypothesis common to sets of studies is that the affective disorders are heterogeneous as regards etiology, clinical features, and response to treatment. Precisely defined homogeneous nosologic classes, validated by multiple external correlates, will facilitate identification of risk factors for epidemiological studies, and verification of hypotheses as to etiology and pathogenesis.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Alcohol Drug Abuse & Mental Health Admin., National Inst. of Mental Health $309,515

2.0269,

FURTHER STUDY OF ESRD CASES AND CONTROLS

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The proposed study is a pilot study which exploits an unexpected research opportunity, the current ready availability of more than 50 analgesic users who report near-daily use for periods of one year or more and who have agreed to participate in this study. Cooperating matched controls are also available.

The analgesics used by these individuals are paraaminophenol, salicylate, and salicylic in a variety of over-the-counter products legally purchasable without prescription. Sustained near-daily use of these products puts the user at increased risk of serious adversity, meets the federal definition for polydrug abuse and in some cases qualifies as drug dependence. However, very little is known about such users in the United States.

Interviews with users and controls will produce a more detailed description of the nature and course of sustained PAP-S-SA analgesic use than is presently available. They will also permit tests of several epidemiological and sociological hypotheses about the mode of spread and the genesis, maintenance and cessation of sustained use. The resulting information will be of great value in developing and applying programs of prevention to reduce the incidence and duration of such use.

The proposed study will make use of a case history without controls research design and a case-control research design to investigate the nature, course,

and mode of spread of such use, and to test the selected hypotheses. These hypotheses concern the intrafamilial and extra-familial environments of the users and controls (prior to onset of sustained use), and the status inconsistency of these subjects. In addition, the study offers a test of Charles Winick's 'sociological theory of the genesis of drug dependence.'

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2.0270,

THE MENTAL HEALTH OF RESIDENTS NEAR THE THREE MILE ISLAND REACTOR - A COMPARATIVE STUDY OF SELECTED GROUPS

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There is a specific need to act with urgency in obtaining information about the impact of this nuclear incident as a near catastrophe upon the emotional and psychological health of the workers and citizens in the surrounding areas. It is imperative that information be obtained as quickly as possible about this incident because no research data are available in this specific realm of health activity. It is especially desirable to sample persons at special risk from an affected population in comparison with control subjects in order to provide factual evidence concerning: (a) the impact of stress from disasters and disastrous events; (b) variables which mediate the stressfulness of the event; and (c) the stability of the mental health changes over time. The objective of the study is to assess the mental health of persons exposed to a potentially disastrous event with a unique configuration of problems. The study should provide data which could be of use in understanding emotional reactions to extremely stressful events and, in particular, to gauging the mental health impact of such potentially catastrophic events as nuclear accidents. Specifically the contractor shall: 1. Develop methods of assessing the mental health functioning of high-risk groups in the population. 2. Identify variables which would be likely to mediate the stressfulness of the accident. These variables should include changes in social networks and perceptions of danger. 3. Conduct a study which will adequately assess responses at crucial time periods following a disastrous event. 4. Delineate the sampling frame and the means by which it is chosen. 5. Designate a comparison or control community and provide a rationale for such a choice.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Alcohol Drug Abuse & Mental Health Admin., National Inst. of Mental Health $374,948

2.0271,

ADOLESCENTS AND ADULTS AT GENETIC RISK FOR PSYCHOSIS

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OBJECTIVE: To monitor the development of 193 children with a psychotic parent genetically at high risk for adult psychosis (experimental group) through a period of three years and to compare and contrast their development with 98 children of physically ill (mainly tuberculous) parents (comparison group) and with 138 children of parents who have experienced no significant mental or physical illness (control group), making a total of 429 children. All of these, currently ranging in age from 7 to 31 years, together with every member of the intact nuclear family group, have already been intensively and extensively studied along a number of different parameters (demographic, physical, psychophysiological, 'anthropological', psychiatric, psychological, experimental, and social), and based on these, prognoses have been made as to immediate and remote expectations of psychiatric disorder. The oldest children in all three groups (19 to 31 years and 186 in all) will be passing through a critical period for the genesis of certain types of psychosis, the incidence of which is less than 1 percent for the general population. Three index members have already sustained fully documented 'breakdowns' with hospitalizations, whereas the incidence in the comparison and control groups has so far been nil. These prospective investigations of psychosis in the making should throw light on the antecedent variables involved in prediction and help in the early recognition of vulnerable subjects. About one-third of the experimental group has undergone some form of preventive intervention, the efficacy of which is also under consideration.

BIBLIOGRAPHIC REFERENCES: Anthony, E. J. Childhood Developmental Stresses. In Wolman, B. (Ed.), International Encyclopedia of Psychiatry, Psychology, Psychoanalysis, & Neurology. Boston: Van Nostrand/Reinhold, 1977. Janes, C.L., Hesselbrock, V., and Stern, J. A. Parental Psychopathology, Age, and Race as Related to Electrodermal Activity of Children. Psychophysiology 15: 1, 1978.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Alcohol Drug Abuse & Mental Health Admin., National Inst. of Mental Health $272,242

2.0272,

ECONOMIC ANTECEDENTS OF BEHAVIORAL DISORDER

C.D. Dooley, University of California, Irvine Campus, Graduate School, *Irvine, California* 92664 (R01 MH 31499-02)

The proposed research will measure the relationship between changes in economic and demographic sub-groups of the population. The independent economic variables will include measures of change in the size and structure of the Washington County, Maryland economy as well as more intuitively predictive measures such as unemployment and inflation.

Several groupings of industrial sectors (e.g., basic industries, service industries) as well as the sum of all sectors will be used as independent measures. The dependent survey measures will include scores on stressful life events instruments, mood scales, psycho-physiological symptom scales and mental health case openings.

The life event, mood and symptom variables will be constructed from existing data collected in a 20-month epidemiological survey conducted by the Johns Hopkins School of Hygiene with NIMH funding. Case openings data are available from the providers of mental health services.

The strength of relationship between the dependent and independent measures wil be measured with cross-lagged correlational techniques for each demographic subgroup.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Alcohol Drug Abuse & Mental Health Admin., National Inst. of Mental Health $17,186

2.0273,

SCHIZOPHRENIC OFFSPRING FROM BIRTH TO ADULTHOOD

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This project will evaluate the adult outcomes and life histories of 24 offspring of schizophrenic and nonpsychotic mothers, who have been studied since their births in 1952-1953, and 1959-1960. The studies will test the hypothesis that specific neurointegrative disorders in infancy predict vulnerability to schizophrenia and to cognitive disorders characteristically found in schizophrenics and their first degree relatives. Neurointegrative disorder, abbreviated as Pandevelopmental Retardation (PDR), e.g., transient dysregulation of motor, visual-motor, and physical development, between birth and 2 years, was significantly related to maternal schizophrenia (X to the second power, p is less than .05) but not to obstetrical complications. The severity of PDR was significantly related to psychiatric morbidity (including schizophrenia) at 10 years (X to the second power, p is less than .01).

The studies proposed include (1) independent diagnostic evaluations of the rearing families, and the 24 subjects at age 20-23 years; (2) independent psychometric assessments of the subjects, their siblings, and their rearing families, including MMPI's and measures of disordered thinking, communication deviance, morbid thought content, and distorted visual-motor productions; (3) analysis of the changes in psychopathology and adaptation of the subjects, in relation to their life experiences; and, (4) analysis of adult outcome, in relation to (a) the chronicity of maternal schizophrenia; (b) the severity of PDR in infancy; and (c) the evidence of psychopathology and disordered communication in the rearing families (including 6 adoptive families). The data should facilitate comparison with the larger studies of children at risk, who have been followed for shorter periods. The long-term goal is to identify infants vulnerable to schizophrenia, and to study the underlying biological and pschological mechanisms during the period when intervention may be most effective.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Alcohol Drug Abuse & Mental Health Admin., National Inst. of Mental Health $41,493

2.0274,

AN EPIDEMIOLOGICAL STUDY OF ATYPICAL SCHIZOPHRENIA

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Our purpose is to gather comprehensive epidemiological data on 310 'atypical schizophrenics' in a longterm follow-up and family study. Procedures designed in the Iowa 500 Research Project, a study of the major psychoses now nearing completion at University of Iowa Psychiatric Hospital (IPH), give us highly effective methods for tracing and personally interviewing subjects as well as extensive procedures for data management and analysis.

In the Iowa 500 study, we used specified research criteria to select nuclear groups of 200 schizophrenics, 100 manics, and 225 depressives from patients consecutively admitted to IPH between 1934-1944. In the same population, 310 carried a chart diagnosis of schizophrenia but failed to meet the research criteria, chiefly for short duration of symptoms, episodic course, or mixed schizophrenic and affective symptoms. These 310 atypical schizophrenics and their families, plus a stratified random sample of 176 surgical controls and their families comprise the study sample. The control group provides baseline for comparison and maintains blindness in data collection.

Our aim is to identify homogeneous subgroups within the atypical schizophrenics by analyzing all follow-up and family data. We will compare these subgroups with any homogeneous subgroups we identify within the typical groups of schizophrenia and affective disorder. Using all available information we will identify homogeneous subgroups within the major psychoses. Finally, we hope to use the results of our analysis to refine the research criteria for selecting pure subgroups in future biological and psycho-social studies.

BIBLIOGRAPHIC REFERENCES: Tsuang M.T., Woolson R.F. (1978): Excess mortality in schizophrenia and affective disorders: Do suicides and accidental deaths solely account for this excess? Archives of General Psychiatry 35:1181-1185. Winokur G., (1979): Unipolar depression. Is it divisible into autonomous subtypes? Archives of General Psychiatry 36:47-52.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Alcohol Drug Abuse & Mental Health Admin., National Inst. of Mental Health $232,070

2.0275,

CHROMOSOME ABNORMALITY AND BEHAVIORAL VARIATION

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The research aims of this study are to relate the new areas of cytogenetics and human behavior genetics to problems in normal human development and psychopathology. We are investigating the nature of the relationship which might exist between the sex chromosome aneuploides in males (i.e., XXY, XYY) and subsequent personality development. Infants with these chromosome lesions and infants serving as controls were located through a chromosome screening of male neonates. These infants and children are being followed in a long-term developmental study with the aim of identifying reactive styles or developmental lags that might be related to the chromosome variations. The data, obtained through semistructured parental interviews (recorded verbatim) and direct observations of the child, are reduced to 16 operationally defined categories of behavior that represent the child's development and functioning in the most relevant aspects of psychosocial adaptation. Preliminary conclusions based on the systematic sampling method are tested independently by formal psychological testing and developmental assessments.

Considerable controversy has surrounded the issue of the possible relationship which might exist between certain sex chromosome variations and personality development. This controversy has resulted from the fact that much of the evidence suggesting

such a relationship has been obtained by surveying groups of individuals who demonstrated a particular personality deviation and finding an increased incidence of specific chromosomal aneuploidy among them. The natural history of unselected individuals who carry such variations remains largely unknown. Should long-term longitudinal studies of affected individuals reveal any developmental risk associated with the variation, this knowledge can be directed to helping these individuals overcome developmental lags and realize their full developmental potentials.

BIBLIOGRAPHIC REFERENCES: Walzer, S., Wolff, P.H., Bowen, D., Silbert, A.R., Bashir, A.S., Gerald, P.S. and Richmond, J.B.: A method for the longitudinal study of behavioral development in infants and children: The early development of XXY children. J. Child Psychol. Psychiat. 19:213-229, 1978.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Alcohol Drug Abuse & Mental Health Admin., National Inst. of Mental Health $157,401

2.0276,

EPIDEMIOLOGY OF DEPRESSION AND HELP-SEEKING BEHAVIOR

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This research examines the occurrence of acute and chronic depression in a large, heterogeneous metropolitan area. The major objectives are to assess causal factors and outcomes associated with this condition, including physical health status, life event stressors, social support networks, health care utilization, and help-seeking behavior. Longitudinal panel data will be used in linear structural relationship models to assess the relative effects of reciprocal causation between mental and physical health status. In addition, the mediating effects of social support networks in buffering between stress and psychiatric health status will be examined.

With the use of a prospective study design, a random sample of 1,000 adults representative of the Los Angeles county population are initially being interviewed in a household survey and followed up quarterly by telephone interviews. The final interview will be either face-to-face or telephone interview, depending upon random assignment. A control group of 250 additional persons will be used at the final interview to investigate panel effects. The major instrument for classifying depression will be the NIMH CES-D scale.

This project will examine the role of social support systems on the use or nonuse of community mental health and general medical resources by individuals identified as depressed. The relationship between cigarette smoking, alcohol consumption, and use of medications and depressive symptomatology will be examined.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Alcohol Drug Abuse & Mental Health Admin., National Inst. of Mental Health $261,777

2.0277,

MEASURES OF UNTREATED PSYCHIATRIC DISORDER

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The proposed research focuses on the central unsolved problem of psychiatric epidemiology, the problem of how to measure psychiatric disorders independently of treatment status in the general population. Its major aim is to test the sensitivity and specificity of the newly developed Psychiatric Epidemiology Research Interview (PERI) as a first-stage instrument to screen functional psychiatric disorders among adults in a demographically complex urban population.

To this end, two field operations would be conducted. In the first, we would investigate PERI's relationship to other potential screening instruments of a sample of 600 adults from the general population and calibrate PERI on a sample of 500 psychiatric patients with diagnoses of schizophrenia, affective psychosis, neurosis, anti-social personality, and other personality disorders. In the second field operation, we would examine PERI's relationship to two diagnostic instruments, the Present State Examination (PSE) and the Schedule for Affective Disorders and Schizophrenia (SADS). In this second study, interviews would be conducted with a full probability sample of 1400 adults from the general population. The research setting for these investigations would be Washington Heights, a section of Manhattan in New York City that surrounds the Columbia Presbyterian Medical Center. It is a demographically complex urban area containing large percentages of black and Puerto Ricans as well as members of more advantaged ethnic groups.

The results should provide a textbook example of the development and testing of a two stage procedure for case identification and classification. The findings should also be important for needs assessment and to the planning and evaluation of mental health service in Washington Heights.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Alcohol Drug Abuse & Mental Health Admin., National Inst. of Mental Health $291,053

2.0278,

PSYCHIATRIC IMPAIRMENT IN URBAN CHILDREN OVER TIME

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Aims for the coming year include: 1. Development of a screening instrument with both concurrent and prognostic power for diverse outcomes by age-sex cohorts; 2. development of an instrument for measuring components of childhood depression; 3. investigation of stability and developmental change within environmental contexts; 4. investigation of historical change in child and parental behavior by ethnic background and sex of child; 5. determination of the extent to which the predictive power of the independent variables is a function of their stability; 6. comparison of causal models which postulate duration (additive effects over time) vs. change over time as critical in the developmental process; 7. development of the best causal models using path-analytic techniques for the major types of child pathology - anxiety, depression, aggression, antisocial behavior, and mentation problems; 8. construction of a more refined model of the stress-strain relationship, by utilizing specific stress scores for marital, parental, demographic, and physical illness stress; 9. examination of the age, sex, ethnic and SES moderators of the stress-strain relationship and predictive courses; 10. to better understand environmental moderators of change, investigate why improvement of poor or minority families does not improve child behavior outcomes, while deterioration of white affluent families doubles their children's poor outcome rate; 11. preparation of book manuscript which represents the major findings of the longitudinal analysis and a conceptualization of the types of psychopathology and types of environments of children and adolescents.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Alcohol Drug Abuse & Mental Health Admin., National Inst. of Mental Health $13,852

2.0279,

HEREDITY, ALCOHOL USE, TEMPERAMENT & CHD RISK FACTORS

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The purposes of this study are to continue developing a survey approach to sampling sets of families in a given population to estimate the amount of genetic contribution to a variety of health-related variables for the purposes of (1) removing the effects of the genetic variance from alcohol-related traits and testing for environmental relations and (2) creating models for estimating heritability of given traits of interest.

The first objective then is methodological: (1) to validate the 4-person Family Set Method by use of genetic markers, and (2) vary the composition of Family Sets to include multiple sibs and first cousins and compare results on genetic markers to simple four-person Sets. The second objective would be to estimate the roles of nature-nuture in alcohol usage, cardiovascular health-risk factors, and specific temperaments, e.g., Extraversion-Introversion and Neuroticism. The third objective is to statistically standardize or remove the genetic effects, if any, and test for relationships among alcohol usage, temperaments, family behavior, health risk factors and demographic categories.

The study sample will be Family Sets (Index, sib, first cousin, unrelated person) drawn from (1) Cardiovascular Exam I (1960-61), and (2) from Cardiovascular Exam II (1963-65). About 265 Sets (after losses) are available with questionnaires collected in 1977 with data on alcohol usage, temperament, and health habits.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Alcohol Drug Abuse & Mental Health Admin., National Inst. on Alcohol Abuse & Alcoholism $68,986

2.0280,

A NATURALISTIC STUDY OF FAMILIES IN TREATMENT

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The proposed research has as its major objective the investigation of the relationship between religion, ethnicity, and family response to alcoholism. Within certain religious and ethnic groups I will: a) examine the role of drinking patterns in both conflicted and non-conflicted families of similar socio-economic characteristics for an assessment of how drinking patterns relate to the totality of family interaction and life style, and under what conditions alcohol consumption becomes a 'problem'; b) compare conflicted families where there is no alcohol problem with conflicted families of similar socio-economic characteristics where there is an alcohol problem. One result of this inquiry will be a clearer understanding of the role that problem drinking plays in family conflict.

Field methods to be used will be in-depth, on-going interviewing of 60 selected families in two religious groups. Participant-observation activities in the two parishes will also be used to a limited extent.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Alcohol Drug Abuse & Mental Health Admin., National Inst. on Alcohol Abuse & Alcoholism $0

2.0281,

PROBLEM DRINKING, DELINQUENCY, AND MATURATIONAL REFORM

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The study investigates the dimensions and determinants of adolescent problem drinking and delinquency involvement. Of principal concern is the study of social maturational development and reform as this relates to involvement in and the cessation of adolescent problem drinking, and the impact of legal intervention in the lives of adolescents. The major focus is upon differential degrees of involvement in and attachment to conventional social institutions and people, and commitment to conventional educational and occupational career lines. Specifically, a major objective is to provide longitudinal baseline data on the developmental nature of adolescent ties to the family, the school, religion, the world of work, the community and the peer group. A second major objective is to establish empirical links and associations between these ties, various personal controls and belief systems relating to the law, religion, and perceived consequences of alcohol use and abuse, behavioral variables, and problem drinking. The research is a panel study involving a cohort of high school youth over a four-year period. Data sources include a questionnaire survey, and scho l and juvenile court records. Primary goals include theoretical development and refinement and policy recommendations.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Alcohol Drug Abuse & Mental Health Admin., National Inst. on Alcohol Abuse & Alcoholism $32,051

2.0282,

ALCOHOL INTAKE IN PREGNANCY AND OFFSPRING'S DEVELOPMENT

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In 1974 a longitudinal prospective study was undertaken to investigate the effects of social drinking on the outcome of pregnancy and the health and development of the offspring. Women who had registered for prenatal care by the 5th month of pregnancy were interviewed regarding their use of alcohol, nicotine, caffeine and drugs.

A variety of behavioral and developmental measures were obtained on subjects of these infants, including operant learning studies, Brazelton Neonatal Behav-

ioral Assessments, naturalistic observations and dysmorphology examination. The Bayley Scales of Infant Mental and motor Development were given when the follow-up cohort of 500 were 8 and 18 months of age.

The present project will examine the follow-up cohort of 500 children, at age four years. The following types of assessments will be used: Intelligence tests, behavior rating scales, psychiatric check-list, health questionaire, anthropomorphic measurements, naturalistic observations, motor tests, and dysmorphology examinations.

The 4-year old data will be studied in terms of maternal alcohol use (adjusting for smoking, caffeine use, and drugs) and in terms of the relationship to earlier behavioral and developmental indices.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Alcohol Drug Abuse & Mental Health Admin., National Inst. on Alcohol Abuse & Alcoholism $140,645

2.0283,

MATERNAL DRINKING, FETAL DAMAGE, AND CHILD DEVELOPMENT

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The Maternal Drinking, Fetal Damage and Child Development Project has two primary goals: (1) to study the relationship between maternal drinking patterns and the risk of fetal malformations, concentrating particularly on the fetal alcohol syndrome, and (2) to explore the relationship between alcohol consumption and subsequent child development.

These data should provide a more complete understanding of the risks of maternal drinking during pregnancy, and of the fetal alcohol syndrome, its nosology, frequency and determinants. This study is being conducted at a municipal hospital which serves a population with high rates of alcohol consumption. All of the women who deliver at the Boston City Hosptial are interviewed about alcohol, use of other drugs, cigarettes, nutritional and health status before and during pregnancy. This cohort of approximately 2000 women includes women from all of the neighborhood health centers. In one part of the study, the 600 women per year who register at the Prenatal Clinic of the Boston City Hospital are interviewed. Intervention is offered for those women who drink heavily.

The larger cohort is being followed using both interviews and observation to assess general and neurological development, and mother-child interactions, in the first two years.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Alcohol Drug Abuse & Mental Health Admin., National Inst. on Alcohol Abuse & Alcoholism $243,409

2.0284,

A PROSPECTIVE STUDY ON FETAL ALCOHOL SYNDROME

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The proposed project is a six year, prospective study on the fetal alcohol syndrome. The overall goals of the study are to determine the incidence of fetal abnormalities secondary to excessive alcohol consumption, and to examine the efficacy of intensive alcoholism treatment in reducing the frequency of fetal anomaly. Four phases are proposed. The first is a Discovery and Screening Phase (2 years) using the Michigan Alcoholism Screening Test (MAST) as part of the high risk screening conducted by the prenatal clinic at Cleveland Metropolitan General Hospital (CMGH). During this period, pregnant women scoring positively and negatively on the test will be identified. Concurrently, the Treatment and Prenatal Monitoring Phase (2 years 9 months) will consist of randomly assigning positive MAST responders to high intensity and low intensity treatment and an equal number of negative responders to a non-alcoholic comparison group. In the low intensity group, routine prenatal monitoring and Alcoholics Anonymous are the only treatment modalities to be employed. In the high intensity treatment group, identified women will be enrolled in an intensive abstinence-oriented treatment program consisting of individual counselling, specialized group counselling and referred to Alcoholics Anonymous. Fetal outcome will be assessed in the low-intensity treatment group, the high intensity treatment group, and the non-alcoholic comparison group. Subgrouping will determine the results for individuals who accept or reject treatment. The prenatal monitoring will consist of monthly evaluations of volume and pattern of alcohol intake using the Volume Pattern Index; social, physical and economic factors using the Data Base Sheet for Alcohol Related Problems; monthly dietary assessment, monthly blood alcohol levels and routine prenatal monitoring as part of the antenatal clinic visit to CMGH through parturition. The Postnatal Outcome Analysis Phase (3 years) will involve physical, neurological and psychological examination of all study infants (alcohols and controls) to be done at birth, and ages 6 months, 1 year, 2 years, and 3 years. The Statistical Analysis Phase (9 months) will be major analysis on the data collected during the first three phases of the study. Quarterly reporting will occur throughout the six years of the study.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Alcohol Drug Abuse & Mental Health Admin., National Inst. on Alcohol Abuse & Alcoholism $188,392

2.0285,

A LONGITUDINAL STUDY OF CHILDREN OF DRINKING MOTHERS

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The interest in the effects of drinking during pregnancy has grown rapidly following the early publications on the fetal alcohol syndrome by Jones and Smith in 1973. The results of various studies to date suggest an adverse relationship of heavy maternal alcohol use during pregnancy on the offspring. There still remains, however, some unanswered questions such as: 'What is the effect of moderate drinking on the offspring? What are the possible synergistic effects of alcohol use with other substances such as smoking? What are the long term development effects of maternal alcohol use on the offspring? Does termination of maternal drinking during the early stages of pregnancy reverse possible adverse effects on the offspring? A five-year prospective study of 1,320 children ages 2 to 5 is proposed to provide information to help answer these questions. The 1,320 children are to be selected from an ongoing study of 10,000 pregnant women on whom we already have extensive prenatal, labor delivery and birth information. For each participate we will annually assess the home environment, parent-child interactions, demographic and psychosocial factors by means of a home interview. Physical and mental characteristics on each child will be assessed by a pediatric nurse and a psychometrician at the first and fourth year at a visit to our clinic. The study design calls for three different comparison groups which will provide data to determine the role that alcohol use during pregnancy played on subsequent development characteristics. By being able to provide data concerning the possible harmful effects of drinking during pregnancy on the offspring, information will be made available that can be used to initiate prevention programs to hopefully reduce morbidity and disability and cut the cost of care of premature infants in the community.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Alcohol Drug Abuse & Mental Health Admin., National Inst. on Alcohol Abuse & Alcoholism $104,459

2.0286,

ALCOHOLISM TRANSMISSION VIA FAMILY RITUAL

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This continuation application proposes a second study on family factors involved in the intergenerational transmission of alcoholism. In the initial study, families with alcohol abuse in two generations--transmitters--have been compared with families having only parental generation affected--non-transmitters. The characteristics of ritual behavior in daily life have been compared in both groups. The transmitter group has been found to develop a preponderance of rituals involving alcohol abuse, subsuming the normal ritual functions in family living. These families have been labelled 'subsumptive,' distinguishing them from 'distinctive' families where normal ritual behaviors do not include alcohol abuse. In transmitter families selective sibling involvement appears related to a second family factor--the continuation or rejection of the family's heritage. This is particularly true at the time of offspring marriage when the selection of a family identity for the new couple will normally allow one origin family or the other to predominate as the family of heritage.

In the proposed study we have revised our structured interviews and criteria for subject population to perform a within-family sibling comparison. The objective will be to assess the likelihood that each married child will repeat in the successive generation his parent's alcoholism. Siblings will be compared as to the subsumptiveness of their origin families and their family identity selection. Subjects will include thirty transmitter families with approximately ninety married couples and their parents, when available. Individual and conjoint couple interviews will be standardized and a manual will be prepared for rating origin family type and family identity selection. Drinking patterns of all family members will be separately assessed and scaled. A rating of the likelihood for alcoholism transmission for each sibling will then be compared with actual drinking behavior to evaluate the relationship between alcohol abuse rituals, family identity and the recurrence of alcoholism.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Alcohol Drug Abuse & Mental Health Admin., National Inst. on Alcohol Abuse & Alcoholism $132,023

2.0287,

ALCOHOL USE AND ABUSE AMONG URBAN WOMEN

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The proposed research represents an exploratory study concerned with documenting the use and abuse of alcohol and alcohol-related problems among urban women. The major goal is to provide reliable and valid estimates of what is increasingly recognized as a growing public health problem among women. Ultimately this will lead to more empirically based planning for services to women with alcohol problems. In essence, our goal is to provide a clearer picture of the epidemiology of alcohol problems among women. Specifically, we propose to: (1) develop new estimates of the prevalence of problem drinking focusing upon context-specific Q-F estimates and to measure the extent of 'hidden' drinking among women; (2) to compare the more traditionally used alcoholism prevalence estimator derived rates of alcohol problems with these newly developed measures; and (3) to account for the part which newly emerging sex roles among women play in alcohol abuse and alcohol problems.

The approach we propose is unique in that the methodology itself will be under scrutiny. Utilizing recently developed and validated telephone survey techniques, a survey will be conducted, consisting of two phases: a random telephone sample of 1,100 households will be utilized in order to screen women who are at 'risk' for alcohol problems, evidenced by moderate to heavy drinking, thus identified, these cases will be subjects for an intensive home interview. A special subsample of non-telephone households will be drawn to maintain a representative sample. Further, we will validate the use of responses obtained by telephone interviews with responses given in personal interviews, leading, ultimately, to more reliable and valid methods of estimating the prevalence of alcohol problems among women.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Alcohol Drug Abuse & Mental Health Admin., National Inst. on Alcohol Abuse & Alcoholism $64,904

2.0288,

COMMUNITIES, ALCOHOL POLICIES AND CIRRHOSIS MORTALITY

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The present study will examine the relationship between alcohol control policies, characteristics of counties, and sex and race specific liver cirrhosis mortality. Two methods of analysis, epidemioiogic case control and multiple regression will be compared to determine whether similar independent variables will be identified as associated with the dependent variable. The research will produce the following products: A compilation of the alcohol control policies of the 3,095 U.S. counties and 100 independent cities, an analysis of the relationship between county characteristics and their control policies, and an analysis of the interaction between con-

trol policies and community characteristics as they together affect cirrhosis mortality.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Alcohol Drug Abuse & Mental Health Admin., National Inst. on Alcohol Abuse & Alcoholism $48,285

2.0289,

FETAL ALCOHOL SYNDROME WORKSHOP

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We propose a workshop of about 75 scientists currently involved in research on fetal alcohol syndrome (FAS), teratogenic effects of alcohol and/or public health issues relating to alcohol use and abuse during pregnancy. The purpose of the workshop is to document the current state of knowledge regarding the teratogenic effects of alcohol and to propose new directions for future research.

We propose a 2-1/2 day workshop including the following sessions: Clinical aspects of FAS, human and epidemiologic studies, animal teratology and behavioral studies, biochemical studies, reports from 4 NIAAA-funded prospective studies. We propose to bring some researchers from out of the U. S in order to improve international understanding and cooperation in this important area.

Proceedings will be compiled in a book and submitted for the NIAAA Research Monograph Series.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Alcohol Drug Abuse & Mental Health Admin., National Inst. on Alcohol Abuse & Alcoholism $20,721

2.0290,

CENTER FOR THE STUDY OF ALCOHOLISM

R.U. Massey, University of Connecticut, Health Center, School of Medicine, Dept. of Psychiatry, *Farmington Ave., Farmington, Connecticut* 06032 (P50 AA 03510-03)

In a series of related and interrelated studies, we propose to examine genetic, behavioral, biochemical and psychopathological aspects of alcoholism. In a follow-up study of factor analytically derived typologies of male and female alcoholics, we propose to develop a multidimensional prediction model of treatment outcome empirically derived from an extensive data base of behavioral, sociological, psychopathological, demographic and pedigree assessments obtained from large sample of alcoholic patients. In some individuals, this will include a systematic assessment of tolerance. Patient outcome will be assessed periodically utilizing a broad range of outcome criteria and using a life insurance table approach to the assessment of 'risk' and 'treatment impact'. Separate prospective studies of antidepressant and lithium treatment will be carried out in a similarly designed format.

In addition to pedigree assessments, we propose to carry out a comparative prospective longitudinal study of young adult children of alcoholic and nonalcoholic individuals.

Finally, studies on the importance of stimulus control of drinking behavior in alcoholics and normal subjects will focus on respondent and operant conditioning in alcoholics. These studies will also be carried out in a clinically relevant context.

Findings from the proposed work should contribute to improved alcoholism treatment and prevention strategies and to greater understanding of the multivariate nature of the disorder.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Alcohol Drug Abuse & Mental Health Admin., National Inst. on Alcohol Abuse & Alcoholism $433,316

2.0291,

SOCIAL EPIDEMIOLOGY OF ALCOHOL PROBLEMS

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Four separate research projects are a part of the research center grant: 1. A study of community responses to alcohol problems involves description and analysis of all agencies dealing with alcohol problems in a study community. Formal treatment agencies are included, as are organizations such as AA, but also included are police, clergy and others who encounter alcohol problems. Community surveys of general populations will be included if possible. 2. An Historical Study of Alcohol Control policies in the U.S. is being undertaken using a combination of historical research methods and analysis of various official records. The intent is a description of the actors and interests who have played significant roles in the development of U.S. policies regulating alcohol use in the years since the turn of the century. 3. The Study of the Structure and Political Economy of the Alcoholic Beverage Industry makes use of published and unpublished data on production and distribution of alcoholic beverages plus materials from trade publications, various secondary sources, etc., to describe the interplay of production, consumption and regulation in the years since the repeal of Prohibition. 4. A study of Alcohol Use and Casualties is concerned with the relationships between alcohol use and such things as accidents, crime, and other casualties. Both aggregate level and individual level data (as from surveys) will be used to describe empirically the relationships among the rates of consumption and problems.

Projects 2-4 are part of an international study coordinated by WHO European Office which coordinates research on these same topics in Canada, Finland, Ireland, Japan, Netherlands, Poland, Switzerland and in the U.S.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Alcohol Drug Abuse & Mental Health Admin., National Inst. on Alcohol Abuse & Alcoholism $160,500

2.0292,

THE ETIOLOGY OF ALCOHOLISM

J.A. Carpenter, Rutgers the State University of New Jersey, New Brunswick Campus, Center for Alcohol Studies, *Old Queens Bldg., New Brunswick, New Jersey* 08903 (P50 AA 03509-03)

This prospective longitudinal study of the etiology of alcoholism began in its second year to accept its first participants, participants selected through random telephone interviews, followed by home visitis where consent was obtained to a full day's on-site visit. The participants, expected to number 325 in this budget year, provide personal data in the social-cultural, psychological, cognitive-perceptual and biological realms; the particular measures used were chosen to highlight differential responses hypothesized to play an etiological role in drinking problems. The study is projected to enlist over 5,000 adolescents to be seen at 3-year intervals until the age of 24, and thereafter at 6-year intervals. An additional 600 new participants are slated to be interviewed and tested in year 3. About 8,600 telephone interviews were necessary to obtain 325 subjects, representing more than one-third of age-eligible respondents; analysis of demographic and other data from this process reveals that participants do not differ from age-eligible non-participants, nor from the larger sample of ineligibles. This study is expected to identify predictive factors predisposing to alcohol abuse and alcoholism: such identification should make possible targeted intervention of persons at risk, prevention of development of alcoholism its goal. In the shorter term, the knowledge gained of the nature and extent of alcohol problems experienced by adolescents as they transit toward adult drinking patterns will help in the formulation of appropriate prevention strategies for specific problem complexes.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Alcohol Drug Abuse & Mental Health Admin., National Inst. on Alcohol Abuse & Alcoholism $0

2.0293,

EPIDEMIOLOGY OF CHANGES IN ALCOHOL CONSUMPTION

H.A. Mulford, University of Iowa, School of Medicine, Dept. of Psychiatry, *Jessup Hall, Iowa City, Iowa* 52240 (R01 AA 03829-02)

An investigation of the conditions and consequences of a dramatic increase in per capita alcohol sales in Iowa since 1958. A cross sectional survey replicating baseline surveys conducted in 1958 and 1961 will investigate changes in: 1) per capita consumption of alcohol; 2) the quantity/frequency dimensions of drinking patterns; 3) the dimensions of problem drinking; and 4) their social and attitudinal concomitants.

Additionally, large seasonal variations (both increases and decreases) in per capita consumption and its correlates will be investigated with a three stage, 12 month panel study. This will allow us not only to compare short with long term changes in consumption, but also to begin to untangle the complex causal chains among the factors affecting alcohol consumption, drinking patterns and problem drinking.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Alcohol Drug Abuse & Mental Health Admin., National Inst. on Alcohol Abuse & Alcoholism $135,002

2.0294,

DRINKING PATTERNS AMONG DISTRICT HIGH SCHOOL STUDENTS

F.S. Tesmer, Aurora Research Corp., *1029 Vermont Ave. N.W., Washington, District of Columbia* 20005 (R01 AA 03978-02)

The purpose of this study is to conduct an exploratory study of drinking patterns among District of Columbia high school students. The study is designed to: (1) provide detailed descriptions of drinking behavior by high school students in order to establish firmer norms for the prevailing drinking or non-drinking customs and norms; (2) examine some of the factors which influence or promote alcohol use, abuse or non-use among high school students in Washington, D.C.; (3) identify some of the problems associated with drinking; (4) generate descriptive baseline data required to develop treatment model(s) which considers the unique normative drinking patterns of high school students in the District of Columbia; and (5) make long-term predictions of the correlates and possible consequences of changes in specific types of drinking problems or potential problems.

The survey sample consists of a stratified random sample of approximately 300 students, enrolled in District of Columbia public high schools. The sample will be drawn from a population of approximately 23,033 students. The primary method of data collection will be personal or face-to-face interviews. Data reduction procedures will include frequency distributions, ANOVA and factor analysis.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Alcohol Drug Abuse & Mental Health Admin., National Inst. on Alcohol Abuse & Alcoholism $29,763

2.0295,

ALCOHOL AND THE STANDING ROCK SIOUX TRIBE

J.O. Whittaker, Pennsylvania State University, Capitol Campus, Graduate School, Dept. of Psychology, *Rte. 230, Middleton, Pennsylvania* 17057 (R01 AA 04078-01)

The proposed research has several objectives. Among these are: (a) to establish more clearly the cultural variables related to symptoms of alcohol dependence; (b) to document changes in the incidence of problem drinking and/or alcoholism in the Standing Rock Sioux Tribe over the past sixteen years; and (c) to compare the pattern of drinking with other major reservation tribes in the U.S., such as the Navajo.

Using an interview schedule modified from the one used in a previous study by the Principal Investigator, the actual interviewing will be done by Indian, rather than White, interviewers. Each interview will be tape-recorded and later transcribed. No record of the respondent's name will ever be made and all tapes will be destroyed following their transcription. Approximately 10 percent of the total reservation population will be interviewed (of those over 15 years of age). The total sample will include 200 subjects, equally divided between male and female. The number of subjects will be in the same proportion for sex, age, and geographical distribution in the sample as in the most recent census figures for the entire reservation population.

Statistics on the physical symptoms of alcoholism will also be collected by the Principal Investigator from the U.S.P.H.S. hospital on the reservation. In addition, 20-30 in-depth interviews will be conducted by the Principal Investigator with selected reservation residents. Finally, there will be an informal comparison of the findings with personnel on the large Navajo reservation in Arizona by the Principal Investigator.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Alcohol Drug Abuse & Mental Health Admin., National Inst. on Alcohol Abuse & Alcoholism $33,506

2.0296,

NUTRITIONAL FACTORS IN THE FETAL ALCOHOL SYNDROME

A.M. Huber, Eunice Kennedy Shriver Center for Mental Retardation, *200 Trapelo Rd., Waltham, Massachusetts* 02154 (R01 AA 03289-03)

The clinical studies are designed to identify the possible role of nutritional deficiencies, specifically vitamin and trace metal deficiencies in the production of abnormalities in offspring of women with excessive alcohol intake during pregnancy, to obtain information which may lead to possible prevention of the injurious effects of alcohol ingestion by pregnant mothers on the developing fetus.

In laboratory studies the role of trace elements and vitamins in the etiology and pathogenesis of the abnormalities in the fetus due to alcohol ingestion is being investigated.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Alcohol Drug Abuse & Mental Health Admin., National Inst. on Alcohol Abuse & Alcoholism $65,818

2.0297,

GENETIC AND EXPERIMENTAL ANTECEDENTS OF ALCOHOLISM

D.W. Goodwin, University of Kansas, Medical Center, School of Medicine, Dept. of Psychiatry, *39th St. & Rainbow Blvd., Kansas City, Kansas* 66103 (R01 AA 03448-02)

Many studies have indicated that children of alcoholics are at high risk for alcoholism. Based on adoption studies, it appears that the susceptibility to alcoholism among the children of alcoholics exists whether the children are raised by their biological alcoholic parents or by non-alcoholic adoptive parents. Perhaps 20 to 25% of the male offspring of alcoholics become alcoholic, based on studies conducted over the past century. The goal of this study is to identify predictors of alcoholism among the sons of alcoholics, with the first stage of the study being conducted before the sons have had extensive experience with alcohol. Numerous differences have been reported between alcohlics and nonalcoholics, but interpretation of these differences has been difficult because they may be accountable to the toxic effects of alcohol itself. This study contravenes this problem by studying children of alcoholics before they have drank enough to produce significant biological and psychological changes. The subjects were located through Danish registers as having had at least one parent hospitalized with a diagnosis of alcoholism. A matched control group consists of individuals without such a history. All of the subjects were a part of a large perinatal study conducted some 17 years ago in Denmark of 9,000 consecutive deliveries at a single hospital. Data gathered will be based on interviews, psychological tests, records, information from families and psychophysiological and electrophysiological measures. The first three years of the study consists of gathering the basic information about the subjects with an anticipated follow-up period of 10 or more years.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Alcohol Drug Abuse & Mental Health Admin., National Inst. on Alcohol Abuse & Alcoholism $177,524

2.0298,

PATHOLOGIC & TOXIC EFFECTS OF ALCOHOL

J. Wolf, City University of New York, Mount Sinai School of Medicine, School of Medicine, Dept. of Clinical Medicine, *5th Ave. at E. 100th St., New York, New York* 10029 (P50 AA 03508-03S1)

Our interdisciplinary team (with expertise in hepatology, gastroenterology, biochemistry, pathology, cardiology, community medicine, endocrinology, genetics, immunology, neurology and nutrition, pharmacology, psychiatry, surgery) will conduct studies in patients as well as in our experimental models of alcoholic injury in rats and baboons in which liver lesions seen in the alcoholic (including cirrhosis) were reproduced. We plan to assess biochemical differences between alcoholics and nonalcoholics and to apply these findings to the validation of a blood test for alcoholism. Alterations of alcohol metabolism and the role of protein retention, acetaldehyde toxicity and immunological reactions in the development of alcoholic liver diseases will be determined. The nature of the abnormality in collagen metabolism will be evaluated. We plan to study the pathogenesis of alcoholic fatty liver and to develop a blood test which might enable us, in a population of heavy drinkers, to detect those whose alcoholic intake has resulted in a significant liver damage beyond the fatty liver stage. We will also try to define a precirrhotic lesion which might allow us to predict which alcoholics might develop cirrhosis, thoreby enhancing our effectiveness in the prevention of this complication. Other attempts at prophylaxis will include the definition of nutritional and preexisting medical conditions that favor the development of cirrhosis and portal hypertension when associated with heavy drinking. Pathogenesis of alcohol induced muscle, intestinal and pancreatic lesions will be assessed, including the carcinogenic role of alcohol. Involvement of microtubular alterations in chromosomal abnormalities and their link to the fetal alcohol syndrome will be determined. Androgen and estrogen abnormalities associated with alcoholism will be evaluated through measurements of hormone levels and clearance rates in the blood and enzyme activities in the liver. Our baboon model will be made available as a resource to other interested investigators.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Alcohol Drug Abuse & Mental Health Admin., National Inst. on Alcohol Abuse & Alcoholism $68,335

2.0299,

NEUROBIOLOGY, GENETICS, EPIDEMIOLOGY AND ALCOHOLISM

S.B. Guze, Washington University, School of Medicine, Dept. of Psychiatry, *660 S. Euclid Ave., St. Louis, Missouri* 63110 (P50 AA 03539-02)

This is an application for an Alcoholism Research Center to carry out studies on the neurobiologic, genetic, and epidemiologic bases of alcoholism. The application comprises a core program and seven separate research projects. The Center will provide facilities and opportunities for research training related to alcoholism in a wide variety of disciplines; and residents in a number of medical specialties.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Alcohol Drug Abuse & Mental Health Admin., National Inst. on Alcohol Abuse & Alcoholism $373,376

2.0300,

DRINKING PATTERNS AMONG AMERICAN INDIAN WOMEN

D.E. Miller, Native American Resource & Research Associates, *Box 88, Pauma Valley, California* 92061 (R01 AA 04134-01)

The proposed research will center on four issues: (1) patterns of alcohol use among American Indian women of child-bearing age; (2) the effects of 'alcoholic' drinking upon the women and the health or development of their children, with special attention to 'fetal alcohol syndrome'; (3) the relationship between drinking behavior and anomie; and (4) the relationship between drinking behavior and identification with Indian tradition.

The study will perform a secondary analysis of comprehensive data previously compiled in a study of Indian child-bearing practices that used a sample of 100 Indian mothers with young children, half of them on reservations near San Diego, California, and the other half in the San Francisco-Oakland metropolitan area. The research instrument used in the previous study contained scales for measuring 'preoccupation with alcohol,' anomie, and attachment to Indian tradition. These scales, along with the empirical data, including data on the children's health and development, afford an adequate data base for the proposed analysis.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Alcohol Drug Abuse & Mental Health Admin., National Inst. on Alcohol Abuse & Alcoholism $52,815

2.0301,

EPIDEMIOLOGIC STUDIES IN DRUG DEPENDENCE

P.H. Hughes, University of Chicago, School of Medicine, Dept. of Psychiatry, *5801 S. Ellis Ave., Chicago, Illinois* 60637 (P01 DA 00250-080016)

This project is part of a broader program (DA 00250).

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Alcohol Drug Abuse & Mental Health Admin., National Inst. on Drug Abuse funds n.a.

2.0302,

A PANEL STUDY OF ADOLESCENT SUBSTANCE ABUSE CAREERS

E.R. Morrissey, University of Washington, Alcoholism & Drug Abuse Inst., *Seattle, Washington* 98195 (R01 DA 02151-02)

This research is a continuation of a project consisting of a follow-up of 1473 adolescents who have been previously interviewed regarding drug and alcohol use patterns and related problems. The project will isolate factors which contribute to the development of substance abuse problems in late adolescence and to their persistence into early adulthood. All of the high risk subjects, originally contacted when they were referred for alcohol counselling or held in juvenile court detention, are being interviewed in the follow-up study. The treatment agencies in which the baseline data were collected will cooperate in recontacting their clients.

Four specific sets of factors will be examined as predictive of stable heavy alcoiol and drug intake and of the development of resultant problems. Independent variables hypothesized to relate to substance abuse outcomes are: (1) prior psychiatric diagnoses; (2) seriousness of deviant history; (3) initial levels of substance intake and related problems and (4) sex role attitudes and behaviors. The effects of these independent variables will be examined controlling for the type of intervention to which the youths were initially subjected, and for demographic characterisics.

An assessment of the effects of these variables will allow for: (1) an evaluation of the relative importance of psychiatric and social histories in the development of symptoms of alcoholism or drug abuse in early adulthood; and (2) the establishment of psychiatric diagnostic criteria for alcoholism and drug abuse which will be useful in screening youthful populations.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Alcohol Drug Abuse & Mental Health Admin., National Inst. on Drug Abuse $125,285

2.0303,

DETECTION OF MUTAGENS IN BODY FLUIDS OF SMOKERS

G.J. Mc Garrity, Inst. for Medical Research, Dept. of Microbiology, *Copewood St., Camden, New Jersey* 08103 (R01 DA 02488-01)

Cigarette smokers constitute the largest population exposed to environmental mutagens and the largest population of drug abusers. Controlled, prospective studies have been designed to directly and indirectly detect mutagens in urine and blood of smokers and to determine if there is a genetic response to exposure to mutagens in cigarette smoke. Urine samples will be concentrated and assayed by the Ames procedure. Sister chromatid exchange, unscheduled DNA synthesis and chromosomal analysis will be performed on short term lymphocyte cultures. The results of Ames and the various cytogenetic assays will be compared to determine the relative effectiveness of the different assay systems. Results of these studies will yield meaningful data on the effectiveness of various assay systems to detect mutagenic activity in body fluids, and the role of host response to standard doses of mutagens in cigarette smoke. Procedures developed in this study will have practical application to assays for mutagens other than cigarettes.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Alcohol Drug Abuse & Mental Health Admin., National Inst. on Drug Abuse $120,085

2.0304,

INHALANT ABUSE AMONG YOUNG NATIVE AMERICANS

E.R. Oetting, Colorado State University, School of Natural Sciences, Dept. of Psychology, *Fort Collins, Colorado* 80523 (R01 DA 01853-02)

Two related research projects on drug use among Native American young people will be done--a longitudinal study and a cross-sectional survey. The longitudinal study will determine how drug use changes over time. Approximately 1800 young people from three large, geographically distinct tribal groups in grades four through twelve will be surveyed during the Spring semester of 1981 and later during the Fall semester of 1982. Each drug use type (for example, those who use both inhalants and alcohol heavily in the 7th grade) will be followed up to determine what their patterns of drug use are 2 1/2 years later. A wide range of factors will be assessed to identify

characteristics that predict later consequences, i.e., increased drug involvement or later avoidance including: age of first use, type and extent of early drug use, family and peer influences, reasons for using drugs, identification with Native American culture, anxiety/unhappiness, attitudes to deviance, etc. The cross-sectional study will be in in-depth examination of inhalant and PCP epidemiology, since increases in both are expected during the next three years. Geographic isolation and cultural characteristics of at least 12 tribal groups sampled over three years will be examined to test hypotheses about how drug use spreads across reservations. PCP and inhalant use will be examined in the context of other drug use and correlated with the above list of factors to determine what attitudes and social surrounding characteristics relate to their use. The total for both studies will be approximately 5120.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Alcohol Drug Abuse & Mentsl Health Admin., National Inst. on Drug Abuse $200,432

2.0305,

U.S.-MEXICO PROGRAM OF RESEARCH IN INHALANT ABUSE

M. Korman, University of Texas, Health Science Center at Dallas, Graduate School of Biomedical Sciences, Dept. of Psychology, *5323 Harry Hines Blvd., Dallas, Texas* 75235 (R01 DA 01977-01A1)

This investigation proposes to study various groups of U.S. and Mexico inhalant users in a series of joint and related studies focusing on young adults. We aim to: 1) Complete an ethnographic study of inhalant use consisting of (a) an analysis of individual users, (b) an analysis of the social context; (c) an analysis of the institutional framework which interfaces with inhalant users. 2) Evaluate the relationship of inhalant use and aggressive behavior; investigate aggressive responses in relationship to such variables as degree of frustration, range of coping strategies available, degree of impulsivity. Examine a number of personality variables to assess underlying psychological mechanisms. 3) Investigate the relationship of the development of tolerance for inhalants to patterns of inhalant use. 4) Describe the extent of psychological dependence upon, and commitment to inhalant use. Relate to sex and ethnic differences. 5) Quantify the extent of physical dependence upon inhalants and relate to patterns of use; chart clinical picture of withdrawal. 6) Evaluate biomedical and neuropsychological status of heavy inhalant users in comparison to other drug users.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Alcohol Drug Abuse & Mental Health Admin., National Inst. on Drug Abuse $134,607

2.0306,

SUBSTANCES ABUSE - SPONTANEOUS ABORTION & FETAL DEFECT

Z.A. Stein, New York State Psychiatric Inst., *722 W. 168th St., New York, New York* 10032 (R01 DA 02090-01)

The study will examine the role of the following substances in relation to spontaneous abortion and fetal defect: alcohol, aspirin, heroin, marijuana, methadone, and tranquillizers. Two approaches will be taken.

First, substances which are associated with spontaneous abortion will be identified through a comparison of the karyotypic and morphologic characteristics of the conceptions of exposed and unexposed parents.

For each substance, the duration of exposure, the timing in relation to conception and the parent involved will be considered.

The proposed study will extend the fieldwork, modify the interview, and refine the analysis of a prior epidemiological study.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Alcohol Drug Abuse & Mental Health Admin., National Inst. on Drug Abuse $284,443

2.0307,

SUBSTANCE ABUSE AMONG HYPERACTIVE BOYS AT ADOLESCENCE

J.P. Loney, University of Iowa, School of Medicine, Dept. of Psychiatry, *Jessup Hall, Iowa City, Iowa* 52240 (R01 DA 02134-02)

This is a comprehensive longitudinal study of the use and abuse of drugs and alcohol in a sample of 135 hyperkinetic boys who were (a) seen for outpatient psychiatric evaluation in the five-year period between 1967 and 1972; (b) subsequently treated with a CNS stimulant drug (methylphenidate); and (c) followed up at adolescence by the present investigator with an extensive battery of tests, interviews, questionnaires, forms, and ratings.

In the first stage of the study, data are drawn from a multivariate computer archive maintained on these boys, and a series of questions about the prevalence of substance use is being investigated. Predictors of adolescent drug and alcohol use and abuse are also being identified, and the covariation of alcohol use, drug use, and other norm-violating and illegal acts (e.g., aggression and delinquent behaviors) is being determined.

In the second stage of the study, an additional sample of 100 hyperkinetic boys is being followed up at adolescence. These are boys who were seen for outpatient psychiatric evaluation in the five-year period between 1972 and 1977 but who (because of a change in 1972 of the clinic's administration and treatment personnel) were not treated with CNS stimulant. Data are being coded so that the drug-treated and untreated hyperkinetic boys can be equated on age, socioeconomic status, and kind and severity of hyperkinetic symptoms. Prevalence and convariation of drug and alcohol abuse in the untreated hyperkinetic samples will then be determined and compared with data from the drug-treated and normal groups. In addition to these descriptive analyses, the cross-sectional and longitudinal predictors of substance use will be identified.

A general aim will be to locate substance use and attitudes within a larger matrix of health threatening and norm-violating behaviors and their treatment and environmental antecedents. Data collection, coding, and storage; statistical analysis; and dissemination will take place throughout each of the three years of this study.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Alcohol Drug Abuse & Mental Health Admin., National Inst. on Drug Abuse $77,840

2.0308,

LONGITUDINAL STUDY OF TEENAGE AND YOUNG ADULT DRUG USE

G.M. Smith, Massachusetts General Hospital, *32 Fruit St., Boston, Massachusetts* 02114 (R01 DA 00065-08)

Our objective is to study antecedents and sequelae of drug use among teenage students and young adults by analyzing a comprehensive, 13-year longitudinal data base collected from 3,200 subjects. Those subjects were in grades 7-12 when our study began in 1969. Between 1969 and 1979, measures were obtained regarding use of illicit drugs, alcohol, and cigarettes; attitudes toward and knowledge about drug users; attitudes toward cigarette smoking and cigarette smokers; personality; grade point average; school attendance; and school suspensions. Follow-up studies to be performed by mailed questionnaire during 1980 and 1981 will collect information regarding post high school substance use and significant life events. Topics covered will include current and past use of illicit drugs, alcohol, and cigarettes; education, work, and military experience since high school; personality; social and family adjustment; physical and psychological health; hospitalization; accidents; and contacts with the criminal justice system. A second mailed questionnaire will be sent to 700 subjects, selected from the sample of 3,200 to represent well-delineated subgroups defined by substance use and non-use.

BIBLIOGRAPHIC REFERENCES: Smith, G.M. and Fogg, C.P. Psychological antecedents of teen-age drug use. pp. 87-102 in Roberta Simmons (Ed), Research in Community and Mental Health: An Annual Compilation of Research, Vol. 1, 1979.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Alcohol Drug Abuse & Mental Health Admin., National Inst. on Drug Abuse $137,784

2.0309,

RESEARCH CENTER - STUDIES OF DRUG DEPENDENCE AND ABUSE

C.R. Schuster, University of Chicago, School of Medicine, Dept. of Psychiatry, *5801 S. Ellis Ave., Chicago, Illinois* 60637 (P01 DA 00250-08)

The Drug Abuse Research Center has continued: 1) to provide a formal structure designed to encourage the cooperation of basic research scientists and clinical researchers in problem-oriented research, 2) to encourage communication among basic research scientists working in related fields, 3) to promote the development and/or expansion of certain key areas in drug abu. research, and 4) to provide an interdisciplinary educational environment for students and faculty interested in various areas of drug abuse research. The philosophy of the Research Center is that drug abuse is a complex problem which needs to be studied on a variety of levels ranging from a drug's sub-cellular actions through its sociological impact. It is impossible for any single department, let alone an isolated individual, to possess the expertise to study drugs at all these levels. The Research Center has been to provide a formal structure for encouraging interaction between scientists and clinicians from several academic departments, all of whom are working in areas related to drug abuse. Current research includes: studies of drug self-administration in infra-human primates as well as man; studies of the sensitivity of current and former methadone dependent humans to alcohol and amphetamines; neurochemical studies of drugs of abuse; metabolism of drugs of abuse in animals and man.

BIBLIOGRAPHIC REFERENCES: Woolverton, W.L., Kandel, D. and Schuster, C.R.: Tolerance and cross-tolerance to cocaine and d-amphetamine. J. Pharm. Exp. Therap., 205, #3, 1978. Woolverton, W.L., Kandel, D. and Schuster, C.R.: Effects of repeated administration of cocaine on schedule-controlled behavior of rats. Pharm. Biochem. Behav., 9, 327-337, 1978.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Alcohol Drug Abuse & Mental Health Admin., National Inst. on Drug Abuse $403,519

2.0310,

MAINTENANCE, EXPANSION AND ANALYSIS OF THE DAEDAC DATA BASE

S.B. Sells, Texas Christian University, Inst. of Behavioral Research, *P.O. Box 29010a, T.C.U. Station, Fort Worth, Texas* 76129

The Drug Abuse Epidemiology Data Center (DAEDAC) is a research archive currently operated by the Institute of Behavioral Research (IBR) at Texas Christian University (TCU). Since its inception in November 1973, DAEDAC has been developed into an extensive and richly endowed data source for research and information on the epidemiologic and social science aspects of drug abuse in the United States. The DAEDAC maintains two types of files: the Original Data File and the Aggregate File. The Original Data File contains the largest single collection of coded raw data from original drug surveys, evaluation studies and drug abuse epidemiology studies. The Aggregate File is a computerized file of research literature containing bibliographic citations, summaries and data tables coded from research reports, studies and journal articles on drug abuse. The objectives of this contract are: 1. Preservation and maintenance of original drug abuse data files; 2. Organization and documentation of data files to facilitate secondary analysis; 3. Development and maintenance of a library of research reports of special interest to professionals and administrators working in the drug abuse field; 4. Development and maintenance of a computer file with retrieval software to provide bibliographies, statistical tables, and other relevant information on drug abuse problems addressed in the research literature; 5. Provision of data, analyses, bibliographies, special reports, and other information based on archive holdings to NIDA staff in response to specific research and technical questions; 6. To fully apprise NIDA about DAEDAC's operations and procedures; and 7. To provide for the transfer of the DAEDAC archive, including files, software, and documentation to any group or organization competitively selected by NIDA.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Alcohol Drug Abuse & Mental Health Admin., National Inst. on Drug Abuse $666,240

2.0311,

ADOLESCENT DRUG ABUSE ETIOLOGIES

P.M. Bentler, University of California, Los Angeles Campus, School of Letters & Science, Dept. of Psychology, *405 Hilgard Ave., Los Angeles, California* 90024 (P01 DA 01070-06)

The proposal describes the development of an integrated series of research projects aimed at understanding the social and psychological etiological bases of adolescent drug abuse. The research framework involves family background variables, interpersonal process and peer influence variables, situational variables, sociocultural variables, and other measurable factors such as attribution processes

that have been considered theoretically or shown empirically to be relevant to understanding the development of drug use patterns. Five specific research projects are conducted, with each project including numerous separate but related studies. Particular attention is paid to predictive, longitudinal research, causal modeling, and multimethod measurement.

Implementation of the coordinated research effort rests with the professional staff. In addition, consultants are utilized in research workshops organized to evaluate the relevance of new methodological techniques to drug abuse research and to produce state-of-the-art introductions and reviews of the methods. Two committees of individuals committed to understanding drug abuse, but not involved in the research effort itself, provide input to the research program; these are a university-based research advisory committee and a community-based advisory council.

BIBLIOGRAPHIC REFERENCES: Bentler, P. M. The interdependence of theory, methodology, and empirical data: Causal modeling as an approach of construct validation. In D. B. Kandel (Ed.), Longitudinal research on drug use. New York: Wiley, 1978. Pp. 267-302. Bentler, P. M., & Huba, G. J. Simple minitheories of love. Journal of Personality and Social Psychology, 1979, 37, 124-130.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Alcohol Drug Abuse & Mental Health Admin., National Inst. on Drug Abuse $437,116

2.0312,

ADOLESCENT DRUG USE IN THREE FAMILY CONTEXTS

B. Rosman, Philadelphia Child Guidance Clinic, *1700 Bainbridge St., Philadelphia, Pennsylvania* 19146 (R01 DA 01629-03)

The purpose of the proposed research is to test the relationship between drug abuse problems in adolescents and their family characteristics. Three hypotheses will be tested: (a) three specific patterns of drug use and abuse in adolescents emerge in three different family contexts; (b) self and parent concepts of the drug using youngsters are related to the different family patterns; (c) changes in family characteriestics effected by family treatment organized around the specific type of family dysfunction will be associated with symptom improvement; and with changes in self and parent concepts.

45 adolescents with drug related problems and their families will be studied; 15 of these will be youngsters who overdose with suicidal ideation, 15 who present as delinquents, where drug use is one among a number of behavior problems and 15 who are habituated users of amphetamines, barbiturates, and paint and glue sniffers. Family characteristics and organization will be assessed using interactional measures; parent and self concepts will be measured by questionnaires. The three groups will be compared on the measures prior to receiving family therapy to test the hypotheses relating family characteristics to pattern of drug use. Pre and post family therapy assessments will be compared to evaluate the relationship between changes in family organization and changes in symptom behavior, home and school adjustment, self and parent concepts.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Alcohol Drug Abuse & Mental Health Admin., National Inst. on Drug Abuse $87,512

2.0313,

SOCIAL FACTORS AND DRUG USE IN AN URBAN POPULATION

S.B. Sells, Texas Christian University, Inst. of Behavioral Research, *P.O. Box 29010a, T.C.U. Station, Fort Worth, Texas* 76129 (R01 DA 01765-02S1)

A major objective of the proposed research is to develop methods whereby the prevalence of drug use can be (a) accurately and economically estimated for specific drugs, population groups, and residential areas, (b) placed within a context of other health and social problems, and (c) related to social dimensions which characterize residential neighborhoods. The setting of this research in Dallas, Texas, a large triethnic city in the Southwest, is expected to favor the additional aims of gaining new understandings of the epidemiology of drug abuse and of developing prevalence estimates which are maximally useful in the planning of intervention programs.

Based on factor analytic and clustering techniques applied to 1970 Census data, sociodemographic factors will be defined for approximately 30 resideetial areas of the city, and will then be extended to the 1974-1978 time period on the basis of local survey and other intercensal data. The resulting sociodemographic measures, along with a large number of drug, health, and social indicators, by residential areas, will constitute the independent variables in the research.

Criterion variables will consist of direct estimates of the prevalence of prescribed use of psychotherapeutic drugs and the nonmedical use of various drugs, including alcohol and tobacco, by population groups of particular residential areas. These estimates will be based on a citywide school survey and a household sample survey, covering both adults and youth.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Alcohol Drug Abuse & Mental Health Admin., National Inst. on Drug Abuse $131,154

2.0314,

MONITORING THE HEALTH IMPACT OF PUBLIC POLICY DECISIONS ON ABORTION

W. Cates, U.S. Dept. of Health & Human Services, Public Health Service, Center for Disease Control, Abortion Surveillance Branch, *1600 Clifton Rd. N.E., Atlanta, Georgia* 30333

CDC has analyzed different national data bases to determine the effect of the increasing availability of legal abortion on trends in abortion-related deaths and hospitalizations in the United States. Moreover, we have designed specific projects to monitor the health impact of 2 recent policy issues: restricting public funds for abortion and requiring 'informed consent' provisions for women obtaining abortions.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Center for Disease Control $30,000

2.0315,

SEROLOGICAL AND IMMUNOMORPHOLOGICAL STUDIES ON HEPATITIS TYPES A AND 'NON A-NON B'

A. Nowoslawski, National Inst. of Hygiene, Dept. of Immunopathology, *24 Chocimska St., 00791 Warsaw 36, Poland* (05-341-C)

The purpose of this project is to obtain data on the incidence of hepatitis type A and type 'non A-non B' and to determine the significance of these infections in the development of chronic liver disease and in the pathogenesis of chronic glomerulonephritis and periarteritis nodosa. Methods for serological and immunomorphological diagnosis of hepatitis A will be developed. These methods, together with those already available for identifying hepatitis B infection, will be used to identify 'non A-non B' cases.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Center for Disease Control funds n.a.

2.0316,

JOINT PROGRAM FOR THE STUDY OF ABORTION/CDC

W. Cates, U.S. Dept. of Health & Human Services, Public Health Service, Center for Disease Control, Abortion Surveillance Branch, *1600 Clifton Rd. N.E., Atlanta, Georgia* 30333

CDC conducts the Joint Program for the Study of Abortion/CDC (JPSA/CDC), a multicenter prospective study of the early complications of legally induced abortion. Including reports of over 150,000 abortions between 1971 and 1978, JPSA/CDC represents the largest abortion study performed to date in the world. The series of publications from this work have advanced the potential for preventing abortion morbidity by documenting the safest possible abortion methods for different gestational ages. If new funding becomes available, data collection will continue through the competitive contract process.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Center for Disease Control $150,000

2.0317,

EPIDEMIOLOGIC SURVEILLANCE OF ABORTION-RELATED MORTALITY

W. Cates, U.S. Dept. of Health & Human Services, Public Health Service, Center for Disease Control, Abortion Surveillance Branch, *1600 Clifton Rd. N.E., Atlanta, Georgia* 30333

CDC has been monitoring all deaths related to abortion since 1972. The number of deaths has declined from 89 in 1972 to 26 in 1976. Preliminary information for 1977 indicates a slight increase in the number of abortion-related deaths. CDC investigates each case both to identify risk factors and to ascertain preventable performance problems; it disseminates these findings through national meetings and publications.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Center for Disease Control $20,000

2.0318,

A STUDY OF VIRAL HEPATITIS IN EGYPT

I.Z. Imam, Egyptian Org. for Biological & Vaccine Productions, Virus Research Training/Production Center, *Cairo, Egypt* (03-328-C)

To determine the incidence and prevalence of viral hepatitis in various geographical areas and population segments of Egypt. To develop laboratory capability in viral hepatitis diagnostics in Egypt. To determine the epidemiologic patterns of hepatitis B infection in Egyptian childrsn as a basis for prevention by specific vaccine.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Center for Disease Control funds n.a.

2.0319,

IMMUNOCHEMICAL ANALYSIS OF PROTEINS AND POLYSACCHARIDES OF CRYPTOCOCCUS NEOFORMANS

E. Reiss, U.S. Dept. of Health & Human Services, Public Health Service, Center for Disease Control, Bureau of Lab., Mycology Division, *1600 Clifton Rd. N.E., Atlanta, Georgia* 30333 (CDC/BL/M-0013)

PROJECT DESCRIPTION: Currently, no well-defined skin test antigen for cryptococcosis is available to physicians and epidemiologists. Furthermore, the mechanism of cryptococcus neoformans pathogenicity is not clear. Studies are being carried out to fractionate subcellular components of the pathogen in order to purify and characterize a microsomal fraction capable of eliciting delayed cutaneous hypersensitivity. The antiphagocytic properties of the capsular polysaccharide and its effect on antibody formation by the host is also being investigated. The structure of the cryptococcal polysaccharide is being delineated as it relates to antigenicity. A skin test antigen will be supplied to a CDC epidemiologist for in vitro lymphocyte test of humans.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Center for Disease Control, Bureau of Lab. funds n.a.

2.0320,

ST. LOUIS ENCEPHALITIS AND RELATED FLAVIVIRUS STUDIES

T.P. Monath, U.S. Dept. of Health & Human Services, Public Health Service, Center for Disease Control, Bureau of Lab., Vector Borne Diseases Division, *1600 Clifton Rd. N.E., Atlanta, Georgia* 30333 (CDC/BL/VBD-0106)

These studies are designed to evaluate the role of virus and host variation in determining the different geographic and ecologic patterns of St. Louis encephalitis and related flaviviruses. The natural variation of flaviviruses is being evaluated by analysis of genetic, pathobiologic, and immunologic factors. Geographically and ecologically representative virus strains are being evaluated with respct to intrinsic factors of virus structure, molecular biology, pathogenicity, vertebrate host specificity, and types of host immune responses. Substructural viral elements are analyzed by immunochemical methods. These studies will provide information to explain the absence of SLE epidemics in tropical America, the milder appearance of the disease in the far western U.S. and will elucidate the viral genetic factors which modulate virulence.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Center for Disease Control, Bureau of Lab. funds n.a.

2.0321,

BIOLOGY AND IMMUNOLOGY OF SCHISTOSOMA MANSONI

T.B. Ruiz, U.S. Dept. of Health & Human Services, Public Health Service, Center for Disease Control, Bureau of Lab., San Juan Laboratories, *1600 Clifton Rd. N.E., Atlanta, Georgia* 30333 (CDC/BL/SJL-0007)

PROJECT DESCRIPTION: Analysis of the data from the Boqueron study continues. Studies of the population's water-contact behavior also continues, along with active surveillance and control of the snail popu-

lation. The circumoval precipitin test is used to screen all serum samples collected from the Boqueron study population. These results are correlated with prevalence and incidence of infection, based on fecal examination data. Serologic confirmation of parasitologic conversions or reversions are necessary to properly assess the acquisition or loss of infection in a population resident in the endemic area of Puerto Rico.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Center for Disease Control, Bureau of Lab. funds n.a.

2.0322,

HOST-PARASITE RELATIONSHIPS, IN VITRO CULTIVATION OF PARASITIC ORGANISMS, AND IMPROVEMENTS IN IMMUNODIAGNOSIS OF PROTOZOA

G.S. Visvesvara, U.S. Dept. of Health & Human Services, Public Health Service, Center for Disease Control, Bureau of Lab., Parasitology Division, *1600 Clifton Rd. N.E., Atlanta, Georgia* 30333 (CDC/BL/P-0006)

PROJECT DESCRIPTION: Protozoan diseases, such as amebiasis, giardiasis, amebic meningoencephalitis, malaria, and pneumocystis, cause a great deal of morbidity and, occasionally, mortality throughout the world. Many aspects of the epidemiology and host-parasite relationship of protozoan parasites need to be clarified. New methodology for the cultivation of parasitic protozoa is needed for the production of specific antigens for serodiagnosis. The specific diagnosis of these diseases needs to be improved. In vitro axenic and polyxenic cultivation and in vivo animal experiments to prepare antigens and to evaluate new diagnostic procedures are being done. The goal of these studies is to increase our understanding of parasitic diseases and improve techniques with which to better organize resources for their identification and control.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Center for Disease Control, Bureau of Lab. funds n.a.

2.0323,

DISABILITY CONDITION IN THE WORKFORCE - PHASE II

J. Kennedy, U.S. Dept. of Health & Human Services, Public Health Service, Center for Disease Control, National Inst. for Occupational Safety & Health, Surveillance Hazard Evaluations & Field Studies Division, *4676 Columbia Pkwy., Cincinnati, Ohio* 45226 (VMO-G11-575)

The project will be carried out in FY'78 and FY'79 and use industrial classification of workers in studying their disabling conditions. The purpose of this project is to extend a previous analysis of disability data which did not contain industry of the worker as a coded variable. Utilizing linear model theory and techniques so derived, we propose to: 1) analyze the industrial classifications; 2) analyze the occupations of individuals identified with a primary or secondary disability condition thought to be occupationally related.

Using data compiled by the Social Security Administration, NIOSH would arrange an Interagency Agreement to obtain the needed information on computer tape. The data set of disabled workers would include age, race, sex, disabling conditions, occupation, time in occupation, and industry.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Center for Disease Control, National Inst. for Occupational Safety & Health $60,000

2.0324,

FETAL MORTALITY STUDY

J. Kennedy, U.S. Dept. of Health & Human Services, Public Health Service, Center for Disease Control, National Inst. for Occupational Safety & Health, Division of Surveillance Hazard Evaluations & Field Studies, *4676 Columbia Pkwy., Cincinnati, Ohio* 45226 (VMO-W11-519)

The National Center for Health Statistics (NCHS) has planned to conduct a 1978 National Fetal Mortality Survey in conjunction with the 1978 National Natality Survey. NIOSH would form an agreement with NCHS to collect on the questionnaires occupational information on the parents, particularly the mother, in these surveys. (NIOSH would assure that NCHS adapts standard occupational questions such as those used by the Bureau of Census. The actual coding of the occupation and industry data would be carried out and conform to the classifications set forth by the Bureau of Census.) NCHS staff along with NIOSH staff would determine suitable analysis, plan, and write one or more reports utilizing the occupational data. NIOSH staff would consult on the contents of these reports. Also, detailed raw data tapes of this study will be provided to NIOSH for further analysis.

FY-78 ACCOMPLISHMENTS: Although the surveys are presently scheduled approximately one year later than originally planned, successful completion of critical efforts necessary in the operation of these surveys were made in 1978. NCHS has filled all of the fulltime staff positions for the surveys. OMB clearance was granted for the questionnaires and for the pretest of the surveys. Final questionnaires were prepared for printing.

It should also be noted that NCHS has elected to postpone the pretest surveys until January 1979 in order to allow optimal conditions for a favorable response rate.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Center for Disease Control, National Inst. for Occupational Safety & Health $36,000

2.0325,

IDENTIFICATION OF OCCUPATIONAL GROUPS AT HIGH RISK OF CANCER

J. Kennedy, U.S. Dept. of Health & Human Services, Public Health Service, Center for Disease Control, National Inst. for Occupational Safety & Health, Surveillance Hazard Evaluation & Field Studies Division, *4676 Columbia Pkwy., Cincinnati, Ohio* 45226 (VMO-C11-512)

Activities listed below are contracted out to the Johns Hopkins University, Dr. Irving I. Kessler, Principal Investigator, and have been carried out since June 1975.

The purpose of this project is to identify high-risk occupational groups in terms of incidence of certain rare cancer sites. The analysis would make it possible to identify potentially dangerous occupational exposures. The results obtained from two independent analyses will allow examination and re-analysis of most data sets in terms of morbidity (cancer) from dangerous occupations or industries newly identified.

From an existing data base containing lifetime occupational information on: a) 800 patients divided into 2 equal groups (persons with cancer of the urinary bladder and persons with other diseases -excluding cancer of any kind); b) a group of more than 1,800 patients (one-half with one of several neoplasms); and c) a group of 1,392 patients (one-half with Parkinson's Disease and the other half without this condition); high-risk occupational groups will be identified in the disease groups.

During FY 77, Dr. Kessler, Principal Investigator, presented some results on the bladder cancer patients to the Surveillance Branch and other interested persons in NIOSH. At the time of the presentation, improvements and refinements to the research by the addition of input from industrial hygienists were suggested that would allow NIOSH to gain the greatest benefits. A modification and extension of the contract has been proposed for incorporation into this project for FY 78 and FY 79.

FY 78 ACCOMPLISHMENTS: Project continuing as planned. Anticipate delays due to Principal Investigator changing his primary affiliation from Johns Hopkins to University of Maryland.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Center for Disease Control, National Inst. for Occupational Safety & Health $5,900

2.0326,

MORTALITY AND INDUSTRIAL HYGIENE STUDY OF PHOSPHATE WORKERS

T. Meinhardt, U.S. Dept. of Health & Human Services, Public Health Service, Center for Disease Control, National Inst. for Occupational Safety & Health, Division of Surveillance Hazard Evaluations & Field Studies, *4676 Columbia Pkwy., Cincinnati, Ohio* 45226 (VMH-C22-562)

NIOSH is conducting an epidemiologic study of the mortality patterns among phosphate (fertilizer) production workers. Interest in the chronic health effects associated with this industry developed because of three observed cases of lung cancer in phosphate production workers. All three men were reported to be non-smokers. The hypothesis of an association between lung cancer and phosphate exposure seems to be supported in studies by other federal agencies and the Florida State Department of Health, all of which have suggested an increased rate of lung cancer among the county populations surrounding the phosphate plants. This study involves a retrospective cohort study of workers' mortality patterns and industrial hygiene evaluations which will be used to characterize the working environment. To date, personnel information has been gathered and is being coded to produce working computer files. Also industrial hygiene reports have been drafted and are being finalized. Location of work experience is currently being coded on all former employees who have worked for companies in the study. This information will be used to limit the study to an appropriate cohort and expedite progress on the study.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Center for Disease Control, National Inst. for Occupational Safety & Health $58,000

2.0327,

INSULATING MATERIALS, LONG-TERM INHALATION EFFECTS - EPA

W. Moorman, U.S. Dept. of Health & Human Services, Public Health Service, Center for Disease Control, National Inst. for Occupational Safety & Health, Division of Biomedical & Behavioral Science, *4676 Columbia Pkwy., Cincinnati, Ohio* 45226 (VOO-E24-340)

Chronic biologic effects following long-term inhalation of fibrous glass used in insulating trades will be studied via the contractual route. Specific objectives include: 1) the evaluation of carcinogenic risk; 2) the fibrogenic potential; and 3) the character of pulmonary responses, both physiological and pathological (including deposition patterns). The results from this effort will be useful in evaluating the validity of the NIOSH proposed standard.

These objectives were identified as research gaps in the 1974 NIOSH-sponsored symposium (Occupational Exposure to Fibrous Glass - HEW Publication No. (NIOSH) 76-151) on fibrous glass and the 1977 NIOSH Criteria Document for Fibrous Glass. The increased usage, along with epidemiologic and experimental data, emphasizes the need for such a long-term investigation.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Center for Disease Control, National Inst. for Occupational Safety & Health $4,290

2.0328,

MORTALITY AND INDUSTRIAL HYGIENE STUDY OF WORKERS EXPOSED TO ETHYLENE OXIDE - NCI

R. Rinsky, U.S. Dept. of Health & Human Services, Public Health Service, Center for Disease Control, National Inst. for Occupational Safety & Health, Division of Surveillance Hazard Evaluations & Field Studies, *4676 Columbia Pkwy., Cincinnati, Ohio* 45226 (VMH-C21-588)

Evidence exists indicating that ethylene oxide is a carcinogen and mutagen in animals. Industrial hygiene and mortality studies will be performed on a cohort of workers exposed to this agent. The mortality study will be conducted to determine whether or not an excess number of cancer deaths (or any other type of deaths) have occurred among deceased workers from the plant or plants being investigated. Detailed industrial hygiene studies will be conducted for the facilities included in the mortality study. Personal monitoring of workers' present exposure in selected job categories will be conducted at each facility. Attempts will be made to determine exposure levels in the past. Preliminary studies of manufacturing plants have been conducted.

One manufacturing plant has already been chosen for study; however, these workers also have exposure to the derivatives of ethylene oxide such as ethanolamine, ethylene glycol, etc. Definite plans have been made to obtain personnel records from this plant. Also, plants for conducting an in-depth industrial hygiene study have been established.

The search for another study cohort which has not experienced exposure to the derivatives of ethylene oxide is continuing. In the event a cohort like this is found, it too will be the subject of an in-depth mortality/industrial hygiene study.

The results of these studies will be used in the development of a recommended safe exposure standard.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Center for Disease Control, National Inst. for Occupational Safety & Health $188,000

2.0329,

STUDY OF NOISE/HEARING IN THE PAPERWORKING INDUSTRY

R. Tubbs, U.S. Dept. of Health & Human Services, Public Health Service, Center for Disease Control, National Inst. for Occupational Safety & Health, Division of Biomedical & Behavioral Science, *4676 Columbia Pkwy., Cincinnati, Ohio* 45226 (VOG-G22-364)

The purpose of this study is to critically examine the hearing and daily noise dose of workers in the paperworking industry (at the request of the United Paper workers International Union) and other industries when non-steady state noise is thought to exist. The hearing of several hundred paperworkers has been tested and recordings of daily noise exposure of a selected number of workers performing a variety of paperworking jobs have been obtained.

A critical analysis of both the audiometric and exposure data will be performed and correlated. Should the present sample size be insufficient, it will be expanded to additional plant(s).

Finally, plant tours of additional industries will be conducted in an effort to quantify the populations and types of jobs and industries where non-steady state noise exists.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Center for Disease Control, National Inst. for Occupational Safety & Health $85,873

2.0330,

INDUSTRIAL HYGIENE STUDY OF NEW AGENTS II - NCI

J. Oser, U.S. Dept. of Health & Human Services, Public Health Service, Center for Disease Control, National Inst. for Occupational Safety & Health, Division of Surveillance Hazard Evaluations & Field Studies, *4676 Columbia Pkwy., Cincinnati, Ohio* 45226 (VMH-C21-597)

Newly suspected hazardous agents are continually being identified in the industrial environment. This project is designed to obtain information about these agents and to determine the extent of industrial exposure and the feasibility of conducting epidemiological studies.

The industrial hygiene component of this study will be by contract. Epidemiological evaluations will be conducted inhouse.

The essentials of the study include literature search and review, industrial hygiene walk-through and monitoring and the assessment of employee records to determine possibility of mortality study.

Contract #210-76-0162 with Stanford Research Institute (September '76 to March '79) is in progress. This contract proposes to study four industrial agents. These include ethylene dibromide, ethylene oxide, toluene and zeolite. The first two of these agents, ethylene dibromide and ethylene oxide are complete. The remaining two, toluene and zeolite are scheduled for this FY.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Center for Disease Control, National Inst. for Occupational Safety & Health $23,000

2.0331,

ROOFING ASPHALT, PITCH AND UVL CARCINOGENESIS (NCI)

P. Niemeier, U.S. Dept. of Health & Human Services, Public Health Service, Center for Disease Control, National Inst. for Occupational Safety & Health, Division of Biomedical & Behavioral Science, *4676 Columbia Pkwy., Cincinnati, Ohio* 45226 (VOO-C24-399)

Increased risks of developing skin cancer and cancer at other sites, i.e., bladder, upper respiratory tract, stomach, leukemia, etc., have been demonstrated for those individuals working for 20 or more years in roofing operations (Hammond et al., 1976).

The purpose of this project is to assess the carcinogenic potential of condensed volatiles from roofing asphalts and coal tar pitch materials when collected from fumes generated at the respective application temperatures. C3H/HeJ and Swiss mice will be used to determine the response to long-term administration of the condensed volatiles through repeated topical skin applications. The phototoxic and/or cocarcinogenic effect of exposure to simulated sunlight (wave lengths greater than 290 nm) will be assessed in this investigation in one half of the experimental animals. Four materials will be used, including: a flat and a steep roofing asphalt, a routine and a 'low-burn' roofing coal tar pitch. All materials will be heated at and above their application temperatures used in the roofing operation. Analyses of the condensed volatile components will be made to estimate both polynuclear aromatic hydrocarbon and metals content. All work will be performed via the contractual route. The contract proposals have been received, evaluated and are currently in the negotiation stage. FY 79 efforts will involve contract monitoring and site visits.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Center for Disease Control, National Inst. for Occupational Safety & Health $5,100

2.0332,

MORTALITY AND INDUSTRIAL HYGIENE STUDY OF PCE WORKERS

D. Brown, U.S. Dept. of Health & Human Services, Public Health Service, Center for Disease Control, National Inst. for Occupational Safety & Health, Surveillance Hazard Evaluations & Field Studies Division, *4676 Columbia Pkwy., Cincinnati, Ohio* 45226 (VMH-C21-547)

Perchloroethylene (PCE) is used extensively throughout the dry cleaning industry (300,000 workers). To date, the effects on humans of long-term low level exposure to PCE is unknown.

This study will assess the health effects of exposure to PCE by analysis of cause specific mortality among an identified group of dry cleaning workers. A cause of death for each individual in the cohort will be determined retrospectively and the observed deaths will be compared to those expected based on a standard, race, sex, and age specific population. Industrial hygiene surveys will be conducted by NIOSH to characterize worker exposure to PCE in the dry cleaning industry.

Union records are being used to identify dry cleaning workers who qualify for the study. Four labor unions have been selected and the personnel records of their members have been microfilmed. Much of the demographic data has been coded and vital status follow-up has begun.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Center for Disease Control, National Inst. for Occupational Safety & Health funds n.a.

2.0333,

MORTALITY STUDY OF PESTICIDE FORMULATORS/MANUFACTURERS

D. Brown, U.S. Dept. of Health & Human Services, Public Health Service, Center for Disease Control, National Inst. for Occupational Safety & Health, Division of Surveillance Hazard Evaluations & Field Studies, *4676 Columbia Pkwy., Cincinnati, Ohio* 45226 (VMH-C22-619)

Although pesticide formulators/manufacturers have been studied by numerous investigators, only minimal attention has been paid to chronic long-term effects. To date, there have been no reported retrospective mortality studies that have been completed on sufficiently large enough cohorts of workers, exposed to high levels of pesticides, to yeild definitive information. Published studies do suggest, however, that chronic or long latency disease may include cancer, kidney and liver disease, suicides, accidents, hypertension-related disease, and abnormalities of offspring. Any of these diseases may be attributable to a single pesticide or class of pesticides.

The nature of the formulating and manufacturing industry places these workers in a potentially highly exposed category. They traditionally manufacture, dilute, mix, and package a large variety of pesticides and diluents which change from season to season and from year to year depending on demand.

The primary purpose of ths project will be to determine if selected groups of pesticide manufacturers are experiencing excessive cause-specific mortality.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Center for Disease Control, National Inst. for Occupational Safety & Health $4,800

2.0334,

INDUSTRIAL HYGIENE STUDY OF PETROLEUM PRODUCTION - EPA

C. Cox, U.S. Dept. of Health & Human Services, Public Health Service, Center for Disease Control, National Inst. for Occupational Safety & Health, Surveillance Hazard Evaluations & Field Studies Division, *4676 Columbia Pkwy., Cincinnati, Ohio* 45226 (VMH-E22-584)

Petroleum refineries in the U.S. process crude oil into approximately 3 x 10 to the 6th power m3/day of refined products. By definition refinery activities start with crude oil storage and terminate with storage of the refined products. There are approximately 250 refineries in the U.S. employing about 100,000 production workers. Refineries range in size from 500 to over 64,000 m3/day, with the average refinery processing 6900 m3/day.

Over 300 different chemical compounds may be present in crude petroleum, with additional compounds being formed during the refining process. Since the health effect on refinery workers resulting from these chemical compounds has not been well defined, toxic and carcinogenic chemicals may be present in the working environment during the refinement of crude petroleum.

The purpose of the project is to identify and quantify worker exposure to potentially hazardous agents in refineries and to provide baseline data which may be used to assure safe and healthful working conditions in the petroleum refineries. Project objectives will be achieved by conducting an in-depth industrial hygiene characterization of worker environments in selected refineries, at selected unit operations, and/or within selected job classifications. A contract will be awarded in September, 1978, to accomplish this project.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Center for Disease Control, National Inst. for Occupational Safety & Health $12,000

2.0335,

PSYCHOLOGICAL EFFECTS OF CARBON DISULFIDE

B. Johnson, U.S. Dept. of Health & Human Services, Public Health Service, Center for Disease Control, National Inst. for Occupational Safety & Health, Division of Biomedical & Behavioral Science, *4676 Columbia Pkwy., Cincinnati, Ohio* 45226 (VOB-B21-306)

Carbon disulfide, a solvent used in viscose rayon manufacture, is known to cause neurological dysfunction and psychological disturbances in workers excessively exposed. The effects, however, of chronic exposure to low levels of CS2 at the existing Federal exposure limit have not been investigated. The purpose of this investigation is to examine the psychological state of workers chronically exposed to CS2. Specifically, as part of a biomedical investigation performed by DSHEFS, 300 workers (plus matched controls) will be given standard psychological tests to determine measures of anxiety, depression, and hostility; together with measures of psychological stress. In addition, psychometric tests of visual and aural function, reasoning ability, response time, coordination, and task time sharing will be administered to ascertain degree, if any, of function loss. Work histories and plant records will be used to derive exposure indices, which will then be used in correlational analyses with the psychological and behavioral data.

During FY-78 a worker population for study was identified in Tennessee, the study protocol was designed and submitted for Human Subjects Review Board approval, and testing equipment was assembled. During the first quarter of FY-79, testing of workers will be performed.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Center for Disease Control, National Inst. for Occupational Safety & Health $11,484

2.0336,

MORTALITY AND INDUSTRIAL HYGIENE STUDY OF PRINTING TRADES

M. Boeniger, U.S. Dept. of Health & Human Services, Public Health Service, Center for Disease Control, National Inst. for Occupational Safety & Health, Division of Surveillance Hazard Evaluations & Field Studies, *4676 Columbia Pkwy., Cincinnati, Ohio* 45226 (VMH-C22-560)

Published literature on the printing trades suggests that a significant number of health hazards exist. Workers are exposed to a variety of substances, i.e., carbon black, oil mist, polychlorinated biphenyls, polyvinyl chloride, carbon disulphide. A number of unusual health conditions observed in earlier studies have been suggested by researchers. These are cancers of the skin, lung, bronchial cavity, digestive system, and bladder. Other suspected diseases include increased heart disease, acro-osteolysis, and cirrhosis of the liver. detailed characterization, including industrial hygiene assessment of the industry and a retrospective study of the mortality patterns among selected specialists within the printing trades industry, is being conducted. The contractor, Mt. Sinai

Hospital, New York City, has performed walk-through industrial hygiene studies in selected printing establishments. Records from a printing union local have been collected and are being analyzed.

NIOSH is extending its study of the printing industry to the point of purchase segment of the screen printing trades. In-depth industrial hygiene characterization of this trade will be performed in the New York metropolitan area. All work in this latter study will be conducted by NIOSH industrial hygienists.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Center for Disease Control, National Inst. for Occupational Safety & Health $45,000

2.0337,

MORTALITY, MEDICAL AND INDUSTRIAL HYGIENE STUDY OF THE PAINTING INDUSTRY

D. Zaebst, U.S. Dept. of Health & Human Services, Public Health Service, Center for Disease Control, National Inst. for Occupational Safety & Health, Division of Surveillance Hazard Evaluations & Field Studies, *4676 Columbia Pkwy., Cincinnati, Ohio* 45226 (VMH-C22-559)

A pilot study conducted by the Mt.Sinai School of Medicine of over 1,000 members of the International Brotherhood of Painters and Allied Trades (IBPAT) under a NIOSH Contract demonstrated the existence of several significant health hazards in the painting industry. Anesthetic effects of the central nervous system were widespread and troublesome. The effects were especially evident among epoxy painters. Respiratory irritation as manifested by increased bronchitis, etc., was seen in sand blasters and metal painters. Chest x-ray changes such as pleural thickening or the occurrence of small rounded opacities were found to be especially evident among general painters, paint manufacturers, and sand blasters.

Therefore, in order to further delineate patterns of morbidity and mortality among applicators of surface coatings, a detailed characterization of industries employing these workers (excluding manufacture of paint) shall be conducted.

Fifteen to twenty sites in each of ten industries engaged in product finishing, and the IBPAT, have been contacted by NIOSH contractors. Walk-through surveys will be conducted in approximately five facilities in each of the ten product finishing industries; the feasibility of conducting mortality or morbidity studies of IBPAT records, and in-depth studies at one or more construction sites, will be selected for in-depth studies. These will include: (1) in-depth industrial hygiene surveys characterizing worker exposures found in the selected industries that employ painters, and/or (2) epidemiological studies and medical studies based on findings of the walk-through surveys and assessments of IBPAT records.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Center for Disease Control, National Inst. for Occupational Safety & Health funds n.a.

2.0338,

PNEUMOCONIOSIS DUE TO MICA DUST INHALATION IN THE MICA PROCESSING INDUSTRIES IN INDIA

S.K. Chatterjee, Occupational Health Research Inst., *Ahmedabad, Gujarat, India* (01-004-C)

SCOPE: The objective of this project is to study the clinical, physiological, radiological, and pathological changes in the lungs of workers exposed to mica dust; to correlate the magnitude of lung changes with the extent of mica exposure; to establish dose-response relationships in animals.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Center for Disease Control, National Inst. for Occupational Safety & Health funds n.a.

2.0339,

HEALTH AND SAFETY IMPLICATIONS OF DIURNAL VARIABILITY IN TOLERANCE TO STRESS

S. Vidacek, Inst. for Medical Research & Occupational Health, *158 M. Pijade, 41000 Zagreb, Yugoslavia* (02-016-C)

Administer a national program to develop and establish recommended occupational safety and health standards to assure safe and healthful working conditions for every working person.

The objective of this study is to determine the effects of shift-work on workers' health, fitness for work, safety on the job and adjustments to the non-working environment.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Center for Disease Control, National Inst. for Occupational Safety & Health $39,991

2.0340,

THE EFFECTS OF IMPULSE AND INTERMITTENT NOISE ON HEARING OF INDUSTRIAL WORKERS

W. Sulkowski, Inst. of Occupational Medicine in the Textile & Chemical Ind, *Teresy 8, 90950 Lodz 1, Poland* (05-335-C)

SCOPE: An epidemiological, clinical, and acoustical investigation will be conducted on workers who are exposed to intermittent and impulse noise of varying intensities and frequency to determine the effects of such noise on hearing and equilibrium and to establish damage risk criteria. Noise levels in selected industries will be characterized and workers in these industries will be studied by otological, audiometric and electronystagmographic methods.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Center for Disease Control, National Inst. for Occupational Safety & Health $27,236

2.0341,

SURVEY OF CHRONIC DISEASE AMONG DEFINED U.S. WORKER POPULATIONS

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This project will develop the methodology to collect and analyze occupational, smoking and medical histories and morbidity information from industrial clinics and hospitals for defined worker populations in specific geographic areas. An interviewer-administered questionnaire, which is computer codable, to obtain occupational (places and dates of employment, job titles and descriptions, etc.) smoking and medical histories (for example family disease histories, drug and alcohol usage, chronic health problems) will be devised.

Mechanisms for taking interviews using this questionnaire in industrial clinics and hospitals will be devised, rated, and recommended. Methods will be developed to abstract, code and record on computer, morbidity and health effects information from records of admissions to industrial clinics and hospitals. Finally, two statistical methods will be documented (including computer programs) to analyze the interview and clinical data, the first method using demographic data (total population values for defined geographic areas and occupation and industry population estimates) to calculate incidence rates for groups of diseases and the second using a case-control approach to examine statistically specific diseases.

When completed a second project will be initiated to institute this methodology in an industrialized area of the U.S.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Center for Disease Control, National Inst. for Occupational Safety & Health $14,000

2.0342,

URANIUM MINES AND MILLS STUDIES

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During the period 1950-1975, NIOSH collected data on about 20,000 uranium miners and mill workers. Further study and analysis of this data is expected to improve the exposure-response curve for lung cancer, to provide data on pulmonary disability and hair root changes, to determine if an altered sex ratio of offspring for uranium miners exists, and to determine if there is an excess of leukemia and cancer of the brain, pancreas, or bone in uranium miners.

Using data from Swedish and other mining groups, a dose-response curve has been constructed extending to quite low levels. This curve suggests that alpha radiation at very low dose rates induces 5 to 10 times as much cancer as equal amounts of radiation at higher dose rates. If this phenomenon is correct, then there are definite implications for setting lower standards, especially for radon daughters in uranium mining and plutonium in the nuclear power industry. Because of importance of the implications, verification or rejection of the present composite exposure-response curve is highly desirable. A retrospective mortality study on new cohort of approximately 3000 uranium miners having less than 12 WLM/year exposure and two control groups will be conducted to test this hypothesis.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Center for Disease Control, National Inst. for Occupational Safety & Health funds n.a.

2.0343,

INDUSTRIAL HYGIENE STUDY OF SOLAR ENERGY COMPONENT MANUFACTURE - EPA

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A new technology which will be playing an increasing role in meeting this countries needed energy demands will be in the utilization of solar energy cells for direct conversion of solar light to electricity. While rapid technological developments are occurring in this field, the present view is that the silicon and cadmium sulfide type photovoltaic cells will dominate the future market. Though photovoltaic conversion of solar energy still plays a very minor role in the total energy supply it will probably make dramatic gains in the near future. For instance, at the close of 1975 approximately 10 Kw from terrestial applications was obtained from solar cells while in 1976 300 Kw are anticipated. Major declines in cost of these cells with moderate increases in efficiency are foreseen and will further their acceptance. Corresponding manpower demands would also be expected.

The production of the final solar collection panel is preceded by many refining steps. Potential health hazards exist, beginning with the initial mining and purification of cadmium and silica bearing ore, the growth and doping of the crystals with boron or phosgene, polishing the crystals with strong acids and caustics, to the installation of the crystals within collection panels. Employee exposures and environmental health aspects in all these refining processes should be evaluated while the industry is still in its infancy.

Establishment of practicable production guidelines for the safeguard of employees health and safety would allow this industry to develop without detrimental side effects.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Center for Disease Control, National Inst. for Occupational Safety & Health $11,000

2.0344,

CROSS-SECTIONAL INDUSTRIAL HYGIENE & MEDICAL SURVEY OF NON-TEXTILE COTTON

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Byssinosis is a well established hazard in the cotton industry. Previous studies have focused on the textile industry. Available dose-response data, the basis for establishing safe exposure levels, are based entirely on studies of byssinosis in the processing phases of the primary textile industry. In parts of the cotton industry, the workers are exposed to dust that is qualitatively different from that in the processing phase of the textile industry. It is necessary to characterize the dose-response relationship in these industries.

Workers involved in the manufacture of cotton pads for mattresses and cotton batting, cottonseed oil mill workers, waste utilization, cotton warehouses and cotton classification offices, are five groups who are exposed to dust which may be different from primary textile dust. Groups of 300-400 workers from each segment will be studied. The biologic response to cotton dust will be characterized by medical and environmental testing.

Contract for the gin and warehouse segment of the study has been awarded. Final clearance was re-

ceived for the in-house phase of the industry and approximately 1/4 of the sample has been studied.
SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Center for Disease Control, National Inst. for Occupational Safety & Health $199,562

2.0345,

IMMUNOGENETICS OF BERYLLIUM DISEASE IN HUMANS

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The continuation of this project is designed to survey the HL-A antigenic determinants on cells from patients with beryllium disease. These results will be compared with HI-A antigenic determinants on cells from patients with sarcoidosis in order to investigate possible genetic similarities to dissimilarities between individuals with either disease. Individals in the following populations will be studied; patients with chronic beryllium disease, beryllium workers without disease, patients with sarcoidosis, and appropriate geographical controls with no pulmonary disease.

A questionnaire will be administered to volunteer subjects and whole blood will be obtained by venipuncture and the cells analyzed for HL-A determinants and blood grouping. Split blood specimens from appropriate test and control sample populations will be utilized to measure MIF production by leukocytes for evaluation of specific hypersensitivity to beryllium compounds. In addition, serum will be examined for total immunoglobulin and C4/4 levels, and the following traits: alpha-1-antitrypsin levels, anti-nuclear antibody, rheumatoid factor, and immunosuppressive/regulatory activity.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Center for Disease Control, National Inst. for Occupational Safety & Health $59,080

2.0346,

INDUSTRIAL HYGIENE STUDY OF GRAIN DUST EXPOSURE

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The objective of the ongoing study has been to evaluate the presence and extent of health hazards associated with occupational exposure to grain dust and other potential etiological agents of respiratory diseases to which workers in the grain elevator industry are exposed.

Major accomplishments of this project to date include the sucessful completion of walk-through surveys and in-depth field surveys of port terminal grain elevators located in the upper Midwest as well as the development of new sampling methodology from collecting large quantities of respirable grain dust for laboratory analysis.

The major objective of the final year of study is to critically test a null hypothesis that randomly selected port terminal grain elevators from seven identified geographical stratums do not statistically differ in respirable and total grain dust mean concentrations from the previous Duluth port terminal data. Other objectives will be to investigate dose-response relationships of grain dust exposures, support LIB investigations of grain dusts, compare country grain elevator and evaluate new equipment and methods.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Center for Disease Control, National Inst. for Occupational Safety & Health $125,448

2.0347,

DISEASE PREVALENCE AND HEALTH HAZARDS OF GRAIN HANDLERS

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The opportunities for potentially hazardous exposures to grain dusts exist at many occupational situations. These include loading/ unloading, storage processing, and shipping of various grains and grain products. During the majority of these processes, dusts are generated which have the size and aerodynamics capable of reaching both the upper and lower respiratory tracts. Previous research studies have demonstrated an excessive prevalence of chronic nonspecific lung diseases and related health problems in the grain handling industry. However, owing to great diversity in scientific design and approach which has been used by various investigators in studying the respiratory symptoms of grain handlers, little data which is standardized and therefore comparable exists. Also, responsible environmental assessment of the industry is absent.

It is the purpose of this project to address the medical aspects and other consequences of occupational exposure to grain dusts and to determine what effects and the extent of these effects such exposure has on the labor force in this industry. The project is divided into three approaches: Clinical/Epidemiological - by contract; laboratory, in vitro analysis - in house; and environmental assessment - in house.

Past accomplishments of this project include completion of Phase and most of Phase II for the Grain Handlers Contract # 210-76-0175; award and partial completion of service contract #210-77-0150; completion of co-sponsorship of an 'International Symposium on Grain Dust and Health--Canada (11/77) plus four resulting publications and draft of symposium proceedings to be published in 1/79.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Center for Disease Control, National Inst. for Occupational Safety & Health $46,438

2.0348,

MORTALITY OF COAL MINERS IN THE UNITED STATES

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This project is aimed mainly at determining age-standardized death rates of coal miners for all deaths, and for deaths from specified causes, principally pneumoconiosis, airway obstructive diseases and malignant neoplasms of the respiratory and digestive systems. Data which can be obtained about disabilities of coal miners determined by uniform medical criteria will also be used to determine age-standardized prevalences of disabilities determined to be serious enough to restrict employment. These death rates and disability prevalences will be determined for coal miners with varying kinds and durations of underground mining, and with varying categories and stages of coalworkers' pneumoconiosis (CWP). Three study groups of coal miners are now being followed for mortality: (a) an Appalachian bituminous coal miner employed when examined in 1963-65 and 1180 miners on the UMWA rosters of nonworking members when examined during the same period; (b) a study group of 3700 applicants for compensation in 1965-70 under a W.Va. state program of compensation for coal-dust-related disability; (c) a nationwide study group of about 12000 miners selected to be regionally representative of both bituminous and anthracite underground and surface miners examined during the period 1969-72.

A second purpose is to identify, measure and reduce ambiguities, biases and other nonsampling errors in estimates of death rates and of 'excesses' or 'deficits' in these rates relative to 'standard' rates. Nonsampling errors arise mainly from (a) lack of data, especially about 'standard' populations, on non-occupational factors elevate death rates, (b) gaps of up to 20-30 years in work-history data on study groups, and (c) inadequate reporting of chronic cardiopulmonary diseases on death certificates.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Center for Disease Control, National Inst. for Occupational Safety & Health $104,630

2.0349,

MORTALITY, MORBIDITY AND INDUSTRIAL HYGIENE STUDY OF BRAKE LINING WORKERS

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The NIOSH recommended standard for asbestos exposure of 2.0 fibers longer than 5 microns per cubic centimeter of air was established with the recognition that: 1) health data was not available for exposures to low levels, and 2) definitive information on the biological response to different size fibers was not available.

Industrial hygiene surveys have been conducted in six automobile facilities by the Industrial Hygiene Section. Optical counting and electron-microscopic analyses are being performed in order to characterize the nature of the exposures occurring in these types of operations.

A contract has been let to the Environmental Sciences Laboratory, Mt. Sinai School of Medicine, to evaluate health effects of exposure to asbestos-containing dusts in brake-lining maintenance and repair. The contract consists of two evaluations: (1) a feasibility study, to locate a cohort of brake lining repair and maintenance workers - with sufficient latency to conduct a retrospective mortality study of these workers; and (2) a cross-sectional medical survey, to define the current health status of a representative cross-section of workers occupationally exposed to brake lining dusts. In conjunction with the cross-sectional medical study, NIOSH will undertake industrial hygiene assessments at a representative sample of work establishments from which the study participants have been drawn. Although the cross-sectional medical survey final report is due October 30, 1978, it is apparent that the report will not be finished until the second quarter of FY'79. Industrial hygiene assessment will be performed following receipt of work establishments from which participants were drawn.

The contractor has promised the final report on the mortality feasibility study to NIOSH by 11/1/78.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Center for Disease Control, National Inst. for Occupational Safety & Health $25,000

2.0350,

PILOT DEMONSTRATION PROJECT FOR WORKER NOTIFICATION, CONSULTATION AND MEDICAL FOLLOW-UP

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For the most part, workers exposed to toxic substances are unaware of the existence of hazards and potential acute or chronic disease outcomes. Although most authorities agree about the principle of the worker's right to know, there is a gap in providing meaningful and timely information coupled with provisions for medical surveillance and counselling. The purpose of this project is to take a small group of workers who have been exposed to one or more of the regulated carcinogens, and develop protocols for follow-up, medical surveillance and counselling and to identify the kinds of information required for adequate surveillance and monitoring as a pilot study - specifically, those workers whose medical records were sent to NIOSH because they had been exposed to a regulated carcinogen and have terminated employment from a company covered by Federal regulations, Title 29, Chapter XVII, Section 1910-10, Subpart G.

This demonstration project could serve as a model for other large groups of workers who may, in the future, be placed under medical surveillance. Cooperation with NCI's cancer information service will be sought as regards the counselling and recommendation for medical screening. Also, an attempt will be made to obtain work history data on the group of workers under study.

FY-78 ACCOMPLISHMENTS: Follow-up activities have been initiated and will conclude by the end of FY-78. Accompanying file development activities (coding, data entry, etc.) will also be completed.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Center for Disease Control, National Inst. for Occupational Safety & Health $56,000

2.0351,

METHYL CHLORIDE/DRUG INTERACTIONS ON PERFORMANCE

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This project represents the completion of human laboratory inhalation investigations which have focused

on the potential interactive effects on behavioral performance and neurologic function of an industrial solvent, methyl chloride, a common prescription drug (Valium), and twonon-prescription drugs, ethanol and caffeine. The intent of the project was to determine by developing dose-effect relationships the precise point at which the solvent in combination with each drug begins to produce changes in functional capacity. Methyl chloride was found in a NIOSH contract study (CDC-99-74-20) to impair workers' performance of tests involving cognitive time-sharing and also increased arm tremor. Valium is the most common prescription drug in current use (18 million prescriptions per year), while ethanol and caffeine are both common drugs having known central nervous system effects, but for which no information exists regarding possible interactions with methyl chloride (MC).

Activities during FY-77 and FY-78 consisted of completing the testing on the interactive effects of MC with Valium and MC with ethanol on human behavioral performance (signal detection, compensatory tracking, vigilance). Early findings from the blood and breath tests revealed large variations in individual uptake levels, which indicated major differences in human sensitivity to the solvent, methyl chloride. As a result of this observation, additional subjects were added to all phases of the investigation in order to determine the extent of distribution and behavioral impairments of those individuals who appear to be highly sensitive to methyl chloride. During FY-79 similar testing will be completed for MC/caffeine and the results from all three studies analyzed and prepared as a NIOSH report.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Center for Disease Control, National Inst. for Occupational Safety & Health $20,546

2.0352,
DEVELOPMENT OF EMPLOYEE-DERIVED EXPOSURE DATA

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The nationwide surveillance of occupational health hazards cannot proceed without effective and continuing contact with those directly affected - the workers. The employee is usually the first person to register awareness about the substances found in the workplace, and the first affected adversely if hazardous substances are improperly used. The employee is frequently uninformed as to the possible deleterious health effects of occupational exposures and usually unaware of potential sources of information and assistance.

Major repositories of data on employee complaints relating to occupational health hazards have been identified and analyzed for completeness and utility as early indicators of potential problems. A generalized process-efficient computer system to accept and display incoming data will be used to accumulate incoming information. As additional sources of data are identified and annexed, a bi-monthly or more frequent bulletin summarizing important new information will be published and disseminated to NIOSH and other researchers.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Center for Disease Control, National Inst. for Occupational Safety & Health $149,000

2.0353,
CANCER SURVEILLANCE OF OCCUPATIONAL COHORTS IN A WESTERN SMSA - NCI

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This project proposes the examination of cancer incidence patterns among selected occupational cohorts in the greater San Francisco-Oakland SMSA. Numerouc unions and collective bargaining organizations maintain data on constituent members. Given existing data on known and suspected carcinogenic hazards present in the environment of these cohorts, the existence and applicability of union data facilitates the study of the occupational cohorts for unusual cancer incidence. Linkage of data such as this with data on cancer incidence in geopolitically defined populations provides direct comparison of cancer risks for selected occupatonal groups. The results of such efforts will assist industrywide studies in identifying groups at risk and thus encourage finer characterization of the occupational environment. These activities will benefit NIOSH programs in criteria document development and OSHA's program of standard setting. This particular project also explores the methodologic and technical problems associated with population-based cancer surveillance. The nature of the study necessitates a cooperative effort between the SEER participant in the Bay Area and NIOSH. A contract will be developed for basic data collection, update, edit, and preliminary analysis.

FY-78 ACCOMPLISHMENTS: Contract awarded. Initial visit to contractor made to discuss scope of work.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Center for Disease Control, National Inst. for Occupational Safety & Health $9,500

2.0354,
MORTALITY, MEDICAL AND REPRODUCTIVE STUDY OF ESTROGEN WORKERS

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Synthetic estrogens are a group of synthetic hormones having serious potential effects on exposed workers. It has been documented that women taking oral contraceptives have an increased risk of thromboembolism, cerebral vascular disease, and myocardial infarction. A NIOSH Hazard Evaluation study which was carried out in an oral contraceptive plant indicated that problems are occurring in both males and females. These problems include gynecomastia and menstrual changes. It has also been noted that estrogens may be carcinogenic (e.g., DES is a transplacental carcinogen).

A cross-sectional medical/environmental study is proposed to investigate health problems occurring as a result of exposure to synthetic estrogens and to attempt to determine a safe level of exposure to these agents. The feasibility of a mortality study of workers occupationally exposed to products containing estrogens will be assessed. The study will be designed to determine if an excess number of carcinoma deaths have occurred in exposed workers.

Concern for an excess of miscarriages and birth defects related to employment at a pharmaceutical laboratory in Radnor, Pennsylvania, resulted in the request for a health hazard evaluation. Data provided by company officials indicate an unsuccessful pregnancy rate of 25.0% (8/31) for Research and Development personnel as compared to 10.8% (4/37) for the administrative personnel. Because this twofold risk is based on small numbers, the population of female workers needs to be further assessed to determine if a more complete data set will still result in the continued observation of an excessive risk.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Center for Disease Control, National Inst. for Occupational Safety & Health $34,000

2.0355,
MORTALITY, MEDICAL, AND REPRODUCTIVE STUDY OF LEAD WORKERS

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Mortality Study of Lead Workers: Lead phosphate administered subcutaneously to rats has resulted in the induction of renal tumors. Renal tumors in rats have also been induced by lead acetate-containing diet. Lead oxide appears to act synergistically with benzo(a)pyrene in pulmonary tumorigenesis in Syrian hamsters, since lead is reportedly cumulative in the lung. Workers in lead smelters and battery plants may breathe or ingest lead as a result of poor work hygiene practices. Possible carcinogenic or co-carcinogenic effect deserves examination. Although the authors of a study concerning carcinogenesis among lead battery plant workers concluded that their results do not support a specific cancer risk, the data indicate that such a risk may be present. In order to further assess the possible excess cancer risk to lead exposure, a further retrospective cohort study is planned on workers exposed to lead and its compounds. A contract for establishing a master file and doing follow-up was given to Westat, Inc. The cohort has been identified and follow-up will be started soon.

Reproductive Studies: Since as early as the mid 1800s, the effects of lead exposure on human reproduction have been observed. In 1860, Constantin Paul collected case histories on the reproductive effects of lead through both male and female exposures. These effects included spontaneous abortions, stillbirths and infant death. Others have observed adverse reproductive effects in both wives of male lead workers and in women workers who have had exposure to lead. Recently, Lancranjan et al. (1975), in a study of 150 male lead battery plant workers, found that those in groups strongly affected by lead exposure had 'decreased fertility due to anthenospermia (reduced viability of sperm), hypospermia or oligospermia (both denote reduced numbers), or teratospermia (malformed), frequently associated.'

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Center for Disease Control, National Inst. for Occupational Safety & Health $95,000

2.0356,
CROSS-SECTIONAL EPIDEMIC AND INDUSTRIAL STUDY OF NEW AND EX-MINERS

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This project is designed to answer the basic question: 'Are those miners who have already left the coal mining industry different from those who remain?' This question will be answered by investigating 'new miners' (those miners who work only for a few years and quit) and 'ex-miners' (those miners who worked for many years and quit). The ex-miners will be investigated by comparing data collected in the first and second round, to determine if they actually left the industry. Data from those who left will be compared with a matched group who remained. This will require no new data collection.

The overall purpose of the 'new miner' study is to determine if new miners develop acute changes in their lung function with dust exposure. The 'new miner' study will be divided into two phases. Phase I will consist of a detailed analysis of those miners who participated in the third round of the National Coal Study with less than 18 months of employment. These miners will be compared to a normal nonminer control group and a group of miners with more than 5 years exposure to coal mine dust.

Phase II of the 'new miner' study will consist of the repeat examination of approximately 100 miners with less than 1 year of employment. Their initial examinations will be conducted before and after a work shift. Follow-up examinations will be conducted at 6 months intervals for approximately 2 years.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Center for Disease Control, National Inst. for Occupational Safety & Health $153,725

2.0357,
MORTALITY OF DIESEL ENGINE MECHANICS

J. Costello, U.S. Dept. of Health & Human Services, Public Health Service, Center for Disease Control, National Inst. for Occupational Safety & Health, Division of Respiratory Disease Studies, *944 Chestnut Ridge Rd., Morgantown, West Virginia* 26505 (VKL-R22-228)

A few years ago a suggestion was made to introduce diesel powered equipment into underground coal mines to replace electrically operated equipment. Labor unions expressed concern about this in terms of both health and safety. NIOSH held a conference in September, 1977, to determine what was known about health effects of diesel exhaust. One recommendation of this conference was for NIOSH to look at a large population of workers who had been exposed to diesel exhaust in confined spaces for an extended period of time.

Diesel engines have been found to emit polynuclear aromatic hydrocarbons. Among these emitted polynuclear aromatic hydrocarbons are found benzo(a)pyrene(BaP) and benz(a)anthracene(BaA) which are known to be carcinogenic. Work by Carnow and others suggests that an increase of 1 mg/m3 BaP in urban pollution is associated with a 5% increase in lung cancer death rate. Battigelli and

others in 1963 looked at 210 workmen exposed to diesel exhaust in railroad engine houses and found that there was no significant difference in pulmonary function between these workers and a control group. However, the maximum latent period was 15 years with an average of 10 year exposure and the study group was small.

Railroads began dieselization in earnest after the Second World War and by 1953 were well on the way toward complete dieselization. We now have a maximum latent period of 24 plus years which should be long encugh to show evidence of lung cancer, if it exists, in these workers. This project will look at mortality patterns of a large group of workers in railroad diesel engine repair shops (and other diesel repair shops) where it is common practice for engines to be left running for adjustments. Particularly in inclement weather the shop doors are closed and inadequate ventilation may result. We will pick a sample of the larger shops in the eastern United States for this project.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Center for Disease Control, National Inst. for Occupational Safety & Health $35,473

2.0358,

MORBIDITY, MORTALITY AND INDUSTRIAL HYGIENE STUDY OF CEMENT WORKERS

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For at least 40 years there have been studies performed to detect evidence of lung disease in Portland cement workers. The most recent epidemiologic study completed in Yugoslavia indicates that cement workers show significant increases in pulmonary symptoms and decreases in pulmonary functions related to chronic obstructive pulmonary disease, as compared to controls.

It is not known whether the results of the Yugoslavian study can be applied to cement workers in the United States. It is possible that the work environment in American cement plants is different enough to produce different results in a similar study.

Workers in the cement industry will be examined for evidence of both obstructive and restrictive (fibrotic) lung disease. Furthermore, personal dust sampling will be done at the study sites to develop 'dose-response' curves to the dust generated at the cement plants.

Results will also be compared to the results of 'Blue Collar' control worker survey soon to be initiated by NIOSH.

During FY 78, in consultation with union and industry, the study protocol was written. It received favorable peer review and was accepted by SPRG. Twenty-nine cement plants were selected as possible study sites, and are presently being visited to determine their suitability. Approximately 19 of these sites will actually be selected for study. Furthermore, a pilot study of dust level variability is being conducted to give insight into the amount of personal sampling that will need to be done in the industry-wide study.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Center for Disease Control, National Inst. for Occupational Safety & Health $112,798

2.0359,

MORBIDITY & INDUSTRIAL HYGIENE STUDY OF WORKERS EXPOSED TO SOX, H2O4, NOX, NO3 - EPA

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The purpose of this study is to develop dose-response relations of both an acute and chronic nature for the various species of sulfur and nitrogen compounds in support of health standards development.

The two essential interdependent parts of this study are the measurement of dose and of response. A measure of environmental dose will be obtained by personal sampling for the compounds under investigation. Measurement of worker response include a questionnaire on demographic variables and respiratory symptoms, chest x-rays, and pulmonary function. A sample of the workers will be tested before and after work for changes in pulmonary function. Environmental measures will be taken concurrently. Levels of exposure that produce chronic effects will be estimated from total work history and environmental sampling at the time of the medical survey.

PAST ACCOMPLISHMENTS: Data collected has been completed for Dieselized Salt Mines (NO2), and Battery manufacturing plants (H2SO4).

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Center for Disease Control, National Inst. for Occupational Safety & Health $280,828

2.0360,

SCAFFOLDS

J. Cavender, U.S. Dept. of Health & Human Services, Public Health Service, Center for Disease Control, National Inst. for Occupational Safety & Health, Division of Safety Research, *944 Chestnut Ridge Rd., Morgantown, West Virginia* 26505 (VLB-S31-838)

OSHA has identified scaffolding accidents as a category requiring special emphasis.

The purpose of this project is to provide continuity between NIOSH and OSHA on the effort to investigate injuries and determine causal factors of accidents involving scaffolds.

The Bureau of Labor Statistics, OSHA and NIOSH have been actively working on this problem through the use of BLS's Supplemental Data System. This system is in the initial stages of implementation and when fully implemented should provide detailed information on scaffolding accidents.

An interagency agreement with the National Bureau of Standards was initiated in May 1978 to provide detailed data on scaffolding accidents and injuries.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Center for Disease Control, National Inst. for Occupational Safety & Health $54,598

2.0361,

SAFETY INTELLIGENCE

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Safety Intelligence connotes the total process of gathering and organizing current occupational accident data for use in establishing priorities and directing the research efforts of the Division of Safety Research. Numerous data sources currently exist in other government agencies and the private sector that are continually monitored by the Safety Surveillance Branch in an effort to maintain the lastest po l of safety statistics for timely and efficient access.

In addition to the data collection, specific projects will be conducted using this data. One effort is aimed at identifying and isolating the industries and occupations that exhibit unusually high risk for injury, both in frequency and severity. Unscheduled, but periodic analysis sheets will be produced indicating the status of the industrial accident experience in as much detail as possible. Finally, a large quantity of first reports of injury will be taped to create a new original data source in extreme detail.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Center for Disease Control, National Inst. for Occupational Safety & Health $83,375

2.0362,

MORTALITY STUDY OF CRUSHED STONE WORKERS - NCI

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As a result of researchers finding asbestos fibers in crushed rock being quarried in Maryland, negotiations were started and are continuing with the National Crushed Stone Associated to arrange for NIOSH to do national mortality study of workers in the crushed stone industry. Emphasis will be placed on causes of death related to cancer and pulmonary diseases.

As an integral part of this study, the Environmental Investigations Branch will examine and chracterize the rock that is being quarried. There are four basic types of rock being quarried and each type will be covered by our sample.

A draft protocol has been written and is under consideration by the National Crushed Stone Association.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Center for Disease Control, National Inst. for Occupational Safety & Health $221,977

2.0363,

MORTALITY, MORBIDITY, AND INDUSTRIAL HYGIENE STUDY OF OIL SHALE WORKERS - EPA

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The purpose of this project is to determine the health effects, if any, of occupational exposure to shale oil. The study cohort is made up of a total of 429 men who worked at Anvil Points Oil Shale Retort and 15 men who worked at the Union Oil Retort in Colorado in the 1950's and 1960's. The project will consist of a mortality study (in-house) and morbidity study (outside contract). The mortality study will compare the mortality patterns among the male, caucasian, shale oil workers cohort with the mortality patterns of U.S. white males. Comparisons will also be made between those in the study group with high and low exposure to shale oil. The morbidity study will compare the morbidity patterns among the male, caucasian, shale oil worker cohort with the morbidity patterns of a matched control group from the Colorado Plateau (age, race, smoking, skin complexion, years on the Colorado Plateau, and time spent in outdoor activities). High and low shale oil exposure groups would be compared. Attempts to develop exposure indicies in both the mortality and morbidity studies will be made.

Representatives of EIB will continue to work with representatives of the USSR on the health effects of oil shale development. Contact will be made with individuals knowledgeable in oil shale technology and involved in industrial hygiene studies related to oil shale processing.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Center for Disease Control, National Inst. for Occupational Safety & Health $83,302

2.0364,

PATHOGENESIS OF ALLERGIC PULMONARY ASPERGILLOSIS

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The first objective is to establish an animal model of allergic aspergillosis in non-human primates. Monkeys are sensitized with A. fumigatus to produce precipitating antibody. Human serum rich in IgE antibody to A. fumigatus is infused and the animals challenged with A. fumigatus aerosol. Changes in lung tissue are determined by light microscopy, immunofluorescence and electron microscopic examination of serially obtained open lung and transbronchial biopsied tissue. Bronchial lavage is performed and lavage fluid and cells evaluated for immunoglobulin and protein content, enzyme activity and evidence of cell mediated immunity. The same sensitization will be done in the monkey skin with serial biopsies. The second major objective is to continue studies on the epidemiology of allergic aspergillosis. In order to determine whether the increased incidence of this disease in Great Britian is due to differences in the atmospheric burden of A. fumigatus, air sampling in St. Louis will be carried out with an Andersen sampler and compared to Great Britain. Individuals with a particularly heavy exposure to A. fumigatus, namely organic farmers, will be evaluated for sensitivity to A. fumigatus by skin testing and precipitin testing.

BIBLIOGRAPHIC REFERENCES: Slavin, R.G. What Does a Fungus Among Us Really Mean? J. Allergy & Clinical Immunology 62:7 1978.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Center for Disease Control, National Inst. for Occupational Safety & Health $54,350

2.0365,

NEUROTOXICITY AND TERATOLOGY OF INDUSTRIAL CHEMICALS

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This project is designed to study: 1) the mechanism of nervous system degeneration following exposure to neurotoxic chemicals used in industry, 2) the capacity for these chemicals to damage the developing nervous system, and 3) to design methods to screen chemicals for neurotoxic properties for the purposes of determining safe exposure levels and 4) to detect early nervous system damage in individuals occupationally exposed to neurotoxic chemicals.

Planned studies will continue to utilize correlated morphological and biochemical tools to dissect the mechanism of nerve fiber degeneration induced by acrylamide and solvents. Morphological studies will be initiated to study the response of the fetal nervous system to maternal exposure to these chemicals. Finally, the modified Optacon R, simple device for the assessment of decrements in palmar sensation, will continue to be developed and tested for its ability to detect sub-clinical occupational neuropathy.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Center for Disease Control, National Inst. for Occupational Safety & Health $113,688

2.0366,

THE ROLE OF ATOPY IN OCCUPATIONAL SKIN DISEASE

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The objectives of this grant concern two areas. Regarding the role of atopy in occupational dermatitis the objectives are as follows: To demonstrate the incidence of atopy among the closed cases of Workmen's compensation in the State of South Carolina for the fiscal year July I, I976 to June 30, I977; To determine the incidence of atopy among the parents and family of the closed cases; To demonstrate the level to which employers are aware of the existence of atopy at the time of hiring employees in those plants in which a closed case of Workmen's compensation involving skin disease occurred.

Regarding the delivery of effective dermatologic intervention at the time of the active case of occupational dermatitis, the objectives are as follows: To identify contributing factors such as nature of in plant irritants or allergens, degree of personal protection used, and work practice routine involved by those employees who represented closed cases of Workmen's compensations attributed to skin disease; to determine the interval between development of the occupational skin disease and referral to trained personnel; To determine the level of medical and/or dermatologic training ultimately involved in the case; To develop a measure of credibility between information gleaned from the employees representing the closed cases themselves and the employers of the closed cases; To determine the ultimate disposition of the closed cases with respect to continuance, transferral, or termination at the place of employment.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Center for Disease Control, National Inst. for Occupational Safety & Health $53,864

2.0367,

LEAD EXPOSURE - ELECTROPHYSIOLOGIC/ PSYCHOLOGIC EFFECTS

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The objective of the proposed research is to identify the most sensitive, specific, and reproducible screening methods for detecting disturbed central and peripheral nervous system function in workers exposed to lead. Earlier studies of lead neuropathy have suffered from methodological inconsistencies and inconclusive results. The proposed study will be a prospective evaluation of cohorts of 40 lead-exposed workers and 40 unexposed controls in which subjects will be tested three times over a three-year period. A 30% sample of subjects will be retested immediately after each of the three testing sessions to assess reproducibility of nerve conduction testing. The following data will be collected from each participant in the study: 1) work and medical history and demographic information; 2) motor and sensory nerve conduction evaluation of ulnar, peroneal, and sural nerves; 3) clinical neurologic examination; 4) psychologic measures of memory, intelligence, and dexterity; 5) blood lead and zinc protoporphyrin levels (collected bi-monthly).

Upon completion of the study, we will be able to recommend a standard methodology for evaluating neurologic effects of lead, and of other neurotoxins in occupational settings. Not only would such a protocol improve the comparability of studies performed by different investigators, but its systematized implementation by trained technicians would facilitate subsequent studies.

Furthermore, more precise dose-response relationships between neurotoxin exposure levels and neurologic effects could be developed and then used to establish permissable exposure levels in the workplace. Since many new chemicals will be introduced into industry in the future, the availability of this method and its criteria would greatly facilitate the evaluation of exposed workers.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Center for Disease Control, National Inst. for Occupational Safety & Health $129,117

2.0368,

MORTALITY EXPERIENCE OF WORKERS EXPOSED TO HALOETHERS

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The primary purpose of this study is to examine the respiratory cancer mortality experience of workers in the chemical industry who have been exposed to chloromethyl methyl ether (CMME). This will be accomplished by updating the mortality experience for the period 1973-1977 among workers in the six firms previously included in our epidemiologic study of occupational exposure to CMME. In addition, all exposed and nonexposed production workers in a seventh firm (plant on the West Coast) will be included in our retrospective cohort for complete mortality follow-up from the year in which CMME operations first began, 1955, through the end of 1977. Respiratory cancer and other mortality experience of the CMME-exposed workers will be characterized according to duration and intensity of CMME exposure; the temporal patterns of respiratory cancer mortality, including estimation of the induction-latency period, will also be examined.

Ascertainment of deaths among separated employees will be based on the searching service of the Social Security Administration. Those not indicated as dead by the Social Security Administration will be traced further for vital status ascertainment by utilization of other resources including the Internal Revenue Service, Post Offices, State Motor Vehicle Bureaus and Union records. Death certificates will be located and obtained; diagnostic confirmations will also be obtained from appropriate physicians, autopsy records, and/or hospitals when any form of cancer is listed as a cause.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Center for Disease Control, National Inst. for Occupational Safety & Health $55,426

2.0369,

MORTALITY, MEDICAL, AND INDUSTRIAL HYGIENE STUDY OF WORKERS EXPOSED TO WOOD PRESERVATIVES

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Wood preservatives are bactericidal, fungicidal, and insecticidal groups of chemicals used to preserve wood against rotting, termite infestation, etc. Examples are arsenicals, creosote, pentachlorophenol, chlorodiphenyls, chlorinated naphthalenes, dinitrophenol, thiuram, copper compounds, and alkyl mercury compounds. These chemicals are toxic to humans and will cause various health effects on exposed workers.

This program plan proposes a cross-sectional medical and industrial hygiene study on workers employed in the manufacture and use of wood preserving chemicals. Since diversified kinds of chemicals are involved, the first phase of the study will be devoted to determine the type and volume of chemicals manufactured or used, and the size of worker population exposed. On the basis of information collected in the walk-through surveys, a plan of study will be developed as to the type of population to be studied and to the methodology.

Currently, the Stewart-Todd Associates of Wayne, Pennsylvania, is about to conduct a number of walk-through surveys under a NIOSH contract on 'Wood Preservatives, Flame Retardants and Acrylates' (TOX-TIPS, September 1979, 40-29). The medical study portion will join this ongoing program to save time and cost and will conduct a cross-sectional medical study of selected groups of workers. A mortality study may also be considered if a suitable cohort is found during the walk-through surveys.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Center for Disease Control, National Inst. for Occupational Safety & Health funds n.a.

2.0370,

MORTALITY STUDY OF INCREASED BRAIN TUMOR INCIDENCE IN TEXAS CITY, TEXAS

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In response to a complaint of alleged excessive brain tumors among employees at the Union Carbide Company of Texas City, Texas, the Houston South Area Office of OSHA launched an investigation in November of 1978. After a careful inquiry, OSHA requested technical assistance from NIOSH in evaluating the problem.

Preliminary data, supplied with aid of the company, local unions, and local physicians and surgeons, show ten cases in which death certificates indicated brain tumor as cause of death. One additional living employee was found to have a brain tumor. The cell types were predominantly glioma or glioblastoma multiforme with one 'meningioma, angioblastic (sarcoma)'. The workforce at the plant presently numbers 2500. Between 7.5 and 10 thousand workers have worked in the plant between 1941, when the plant began operation, and the present.

Present plans call for additional case-finding, case confirmation by pathological review of tissues, a proportional mortality study (as check of methodology which may be useful elsewhere), a case-control study of brain tumor deaths, and a cohort mortality study. Coding of company records is being completed and the case-control study will begin soon.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Center for Disease Control, National Inst. for Occupational Safety & Health funds n.a.

2.0371,

REGISTRATION OF DIOXIN WORKERS

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Tetrachlorodibenzo-p-dioxin (TCDD) is a highly toxic contaminant of manufacturing processes which use trichlorophenol as a feedstock. The manufacture of the herbicide 2,4,5-T is an example. TCDD is a chloracnegen and acute toxin as well as a carcinogen and a teratogen in laboratory animals. In its use as a defoliant, large numbers of people have been exposed.

We propose establishing a registry of workers who have been exposed to TCDD during manufacture of TCP and other compounds. This registry may serve as a base for cohort mortality studies and for possible studies of reproductive effects and morbidity.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Center for Disease Control, National Inst. for Occupational Safety & Health funds n.a.

2.0372,

CASE CONTROL STUDY OF GOODPASTURE'S SYNDROME ETIOLOGY

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Goodpasture's Syndrome (GPS), a rare but devastating form of renal failure, is characterized by necrotizing glomerulitis and life threatening pulmonary hemorrhage. Consistent with an occupational disease, GPS is more common in males than females, and more common in younger rather than older adults. The etiology is thought to be autoimmune, although tentative associations with influenza and hydrocarbon solvents are alleged. One study documents prominent solvent exposure in six of eight cases interviewed, but no assessment of exposure in controls was attempted.

A case control study of the causes of GPS will require nationwide interviews of 75 cases and 150 controls. Methods of case ascertainments are now being explored.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Center for Disease Control, National Inst. for Occupational Safety & Health funds n.a.

2.0373,

MORTALITY AND INDUSTRIAL HYGIENE STUDY OF FUELMEN

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Workers who load jet fuel (kerosene) into commercial aircraft at JFK Airport in New York are exposed to kerosene, carbon monoxide from vehicular exhaust, and aircraft exhaust which include aliphatic and aromatic hydrocarbons. A preliminary investigation in response to alleged unusual death rates has uncovered several findings: 1) two of 31 deaths are due to multiple myeloma which represents an unusual fraction, and 2) maintenance and design of vehicles may allow excessive exposure to carbon monoxide. A cohort mortality study with industrial hygiene characterization of the worksite is planned.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Center for Disease Control, National Inst. for Occupational Safety & Health funds n.a.

2.0374,

MORTALITY AND INDUSTRIAL HYGIENE STUDY OF WORKERS EXPOSED TO TETRAETHYL LEAD

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Preliminary epidemiologic investigation of employees of one company involved in the production of tetraethyl lead has revealed three cases of multiple myeloma, two living and one deceased. These three cases represent approximately 30 times the rate expected. More comprehensive case ascertainment is being proposed to locate other diagnosed cases, both living and dead, in the same workforce. This will be accomplished by expanding a continuing retrospective cohort mortality study conducted by the company and by mailing questionnaires to former and current employees. Dependent on the results of more extensive case findings, it is proposed to screen the population for asymptomatic multiple myeloma. Multiple myeloma often demonstrates a lengthy course prior to diagnosis. The cost of laboratory tests might range from 40 to 70 dollars per person.

The industrial hygiene portion of this project will include both preliminary and in-depth characterizations of the work environment in the tetraethyl lead production areas. Personal and area monitoring for tetraethyl lead, the reactants in the production process, and other additives used in the blending operations will be included.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Center for Disease Control, National Inst. for Occupational Safety & Health funds n.a.

2.0375,

INDUSTRIAL HYGIENE CHARACTERIZATION OF PETROLEUM REFINERY TURNAROUNDS

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The petroleum refining industry is one of the most complex industries in the U.S. although not necessarily one of the most technically up-to-date industries. Only three new grassroots petroleum refineries have been constructed in the U.S. since 1971. To insure that unit operations within these refineries remain on line, regular on-line maintenance is programmed. However, unit operations must periodically be taken off-line (closed down) to perform a complete overhaul or major maintenance. In the refining industry, this would be defined as a 'turnaround'. Most of the turnaround work is done by outside contract firms. Current literature reviews and contacts within the petroleum industry indicate that very little is known about the injury and illness associated with these activities. Depending on the unit operation on which the turnaround is being performed, the workers will be potentially exposed to virtually a shopping list of toxic and carcinogenic chemicals.

The purpose of the project is to identify and quantify worker exposure during turnaround activities at the catalytic cracker, coker, and asphalt units. The industrial hygiene characterization of these units would complement the current project 'Industrial Hygiene Characterization of Petroleum Refineries' which is documenting worker exposure to selected carcinogens during normal on-line operations of these three refinery units.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Center for Disease Control, National Inst. for Occupational Safety & Health funds n.a.

2.0376,

VIBRATION AND INDUSTRIALLY RELATED LOW BACK DISEASE

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Epidemiologic and mechanical studies suggest that cyclic loading is an important etiologic risk factor in the development of degnerative disc disease. Posture, spinal stiffness, asymmetric spinal loading and abdominal tone appear to influence the effects of vibration. By analysis of a general practice population and questionnaire survey, we will define the role of cyclic loading in the broader perspective of low back pain (LBP). Sub-groups with and without back pain, with and without significant vibrational loadings will be identified. These sub-groups will then be investigated by questionnaire, and by standardized physical examination for spine stiffness, posture, straight leg raising, and neurologic abnormality, using biomechanical test methods including Moire fringe topography. Psychologic factors will be evaluated by computerized modified Minnesota Multiphasic Personality Index (MMPI), pain drawings and tolerance tests. Objective radiographic analysis will correlate LBP with postural, congenital, disc space height, and facet characteristics. The load deflection and impedance characteristics will be measured. By case studies, the environmental vibrational stresses, lifting requirements, and asymmetric loading configurations imposed on the spine will be analyzed. (Safety standards will be recommended for vibrational stresses.)

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Center for Disease Control, National Inst. for Occupational Safety & Health $33,805

2.0377,

OCCUPATIONALLY-INDUCED ISOCYANATE REACTIONS

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Isocyanates are widely used in the plastics industry for preparation of polyurethanes. Adverse effects of various isocyanates such as asthma and contact dermatitis are well-recognized occupational hazards. This proposal is designed to investigate the immunological basis of these isocyanate reactions. Immunological effects of aromatic diisocyanate (TDI toluene diisocyanate) and aliphatic diisocyanate (HDI hexamethylene diisocyante) will be studied in both animals and humans. Various isocyanate-protein conjugates prepared under controlled laboratory conditions will be characterized by determining precise adduct-carrier ratios. Inducton of homocytotropic and precipitating antibodies by isocyanate-protein conjugates will be investigated in guinea pigs and mice. Effects of chronic inhalation of isocyanate compounds and protein conjugates will be studied in guinea pigs. Investigation of humoral and delayed hypersensitivity will be conducted in TDI- and HDI-sensitive workers. Bronchial provocation tests to isocyanate vapours and aerosol mists of protein conjugates will also be performed in sensitized workers.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Center for Disease Control, National Inst. for Occupational Safety & Health $105,734

2.0378,

ANESTHETIC EXPOSURE AND HEALTH OF DENTAL PERSONNEL

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Recent epidemiologic studies indicate that chronic exposure to inhalation anesthetic gases may have a deleterious effect on the health of personnel employed in the operating room. A comprehensive study of exposed personnel in the hospital operating rooms of this country was recently conducted by the American Society of Anesthesiologists for the National Institute for Occupational Health and reported in 1974. This major study confirmed the findings of previous small-scale studies, all of which indicated an increase in the rate of spontaneous abortion and birth defects in exposed operating room personnel. There was also a significant increase in the incidence of liver disease and unexpected disclosure of a higher rate of congenital anomalies in unexposed wives of practicing anesthesiologists. The belated suspicion that a large segment of the dental profession might be similarly affected was given support when a small pilot study of dentistry disclosed similar serious health hazards.

The purpose of the present investigation is to study in detail the health histories of dentists, their wives, and auxiliary personnel numbering nearly 100,000 individuals. A unique opportunity in this effort will be the study of a large occupational group exposed to a single agent, nitrous oxide, versus the anesthetic gas mixtures.

A two-phase questionnaire survey has been designed to first identify those dentists who use and those who do not use inhalation anesthetics. The investigation will then concentrate on the health hazards of the users, ther wives and exposed employees. In turn, this group will be compared to a control group of non-inhalation anesthetic users. A carefully designed written questionnaire, fashioned after that used in the original ASA-NIOSH survey of hospital operating room personnel, will be employed. The questionnaire will be followed by written and telephone communications, ensuring a high response rate and adding validity to the overall health findings.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Center for Disease Control, National Inst. for Occupational Safety & Health $114,550

2.0379,

CANCER RISKS IN COSMETOLOGISTS

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This study will investigate the incidence of cancer of all sites among cosmetologists who were licensed in Connecticut before 1965, and will obtain a more definitive test of preliminary results which suggested that the cosmetologists have an icreased risk of acute leukemia. Follow-up status as of December, 1978 will be determined for all cosmetologists. The expected number of cases of cancer of individual sites will be: determined by applying to the group at risk the cancer incidence rates of the general Connecticut population, specific for age, calendar year, sex and site. Cancer cases will be ascertained through the Connecticut Tumor Registry.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Center for Disease Control, National Inst. for Occupational Safety & Health $73,322

2.0380,

JOB CONDITIONS, OCCUPATION, AND CORONARY HEART DISEASE

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The object of this research is to examine U.S. data on cardiovascular disease and job conditions for associations similar to those recently obtained by these researchers in cross-sectional and prospective analysis of Swedish national data. Those findings confirmed the relationship between C.V.D. and psychosocial job characteristics using a previously untested model of job psychological strain development based on job decision latitude (low) and psychological job demands. These same job characteristics have been previously shown to be stress-related in both U.S. data and Swedish data based on comparable populations and survey instruments.

We propose to examine five major U.S. data bases including information on job characteristics and C.V.D. or C.H.D.: The H.I.S. (I972); H.E.S. (I960-62); H.A.N.E.S. (I970-75); the Western Collaborative Study; and the Framingham Study. While data measuring job characteristics is generally weak in all existing large scale U.S. C.V.D.-C.H.D. data bases, the above surveys do contain either limited direct measures of the relevant job characteristics or detailed U.S. Census Occupational Codes (382 categories). These codes can be used to indirectly assess job condition impacts with the help of job characteristic-occupation data in three national U.S. working condition surveys (I969, I972, I977). The U.S. data bases also allow isolation of the unique contribution of job conditions to C.V.D. risk, through multivariate control for conventional risk factors (especially age, smoking, serum cholesterol, type A behavior and socioeconomic status). It should be noted that our model, based on work environment conditions, represents an alternative psycho-social mechanism of disease development to that implied by current 'Type A' behavior research (based on personality characteristics). Also, previous U.S. and Swedish findings based on the model have not substantially weakened when socioeconomic status is controlled.

The presently available U.S. data probably cannot provide the final assessment of job-related C.H.D. risk. Our proposal makes maximum use of the extensive existing data resources, and should provide a basis of more exact data collection instruments in the future. Our project output will include a recommended job analysis instrument.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Center for Disease Control, National Inst. for Occupational Safety & Health $114,588

2.0381,

LUNG CANCER SCREENING OF WORKERS AT HIGH RISK

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Through a longitudinal study of approximately 6000 coke-oven workers we will characterize the histopathology of lung cancer occurring in this high-risk occupation and determine if repeated sputum cytology studies reveal a sequence of changes leading to lung cancer. We seek also to determine if coke workers who develop lung and other cancer have elevated levels of tumor markers such as serum CEA, serum and urine polyamines. We will try to ascertain if the presence of tetraploidy characterizes cells in lung cancer. Factors influencing these changes will be examined, especially cigarette smoking history, job location and duration. This information will be used to propose cancer control strategies for this group of workers.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Center for Disease Control, National Inst. for Occupational Safety & Health $308,503

2.0382,

OCCUPATIONAL HEALTH RISKS OF WORKERS IN ATOMIC PLANTS

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The purpose of this research is to determine the occupational risks among workers in an atomic energy facility. A major objective is to study the long-term delayed biological effects of low-level ionizing radiation in a normal adult industrial population, who have been chronically exposed to fractionated doses of low-level ionizing radiation over a span of years. The study is a prospective epidemiological evaluation of workers employed since 1944 and in succeeding years to be followed for cause of death identification through 1979, in which known radiation measurements have been made and recorded on a uniform basis during the entire period of employment. The National Social Security System is utilized for the identification of the deceased and the state vital records provide the cause of death data.

A control population for the Hanford employees matched to the 35,000 atomic worker population has been established and will be processed simultaneously through Social Security with the employees for the identification of mortality data. Previous analyses have been confined to Hanford employees, 1976.

The research will enable the extension of the period of years of observation for a population of 150,000 with the incorporation of the matched controls, for the same period of time.

Successive cohort analyses of employee populations, with simultaneous control of employment exposures, employment patterns, occupations, and external and internal radiation measurements will be carried out.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Center for Disease Control, National Inst. for Occupational Safety & Health $410,260

2.0383,

ANESTHETIC METABOLISM - TOXIC EFFECTS IN OPERATING ROOM PERSONNEL

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The association between metabolism of the volatile anesthetics and long-term toxicity is well established. This toxicity is frequently seen as organ damage to the liver, kidney and reproductive system. An association between cancer and anesthetic exposure has also been suggested, and recent large scale epidemiologic studies in the U.S. and U.K. indicate an increase in female cancer among exposed O.R. personnel. The likely association between exposure to the waste gases in the operating room, anesthetic metabolism, teratogenicity, and carcinogenicity is based on studies indicating that irreversible effects result from anesthetic biodegradation. Our intent is to select two commonly used anesthetics, halothane and nitrous oxide, and investigate their metabolism. It is known that exposure to compounds such as vinyl chloride and the alpha-haloethers results in carcinogenesis, possibly related to the fact that these agents or their metabolites are powerful alkylating agents. It seems reasonable that a similar mechanism might apply in the case of the chemically related halogenated anesthetics. Halothane is known to be metabolized, but limited information is available concerning the reactive intermediates which covalently bind to the liver. These or similar molecules are likely to be involved in its potential toxicity and carcinogenicity. The metabolism of nitrous oxide remains to be confirmed. On a theoretical basis, its biodegradation to nitrites or nitrosamines would produce mutagenic and carcinogenic effects. Study of the metabolism of these two anesthetics, identification of their reactive intermediary metabolites and determination of their binding properties will help determine whether anesthetic metabolism is responsible for the observed toxicity. Such information will further guide our search for new and safer anesthetics and help establish standards for the protection of occupationally exposed operating room personnel.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Center for Disease Control, National Inst. for Occupational Safety & Health $206,347

2.0384,

PULMONARY DUST RETENTION & OCCUPATIONAL LUNG DISEASE

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The retention sites and residence times for inhaled particles deposited in the non-ciliated pulmonary regions are important factors in the pathogenesis of major occupational respiratory diseases. This study is directed toward the quantitative characterization of the pathways, transport rates, and storage sites for respirable particles with defined size and shape and concentration. Particle retention within the thorax and tracheal lymph nodes following aerosol inhalation will be measured for at least 8 months in 4 donkeys by the external in vivo dectection of radionuclides within the particles, and for ferromagnetic particles, by remanent magnetism.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Center for Disease Control, National Inst. for Occupational Safety & Health $31,329

2.0385,

AN INVESTIGATION OF OCCUPATIONAL WRIST INJURIES IN WOMEN

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Past experience has shown that there is a high incidence of chronic wrist injuries among workers who perform manual work in industry; this incidence is particularly high among female workers. For example, in recent five year retrospective study of a sewing plant that was studied in the current investigation, Wherle (1976) reported that 10.3 cases of carpal tunnel syndrome occurred per million man hours worked.

The proposed research is a continuation of a current investigation, the tentative results of which show that carpal tunnel syndrome causation has both worker and job attributes. Based upon the findings of the current study, recommendations to alleviate carpal tunnel syndrome at the work place will be proposed. The objective of this continued research is to validate the effectiveness of these recommendations, both theoretically and empirically.

A field study that will involve implementation of the recommendations so as to intervene in the pathogenesis of carpal tunnel syndrome at the workplace is planned.

To measure the effectiveness of the recommendations, it has been necessary to develop a test battery to evaluate functional hand performance and to establish test score distributions for symptomatic populations during the past year.

An anatomical study in which the types of intrawrist forces that create morphological tissue changes within the carpal tunnel is underway to evaluate the theoretical basis of the field recommendations. Papers have been submitted to the following journals: Journal of Biomechanics, Journal of Occupational Medicine, Archives of Physical Medicine.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Center for Disease Control, National Inst. for Occupational Safety & Health $84,804

2.0386,

PULMONARY EFFECTS OF VINYL CHLORIDE

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Animal lungs (90 mice and 30 hamster) exposed to vinyl chloride monomer by inhalation at low doses (1ppm, 10ppm and 100ppm) and for short durations of exposure (4 weeks), will be studied by gross anatomy, light microscopy and electron microscopy. Our objectives are (1) to study oncogenetic effects of vinyl chloride on mouse lung under these conditions and to observe processes of formation of the neoplastic cell from the precursor via the preneoplastic cell in the lung, on the level of ultrastructrue, (2) to characterize the non-neoplastic pulmonary damage by vinyl chloride in mouse and hamster, and to consider mechanisms underlying the damage, and (3) to evaluate vinyl chloride induced lesions in vinyl chloride workers' lungs.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Center for Disease Control, National Inst. for Occupational Safety & Health $96,934

2.0387,

COHORT MORTALITY STUDY OF DIMETHYLNITROSAMINE WORKERS

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This proposed research will establish a cohort of workers exposed occupationally in the past to di-

methylnitrosamine. Prospective observation of their full mortality experience, from the time of first exposure, will be conducted. Expected and observed rates of death by cause will be tabulated to ascertain if unusual mortality patterns exist. Such data will have importance in assessing the potential human carcinogenicity of dimethylnitrosamine and in assessing the potential risk of environmental exposure of N-nitroso compounds.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Center for Disease Control, National Inst. for Occupational Safety & Health $25,164

2.0388,

BEHAVIORAL AND NEUROLOGICAL EFFECTS OF MERCURY

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A cross-sectional study of effects of industrial mercury exposure is proposed. At least 150 workers from the mercury cell chlor-alkali industry will serve as subjects. Tests will include recently developed electrophysiologic (nerve conduction) and short term memory functional measurements. Results from pilot studies of 40 workers conducted during our current longitudinal study indicate that these tests may be very sensitive in detecting the earliest subclinical effects of mercury exposure. A larger cross-sectional study is therefore necessary to evaluate the adequacy of current mercury exposure control methods.

Electrophysiologic measurements will include traditional clinical measurements of nerves of upper and lower extremities in addition to new slow conduction velocity measurements. Tests of short term memory will include recently developed measurements of memory scanning rate and precision measures of memory span. All tests utilize microcomputer administration or analysis and have been developed in our current research. Correlation analysis will be used to explore possible relationships between employees' urinary mercury histories and test results.

Tests similar to those mentioned above have been found to be extremely sensitive in detecting early effects of lead and carbon disulfide exposure in several large cross-sectional studies in Europe and the U.S. Our preliminary evidence strongly suggests that a similar study of mercury exposed workers must be performed to assure protection of health of these workers.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Center for Disease Control, National Inst. for Occupational Safety & Health $106,489

2.0389,

SHIPYARD ASBESTOS DISEASE - MORTALITY EXPERIENCE

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An epidemiological mortality study will be undertaken to analyze the experience of a cohort of aproximately 4,000 shipyard workers, characterized by trade, employed in a major eastern shipyard in 1967 for at least ten years and traced through 1980. Since many of these men began work (and asbestos exposure) 1940-1955, their experience will provide important information concerning the cancer risk associated with asbestos shipyard exposure.

These data will provide information concerning two important questions: the extent and nature of asbestos-associated disease with low-level, intermittent, episodic asbestos exposure, an important problem in much of American industry, including construction and shipyard work. Second, there are now plus or minus 4,000,000 Americans currently (225,000) or formerly engaged in shipyard work at sometime 1940-1975. Available information indicates that this group is at high risk of developing cancer in the future. It is anticipated that the information in this investigation will assist in identifying criteria for the development of an optimum medical surveillance program, a matter of considerable practical importance.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Center for Disease Control, National Inst. for Occupational Safety & Health $92,436

2.0390,

INDUSTRIAL HYGIENE STUDY OF INSULATION MATERIAL WORKERS - EPA

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Members of the insulation trade have long been noted to experience excess mortality due to malignant and non-malignant respiratory diseases. Although much of this observed disease has been attributed to asbestos fiber exposures, the hazards associated with many of the other insulation materials used are unknown. Some of the commonly used insulation materials include: 1. Aluminum silicate (ceramic) fibers. 2. Asbestos fibers. 3. Bentonite clay. 4. Calcium carbonate. 5. Cork. 6. Fibrous glass. 7. Gypsum. 8. Hair felt. 9. Impregnanted paper. 10. Magnesium carbonate. 11. Polystyrene. 12. Polyurethane foams. 13. Portland cement. 14. Slagwool and rockwool fibers. 15. Vermiculite (expanded).

The purpose of the proposed research is to determine by literature research quantities of the various insulation materials used in the U.S., the number of workers potentially exposed to each material, and historic exposure levels. Current exposure levels of employees to two insulation materials will be determined through industrial hygiene surveys. A contract will be awarded to accomplish this project.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Center for Disease Control, National Inst. for Occupational Safety & Health $10,000

2.0391,

NEUROLOGICAL EFFECTS IN LEPTOPHOS EXPOSED WORKERS

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Medical findings from a recent health study of workers exposed to leptophos (Occupational Exposure to Leptophos and Other Chemicals, NIOSH Pub. No. 78-136, March 1978) revealed workers with slow or incomplete recovery from peripheral nerve damage and, in some instances, damage to the central nervous system suggesting upper motor neuron lesions. Through appropriate medical follow-up examinations, this project seeks to determine the reversibility of the observed effects and to better understand the significance of any diminished functional capacity to the demands of the worker's current and potential job opportunities.

All former and current workers with out-of-range values in NIOSH's first neurological/electromyographic examination will be contacted and asked to volunteer to be re-examined. Selected elements of the medical examination will be identical to those administered during NIOSH's first medical examination to ensure comparability of findings. Electrophysiological tests will be administered by physiatrists.

Results of this study will establish the reversibility of neurological effects in workers exposed to leptophos and provide information on the sensitivity of electrophysiological measures for the early detection of neurological effects in workers exposed to neurotoxic chemicals.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Center for Disease Control, National Inst. for Occupational Safety & Health funds n.a.

2.0392,

CYTOGENETIC EPIDEMIOLOGIC STUDIES

W. Halperin, U.S. Dept. of Health & Human Services, Public Health Service, Center for Disease Control, National Inst. for Occupational Safety & Health, Division of Surveillance Hazard Evaluations & Field Studies, *4676 Columbia Pkwy., Cincinnati, Ohio* 45226 (VMH-W22-663)

It is well documented that cytogenetic changes or disorders have been associated in both animals and man with cancer, birth defects, and spontaneous abortions. Recent studies have associated environmental exposures, such as benzene, with increased levels of chromosomal damage as well as increased risk of cancer in exposed individuals. Studies of survivors of the atomic bombs in Hiroshima and Nagasaki have demonstrated an increase in chromosomal aberrations, birth defects in the offspring of the exposed parents, and a high incidence of leukemia. Results from two separate studies of individuals exposed to benzene have demonstrated an increased risk of leukemia and an increased incidence of chromosomal aberrations. However, the exact relationship between cytogenetic changes and cancer, birth defects, and fetal loss is not yet known.

This project will initiate studies to explore this relationship. population of workers exposed to a specific agent or working in a specific industry suspected to have mutagenic and/or carcinogenic potential will be selected for study. Peripheral blood samples will be obtained and analyzed for chromosomal aberrations. It is likely that the population selected will be already undergoing a reproductive history and, if feasible, a mortality study so as to maximize the yield of information on the substance under study. A contract or grant for cytogenic analyses will be developed and let.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Center for Disease Control, National Inst. for Occupational Safety & Health funds n.a.

2.0393,

MORTALITY STUDY OF CHEMICAL PLANT WORKERS IN THE KANAWHA VALLEY, WEST VIRGINIA

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The Union Carbide Corporation has begun a study of mortality patterns among its Kanawha Valley employees. Union Carbide plans to determine the vital status of all past employees and to analyze deaths by life table and case control studies.

Union Carbide has requested that the National Institute for Occupational Safety and Health (NIOSH) become involved in a joint venture. NIOSH would provide technical expertise, computer support, and limited follow-up, while Union Carbide would provide clerical staff for coding and would develop a history of the plant's operations.

NIOSH previously was involved in a similar effort with a Union Carbide study of its Texas City employees. This study will also be of value in the NIOSH study of Union Carbide Kanawha Valley workers exposed to ethylene oxide. There is opportunity for a number of cohort studies to be developed.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Center for Disease Control, National Inst. for Occupational Safety & Health funds n.a.

2.0394,

MORTALITY STUDY OF STEELWORKERS

J. Salg, U.S. Dept. of Health & Human Services, Public Health Service, Center for Disease Control, National Inst. for Occupational Safety & Health, Surveillance Hazard Evaluations & Field Studies Division, *4676 Columbia Pkwy., Cincinnati, Ohio* 45226 (VMO-C11-516)

PART I: A study of the Long Term Mortality Experience of Steelworkers was initiated in 1962 as a contract with the National Institutes of Health and the Department of Biostatistics, University of Pittsburgh, Graduate School of Public Health. Originally, data was collected on all male employees from seven Allegheny County steel plants. Since then, the study has expanded to include steelworkers throughout the United States and Canada. Although the investigation originally focused on coke oven workers, it has expanded to include all work areas within the steel industry. Important findings include the identification of lung cancer excess among coke workers, the excess of nonmalignant respiratory diseases among coke oven workers, and the positive association of increased risk of disease with increased length of exposure for coke oven workers. Mortality patterns have been described for other major work areas within the plant such as the foundry, the billet, bloom and slab mills, structural mills and the mason department.

PART II: In addition, we propose to review, organize and prepare for NIOSH publication detailed data already generated from the ongoing contract. Although the principal results have appeared primarily in a series of articles in the Journal of Occupational Medicine, presentation of detailed data in specific work areas of interest and a general update of steelworker mortality data are needed.

FY-78 ACCOMPLISHMENTS: Part I: Completion date has been pushed back to March 1979. Part II: Preliminary review of study data through 1970 has been completed.
SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Center for Disease Control, National Inst. for Occupational Safety & Health $5,700

2.0395,
MORTALITY, REPRODUCTIVE AND INDUSTRIAL HYGIENE STUDY OF WORKERS EXPOSED TO MW-RF ENERGY
B. Egan, U.S. Dept. of Health & Human Services, Public Health Service, Center for Disease Control, National Inst. for Occupational Safety & Health, Division of Surveillance Hazard Evaluations & Field Studies, *4676 Columbia Pkwy., Cincinnati, Ohio* 45226 (VMH-C21-595)
RF/MW radiation has been implicated in a variety of biological phenomena including altered transmembrane potentials, increased membrane permeability, hyperthermia, hormonal imbalance, chromosomal anomalies and mutagenesis. Although their exact roles are unknown, similar phenomena have been implicated in carcinogenesis. In addition several unconfirmed allegations have been made associating exposure to microwave radiation with pancreatic cancer in radar repair workers, brain cancer in electronic workers and leukemia in the Moscow Embassy employees. Unfortunately, the size of the population potentially at risk in most of these case reports was too small to conduct a scientific evaluation of the situation. More recent research has indicated that exposure to RF/MW radiation can effect incidence of infertility and teratogenesis among study groups exposed to RF/MW radiation. The reported experimental and clinical results raise more questions than answers. Though these questions are both stimulating and suggestive, further research is required to critically assess both the potential carcinogenic hazards and reproductive hazards of RF/MW radiation. NIOSH has identified a cohort of radar repair workers that may be suitable for inclusion in an epidemiologic mortality study. This population would consist of all persons enrolled in the Electronic Apprenticeship Training Program which has been sponsored by the Naval Air Reworks Facility since the early 1950's. However, since this study population will only consist of about 1000 individuals and it may be difficult to obtain complete employment histories on all workers, additional walk through surveys and record assessments will be conducted in plants having microwave heat sealing, drying or baking operations before a final cohort is selected. If possible, a cohort will be selected that includes a large number of female employees so that a retrospective cohort mortality study and a reproductive study can be conducted on the same population. If a cohort with a large enough number of female workers can not be identified then the wives of male workers will be interviewed for a reproductive history.
SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Center for Disease Control, National Inst. for Occupational Safety & Health $109,000

2.0396,
MORTALITY AND INDUSTRIAL STUDY OF FOUNDRY INDUSTRY - NCI
B. Egan, U.S. Dept. of Health & Human Services, Public Health Service, Center for Disease Control, National Inst. for Occupational Safety & Health, Division of Surveillance Hazard Evaluations & Field Studies, *4676 Columbia Pkwy., Cincinnati, Ohio* 45226 (VMH-C22-616)
A preliminary report on a proportional mortality study of foundry workers demonstrated an excess mortality from lung cancer and nonmalignant respiratory disease (NMRD). Similar findings have been reported in other epidemiologic studies.
Excessive exposure to particulate dust, especially silica dust, is a logical explanation for the NMRD. However, there is controversy over whether silica exposure is still a problem in foundries today or whether the advanced control technology introduced into many foundries over the last 20 years has reduced the silica levels enough to prevent an excess NMRD risk.
Those specific etiologic agents responsible for the increased lung cancer risk have not yet been adequately identified. Two of the more recent epidemiologic studies of foundry workers conducted by Karava et al. in Finland and Gibson et al. in Canada included detailed industrial hygiene surveys as part of the study. Low levels of several suspect carcinogens were identified, but neither of these surveys was able to pinpoint specific agents as being associated with the excess lung cancer risk.
Studies to ascertain what chemical or physical agents may be associated with the excess lung cancer risk identified among foundry workers and what the incidence of silicosis is among those individuals who were first employed in a foundry after 1950 are needed.
A feasibility study will be initiated to collect additional detailed exposure data on the study population identified through the International Molders Union's death benefit fund. Selected locals of the Molders Union will be contacted directly to determine what type of information is available on deceased individuals, such as type of foundry where they were employed and/or specific jobs worked, and then case control study will be conducted to evaluate the work experience of the lung cancer cases.
SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Center for Disease Control, National Inst. for Occupational Safety & Health $104,000

2.0397,
EVALUATION OF SPECIAL OCCUPATIONAL HAZARDS
A. Gregory, U.S. Dept. of Health & Human Services, Public Health Service, Center for Disease Control, National Inst. for Occupational Safety & Health, Division of Criteria Documentation & Standards Development, *5600 Fishers Ln., Room 3-32, Rockville, Maryland* 20852 (VII-D50-093)
This project entails the review and evaluation of potential workplace hazards where new evidence of a particular or special hazard is received. As a result, special occupational hazard reports, which may include recommended occupational standards, including emergency temporary standards, will be prepared. The nature of the alleged hazard and urgency of the required response will dictate the procedures to be used as well as the report to be issued.
The Special Occupational Hazard Reviews will evaluate health effects, and existing exposures and control measures. Based upon such review, appropriate preventive measures may be recommended, including engineering controls, good work practices, safe materials handling, workplace monitoring, environmental exposure limits, surveillance methods, recordkeeping, etc.
Based upon the nature of the review, the report will be disseminated to the Department of Labor and/or to the occupational health community.
The evaluations will pertain primarily to special alleged hazards, e.g., carcinogenic, mutagenic, or reproductive effects, although they may review other effects as needed. During FY79 special hazard reviews were completed on trichloroethylene, ethylene dichloride, and MOCA.
This project also provides technical support to the Chemical Selection Working Group of the National Cancer Institute for determining chemicals to be selected for carcinogenicity testing.
SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Center for Disease Control, National Inst. for Occupational Safety & Health $264,877

2.0398,
CURRENT INTELLIGENCE SYSTEM
N.A. Leidel, U.S. Dept. of Health & Human Services, Public Health Service, Center for Disease Control, National Inst. for Occupational Safety & Health, Division of Criteria Documentation & Standards Development, *5600 Fishers Ln., Room 3-32, Rockville, Maryland* 20852 (VCF-G12-019)
The basic purpose of the Current Intelligence System is to promptly review, evaluate and supplement new information received or generated by the National Institute for Occupational Safety and Health (NIOSH) on occupational hazards which are either unrecognized or are more severe than generally known. As warranted by this evaluation the information is capsulized and disseminated to NIOSH staff, other government agencies, the occupational health community (which includes labor, industry, academia and public interest groups), and the general public. The Current Intelligence Bulletins prepared in this project describe measures designed to minimize human risks. This system also serves to advise selected members of the above groups of specific knowledge recently acquired by NIOSH which pertains to their particular occupational environments.
SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Center for Disease Control, National Inst. for Occupational Safety & Health $320,000

2.0399,
MORTALITY, MEDICAL AND INDUSTRIAL HYGIENE STUDY OF WORKERS EXPOSED TO NITROGLYCERIN
G. Reeve, U.S. Dept. of Health & Human Services, Public Health Service, Center for Disease Control, National Inst. for Occupational Safety & Health, Division of Surveillance Hazard Evaluations & Field Studies, *4676 Columbia Pkwy., Cincinnati, Ohio* 45226 (VMH-G21-669)
About 8000 workers are exposed yearly to nitroglycerin (NG) during its manufacture. Not only is work with this agent hazardous because it is explosive, but workers also suffer from acute toxicity (headaches due to vasodilation), may have excessive numbers of sudden deaths while employed (possibly from coronary vasospasm), and may suffer from excessive cardiovascular mortality after retirement.
An opportunity exists at the Radford Arsenal in Virginia to study cohort of 37 current workers and a much larger number of former nitroglycerin workers. A cohort mortality study (Va. deaths as comparison) would be valuable to establish the fact of excess death during employment and after separation. Since the plant physician has done periodic electrocardiograms and excluded workers with abnormalities from NG exposure, a potential exists to compare the mortality of NG workers with ECG abnormalities to NG workers with normal ECGs. This comparison would not be meaningful unless another group of non-nitroglycerin workers is followed in the same way.
These same groups would be used to determine if there is a characteristic NG abnormality on the ECG and also if abnormalities are present at the same rate in non-NG workers.
If there is excess mortality in workers long after separation from exposure, it will be valuable to investigate its cause by comparing heart disease risk factors in NG retirees compared with other retirees. Risk factors such as blood pressure, lipids, etc. would be evaluated.
SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Center for Disease Control, National Inst. for Occupational Safety & Health funds n.a.

2.0400,
MORTALITY STUDY OF WORKERS EXPOSED TO CARBON MONOXIDE
W. Halperin, U.S. Dept. of Health & Human Services, Public Health Service, Center for Disease Control, National Inst. for Occupational Safety & Health, Division of Surveillance Hazard Evaluations & Field Studies, *4676 Columbia Pkwy., Cincinnati, Ohio* 45226 (VMH-G21-673)
Carbon monoxide is a commonly encountered industrial asphyxiant, and the effects of acute exposure have been fairly well studied. Although little is known about the effects of chronic exposure in man, ambient air levels have been linked to the probability of surviving a myocardial infarction. In animals, chronic exposure is linked with lowering of the ventricular fibrillation threshold. NIOSH has conducted a study of possible chronic effects from CO exposure in motor vehicle inspectors with chronic exposure of 15 ppm with equivocal results. An opportunity may exist to study car tunnel workers with exposures of 70 ppm.
SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Center for Disease Control, National Inst. for Occupational Safety & Health funds n.a.

2.0401,
MEDICAL AND INDUSTRIAL HYGIENE STUDY OF WORKERS EXPOSED TO 4,6-DINITRO-2-SEC-BUTYLPHENOL (DNBP)
W. Halperin, U.S. Dept. of Health & Human Services, Public Health Service, Center for Disease Control, National Inst. for Occupational Safety & Health, Division of Surveillance Hazard Evaluations & Field Studies, *4676 Columbia Pkwy., Cincinnati, Ohio* 45226 (VMH-G21-672)
The herbicide 4,6-Dinitro-2-sec-butylphenol (DNBP) has been demonstrated to have adverse effects such as testicular atrophy in studies with rats (Hall, L. et al. Subchronic and Reproductive Toxicity of

Denoseb., Toxicol. Appl. Pharm. 45 (1):235-236, 1978). If a cohort of sufficient size can be located, exposed individuals and appropriate controls will be interviewed, examined, and tested for testicular as well as other effects.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Center for Disease Control, National Inst. for Occupational Safety & Health funds n.a.

2.0402,

MORTALITY STUDY OF POTASH WORKERS

R. Waxweiler, U.S. Dept. of Health & Human Services, Public Health Service, Center for Disease Control, National Inst. for Occupational Safety & Health, Division of Surveillance Hazard Evaluations & Field Studies, *4676 Columbia Pkwy., Cincinnati, Ohio* 45226 (VMH-M22-664)

The long term effects of diesel exposures need to be thoroughly evaluated as diesel fuel begins to take on a more important role in our country's energy policy. An occupation believed to have fairly high levels of diesel exposures is underground mining. Although most mines would have many other confounding exposures such as asbestos, radon daughters, and arsenic, potash mines have presumably non-carcinogenic environments as determined by a previously conducted retrospective cohort mortality study of 2743 underground and 1143 surface potash miners (Waxweiler et al., J. Occup. Med. 1973). Diesels were introduced in these mines in the early 1950's. By extending the epidemiologic study from 1967 to include follow-up through 1978, a 25 year latency period could be evaluated for many of the miners. In-depth industrial hygiene surveys would characterize current worker practices. The control technology section of NIOSH has an analogous project to evaluate diesel exposures underground in relation to such parameters as duty time and preventive maintenance.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Center for Disease Control, National Inst. for Occupational Safety & Health funds n.a.

2.0403,

EPIDEMIOLOGIC STUDY OF WORKERS IN PETROLEUM REFINERIES AND PETROCHEMICAL PLANTS

R. Waxweiler, U.S. Dept. of Health & Human Services, Public Health Service, Center for Disease Control, National Inst. for Occupational Safety & Health, Division of Surveillance Hazard Evaluations & Field Studies, *4676 Columbia Pkwy., Cincinnati, Ohio* 45226 (VMH-C22-662)

An NCI study examined the cause-specific mortality experience of workers who were active members of Oil, Chemical and Atomic Workers International Union (OCAW) Locals in Texas at the time of death. Proportional mortality ratios (PMR's) for stomach and brain cancers, for leukemia, and for multiple myeloma were elevated among white males who worked in petroleum refineries and petrochemical plants and were Union members for at least 10 years. In particular, increased relative frequencies of stomach and brain cancer deaths were found among white male members who were employed at a refinery in Port Arthur (Plant A). In addition, PMR's were elevated for lung cancer among non-whites and stomach cancer in both racial groups employed at another refinery in Port Arthur (Plant B).

Observed numbers of deaths from leukemia, and from cancers of the kidney and skin were greater than expected among white males at Plant B, but observed numbers were very small.

A third refinery in Beaumont, Texas, was found to have excessive frequencies of lung and brain cancers among workers. A case-control study will be done as a timely second step to examine excess deaths from certain cancers in greater detail.

Detailed work histories will be obtained from each case control to determine length of employment in these plants, specific job(s) held, work location(s) within the plants, and any other employment or exposure information that is available.

The case-control study may be followed by a more definitive cohort study.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Center for Disease Control, National Inst. for Occupational Safety & Health funds n.a.

2.0404,

INDUSTRIAL HYGIENE/MORTALITY STUDY OF WORKERS EXPOSED TO SELENIUM

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The U.S. produces and uses approximately 1.4 million pounds of selenium annually. All primary selenium producers are electrolytic copper refiners. Selenium compounds are manufactured by approximately 10 producers at various locations withing the U.S. Chronic selenium poisoning in test animals has been shown to have widespread effects with lesions occurring in all the internal organs. Selenium and its compounds have been shown to be carcinogenic in rats, and teratogenic for chicks, sheep, pigs, and cattle. In addition, chronic selenium poisoning has produced adverse effects in the reproductive system in rats, sheep, cattle, and other grazing animals. In industrial situations, workers exposed to elemental selenium in the form of fine dust have developed nosebleeds, loss of the sense of smell, inflammation of respiratory mucous membranes, and dermatitis.

The purpose of this project is to conduct an industrial hygiene/retrospective cohort mortality study of workers exposed to selenium to evaluate the long term effects. The first phase of the investigation will be a study to determine the extent of exposure, to characterize the work environment, and to assess the feasibility of conducting the mortality portion of the study. The second phase, if initiated, will be a comprehensive industrial hygiene characterization and retrospective mortality study of the selected site(s).

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Center for Disease Control, National Inst. for Occupational Safety & Health funds n.a.

2.0405,

SPONTANEOUS ABORTIONS AMONG EMPLOYED WOMEN

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NIOSH periodically receives inquiries about complaints of fetal loss from women employed in various work places. Beyond the generally accepted estimate of gynecologists that about one pregnancy in ten terminates in spontaneous abortion and one well-controlled study in Hawaii with few white participants, there are no reliable standards to which we can compare the experience of a group of women. Furthermore, effects of prior abortions on the probability of successful completion of a present pregnancy are not well documented.

This study would seek to establish rates for spontaneous abortions in a variety of working populations through the following steps: 1. Concurrent literature review and consultation with experts or organizations interested in pregnancy outcome to assure that this information is not already available. 2. Feasibility study to ascertain whether large national organizations with sizable constituencies of young women would assist in this type of study. Organizations for consideration may include the National Education Association; the International Ladies Garment Workers Union; the American Federation of State, County, and Municipal Employees; and female federal employees. We would be looking for cohorts with differing socio-economic and regional backgrounds but without high exposures to toxic agents. 3. If a cohort could be found, members planning to become pregnant would be asked to register with NIOSH. Each woman would be given a log book in which to record each menstrual period and a home pregnancy detection kit. Each participant would be given a questionnaire dealing with demographic data, past pregnancy history, etc.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Center for Disease Control, National Inst. for Occupational Safety & Health funds n.a.

2.0406,

OCCUPATIONAL RESPIRATORY DISEASE STUDY - D.O.L.

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In Section 17 of the Black Lung Benefits Reform Act of 1977, the Secretary of Labor in cooperation with the Director of NIOSH was asked to conduct a comprehensive study of occupational respiraory disease. This study was to include definition, clinical aspects, epidemiological aspects, State and Federal compensation programs, and State and Federal legislation dealing with occupational safety and health legislation. Under an Interagency Agreement with ASPER, the Department of Labor, and Division of Respiratory Disease Studies, it was agreed that a report would be prepared covering occupational respiratory diseases in some detail. This report will be completed largely on task order contracts with experts dealing with various respiratory diseases. It is anticipated that this report will be completed by the end of the 3rd Quarter of FY'79.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Center for Disease Control, National Inst. for Occupational Safety & Health $220,357

2.0407,

EPIDEMIOLOGIC STUDY OF NORMAL BLUE COLLAR WORKERS

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Nonexposed blue collar workers will be examined using DRDS staff, equipment, and techniques for use as controls for epidemiological studies conducted at ALOSH. Participation is voluntary and data will be collected by a mobile field team. The subjects will be grouped by combinations of sex, race, and smoking habits in the analysis, and estimates of prevalence rates of symptoms and disease as well as standard pulmonary function equations will be developed for each combination.

In addition, the project will be expanded to compare other areas of the country to the North Carolina area.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Center for Disease Control, National Inst. for Occupational Safety & Health $30,185

2.0408,

3RD ROUND NATIONAL STUDY OF COAL-WORKERS' PNEUMOCONIOSIS

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In the area of coal research, it is mandatory that a large and stable group of miners be studied over a long time period. The many relationships between dust, radio-graphic evidence of disease, and pulmonary function can thus be studied. Moreover, a data base is being developed which should be helpful in future mortality studies.

The data base being developed is a pool of information wherein selected facets of the problems associated with CWP can be studied. The data base is open to all investigators in ALOSH.

The data base development is a consequence of close cooperation between the Epidemiological Investigations Branch, the Environmental Investigations Branch, and the Examination Processing Branch of ALOSH. The data (spirometry, symptomatology, demographic and anthropometric measures, and chest radiographs) are obtained by the field team from the miners at the mine site. The mines have been pre-selected to represent a cross-section of mining methods, type of coal, and other factors so as to be representative of the U.S. coal industry. From round to round, if a particular mine closes, a new one is added or in some instances, new ones are added to expand the data base. Once the data have been collected, it is checked, coded, punched to tape, verified, and in general, processed by the Statistics section and the Examination Processing

Branch. Several types of magnetic tapes are generated and these tapes are continually updated.
Analyses of the data is done concurrently with the processing.
Additions to original cohort of mines made solid and most advance negotiations with companies and union completed.
SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Center for Disease Control, National Inst. for Occupational Safety & Health $326,034

2.0409,
MORTALITY AND INDUSTRIAL HYGIENE STUDY OF WORKERS EXPOSED TO SULFURIC ACID - EPA
J. Beaumont, U.S. Dept. of Health & Human Services, Public Health Service, Center for Disease Control, National Inst. for Occupational Safety & Health, Surveillance Hazard Evaluations & Field Studies Division, *4676 Columbia Pkwy., Cincinnati, Ohio* 45226 (VMH E21-579)
The EPA in its CHESS report (1970-1971) studied seven U.S. cities for community exposure to air contaminants. One community had a primary exposure to sulfur oxides and particulates. The findings of the CHESS report strongly suggest that occupational exposures to sulfur pollutants need further study in terms of exposure levels and morbidity and mortality.
The Proceedings of the Computer-based Conference on 'Human Response to Sulfur Pollutants' at Brookhaven Laboratory (1974) suggested that sulfates and sulfuric acid could have a possible carcinogenic and/or co-carcinogenic effect.
The purpose of this project is to conduct a retrospective cohort mortality study of a population occupationally exposed to sulfuric acid mist.
Pulp facilities, sulfuric acid plants, and copper sulfate processes have been eliminated as suitable cohorts. Several battery plants have been visited to determine their suitability for inclusion in a cohort mortality study. A contract has been awarded to Enviro Control, Inc. to locate a cohort and conduct a retrospective mortality study. Industrial hygiene assessment of the study plants will be conducted by NIOSH.
SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Center for Disease Control, National Inst. for Occupational Safety & Health $44,000

2.0410,
MORTALITY STUDY OF WORKERS EXPOSED TO FIBROUS GLASS - EPA
D. Bayliss, U.S. Dept. of Health & Human Services, Public Health Service, Center for Disease Control, National Inst. for Occupational Safety & Health, Surveillance Hazard Evaluations & Field Studies Division, *4676 Columbia Pkwy., Cincinnati, Ohio* 45226 (VMH-E22-585)
Much controversy has arisen over the possible carcinogenicity of fibers of small diameter. One group of scientists believes that the carcinogenicity of such fibers is related not to their physiochemical properties but more to the morphology of the particle. Several recent studies have provided evidence that tends to support both positions. historic follow-up study of workers at an Ohio fiberglass plant failed to demonstrate any excess of cancer over expected when followed for over thirty (30) years.
In the historic follow-up study most members of the cohort under study were never exposed or minimally exposed to small diameter fibers, with certain exceptions. However, during the 1940's, a process existed that produced small diameter fibers at this plant. While this 'pilot plant' operation existed, approximately 450 employees were exposed to small diameter fibers for varying lengths of time.
It is proposed that in order to assess whether this group of employees suffers from unusual cancer mortality a matched control group be selected from the non-exposed segment of the same population, matched according to date of birth and beginning date of employment, and cancer mortality of the exposed be compared to that of the non-exposed controls. (The population consists entirely of white males.) It is proposed that two controls be selected for each exposed employee.
After the selection of the controls, follow-up will be accomplished on the approximately 450 exposed and their approximately 900 non-exposed controls. Mortality due to lung cancer in the 'exposed' will be contrasted with that of the 'non-exposed' after analysis is complete. Relative risk of lung cancer will be examined at various periods from initial exposure and contrasted with that of the 'non-exposed' controls. Altogether follow-up will be accomplished on some 1900 former employees of this plant, i.e., 450 'exposed', 900 'non-exposed', and 550 large fiber 'exposed' employees.
SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Center for Disease Control, National Inst. for Occupational Safety & Health $16,000

2.0411,
THE INFLUENCE OF THE WORK ENVIRONMENT ON THE HEALTH OF THE WORKERS IN THE IRON AND STEEL INDUSTRY
E.F. Kiec, Akademia Medyczna W Krakowie, *Ul. Kopernika 17, Sw. Anny 12, Cracow, Poland* (05-343-C)
Ergonomic evaluation of some employees at selected posts as well as the fatigue provoked by the shift work in the iron and steel industry will be carried out. All information received will be coded and evaluated by means of the computer and the preliminary data will be received. The aim of further calculations will be the study of the correlations between the hygienic and ergonomics data and of the physiological and biochemical parameters.
SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Center for Disease Control, National Inst. for Occupational Safety & Health funds n.a.

2.0412,
MORTALITY AND INDUSTRIAL HYGIENE STUDY OF WORKERS EXPOSED TO DYES - NCI
M. Boeniger, U.S. Dept. of Health & Human Services, Public Health Service, Center for Disease Control, National Inst. for Occupational Safety & Health, Division of Surveillance Hazard Evaluations & Field Studies, *4676 Columbia Pkwy., Cincinnati, Ohio* 45226 (VMH-C21-558)
In FY 78, NIOSH conducted a study to evaluate worker exposure to benzidine azo dyes utilizing biological sampling techniques. In the study, the metabolic products were monitored and used as an indicator of worker exposure, The demonstration of carcinogenic chemicals (2,4-diaminoanisole) in hair dyes will result in NIOSH conducting a feasibility study to evaluate the skin absorption of chemicals used in hair dyes by monitoring the exposure through use of similar biological techniques.
A joint feasibility study for an epidemiologic mortality evaluation of fur dyes belonging to the Fur, Leather, and Mechanists Union will be undertaken between NIOSH and NCI. NIOSH will also monitor a grant from NCI to Yale University to study the mortality trends of beauticians. feasibility study of whether or not it is possible to conduct epidemiologic evaluation of dye formulators will also be undertaken.
SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Center for Disease Control, National Inst. for Occupational Safety & Health $140,000

2.0413,
HEALTH HAZARD EVALUATION DATA BASE
V. Behrens, U.S. Dept. of Health & Human Services, Public Health Service, Center for Disease Control, National Inst. for Occupational Safety & Health, Division of Surveillance Hazard Evaluations & Field Studies, *4676 Columbia Pkwy., Cincinnati, Ohio* 45226 (VMO-G11-576)
Section 20(a)(6) of the OSH Act of 1970 charges DHEW with the responsibility for evaluating the potential toxicity of chemicals used or found in the workplace upon receipt of a written request from an employer or employee representative. The Hazard Evaluation and Technical Assistance Branch of NIOSH has been performing these on-site toxicity determinations without cost to the requestor since 1971. Although the procedure for responding to requests does not result in evaluation of sample worker populations representative of larger such populations, the surveys are unique for their combination of indepth environmental and medical investigations of particular industrial estabishments.
Selected information will be abstracted from all health hazard evaluation and technical assistance reports, including both past and currently generated reports, in a form suitable for computer input. Once this data has been transferred onto computer tape (or disk) it will be analyzed, using descriptive statistical techniques.
The Health Evaluation Data Base should demonstrate usefulness in an occupational health surveillance program. Significant health-related events or situations occurring in the U.S. worker groups can be monitored through comparisons to similar or contrasting occurrences in the past several years. The Data Base will facilitate these comparisons. Analysis can be accomplished for several variables (several of which are quantitative) to determine the factors for which ongoing or current occupational health-related events or situations deserve special consideration or study.
FY-78 ACCOMPLISHMENTS: Completed the abstracting, and coding from HHE and TA Reports for the period Jan. 77-June 78. Initiating creation of computer-based data file.
SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Center for Disease Control, National Inst. for Occupational Safety & Health $87,000

2.0414,
EPIDEMIOLOGY AND INDUSTRIAL HYGIENE STUDY OF ALUMINUM REDUCTION WORKERS
D. Brown, U.S. Dept. of Health & Human Services, Public Health Service, Center for Disease Control, National Inst. for Occupational Safety & Health, Division of Surveillance Hazard Evaluations & Field Studies, *4676 Columbia Pkwy., Cincinnati, Ohio* 45226 (VMH-C22-563)
Workers in the aluminum reduction industry are exposed to a variety of substances, hydrogen fluoride fumes, dust, carbon monoxide, and coal tar pitch volatiles (CTPVs) such as benz(a)pyrene. CTPVs are released in the anode preparation area in plants using pre-baked anodes and in the pot lines where Soderberg self-baking cells are used. The release of CTPVs is thought to be temperature dependent. Sufficiently high temperatures are reached in both anode preparation and electrolysis of aluminum to achieve the release of such materials. Thus, there is concern for the health of aluminum workers who may be exposed to carcinogens within CTPVs such as benz(a)pyrene.
Industrial hygiene surveys of the aluminum reduction industry have revealed levels of CTPVs well above the current occupational health standard of 0.2 milligrams per cubic meter by the benzene soluble fraction method. A variety of studies have been carried out to describe the cancer mortality experience of workers in aluminum reduction facilities. Milham (1976) has reported an increase in proportionate mortality from total cancer, cancer of the pancreas, cancer of the respiratory system, and malignant lymphomas among aluminum workers in Wahington State. In a study by Equitble Environmental Health, cause-specific standard mortality ratios calculated for subgroups in the study population defined by major process showed a positive association between employment as a potroom worker and lung cancer, leukemia, and lymphoma.
In order to more fully define the specific cancer risk within the potrooms, a retrospective case control study is planned on aluminum workers exposed to CTPVs. Industrial hygiene will assist in classifying job categories and in verifying related industrial hygiene data. The case control study will use existing data generated from the Equitable study. The uses and controls have been selected from the Alcoa plants and the work histories have been coded.
SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Center for Disease Control, National Inst. for Occupational Safety & Health funds n.a.

2.0415,
CASE-CONTROL STUDY OF REPRODUCTIVE OUTCOMES
V. Behrens, U.S. Dept. of Health & Human Services, Public Health Service, Center for Disease Control, National Inst. for Occupational Safety & Health, Division of Surveillance Hazard Evlauations & Field Studies, *4676 Columbia Pkwy., Cincinnati, Ohio* 45226 (VMO-W11-507)
As part of the development of nationwide capabilities to assess occupational health effects and hazards, the Surveillance Branch has emphasized the use of existing sources of relevant comprehensive data. Information derived from the use of existing data sets should help in the identification of high risk occupational groups and the prioritization of research needs.
In the study of occupationally-related illnesses it is now important to assess the mutagenic and teratogenic effects on mothers and the mutagenic effects on fathers from reproductive hazards in the workplace. In the report of the NIOSH Work Group on Occupational Mutagenesis, Teratogenesis and Transplacental Carcinogenesis (November 5, 1976)

and a report and recommendations for the office of the Secretary DHEW on Occupational Health Problems of Pregnant Women (Vilma R. Hunt, April 30, 1975), recommendations were made to give high priority to the analysis of data already collected on pregnancy outcomes in relation to parental employment.

Through the publication of a sources sought synopsis (No. R-2-78) in the Commerce Business Daily on November 10, 1977, it was determined that a number of data sets are available for a study of pregnancy outcome in relation to parental employment. This project will abstract, code, computerize and analyze an existing data set, which includes among other elements occupational histories of parents and medical records of pregnancy outcomes, by a case-control approach to identify possible relationships between occupation and pregnancy outcome.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Center for Disease Control, National Inst. for Occupational Safety & Health $9,700

2.0416,

PREDICTION OF LUNG CANCER RATES FROM SPUTUM CYTOLOGY - EPA

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Over 50,000 sputum samples have been collected from uranium miners since 1956. The collection has been financed by NIOSH, NCI, and ERDA. The sputum data, along with demographic data, have been put on computer tape and submitted to NCI for analysis. Analysis will be done in several ways, but the most important will be selection of individuals who had certain readings (e.g., Class III) on or before a certain date, then ascertaining deaths among the groups, and doing a life table mortality analyis to determine lung cancer incidence at 5, 10, 15 etc. years. This will be done for most classifications, and will give predictive values for each classification. This will probably apply to other groups as well as uranium miners, but actual study might be needed for verification. Progression from one sputum class to the next higher classification has been demonstrated in many individuals, with a mean of about 5 years between steps. Many individuals show progression. Sputum cytology is now used as a screening service for lung cancer among high risk populations. Many improvements in sputum cytology have come from these studies, and the lives of some uranium miners have been saved.

A contract is planned to collect morbidity and mortality data (and sputum samples where available) on about 500 individuals who have not responded to mailed requests for sputum samples. This will fill a gap in the sputum follow-up which is present in the data. A re-reading of many of the old slides will be done to strengthen the associations. The major activity in this project will be through the proposed contract. It is necessary because the follow-up requires contacting many former miners who are widely scattered. Information must be obtained on changes in their cigarette usage, changes in occupation, changes in sputum cytology, and changes in health.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Center for Disease Control, National Inst. for Occupational Safety & Health $113,000

2.0417,

LONG TERM EFFECTS OF PRENATAL X-RAY ON HUMAN FEMALES

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This long-term epidemiologic study was designed to investigate possible effects of x-ray exposure during fetal life on the subsequent development, health, and reproductive experience of human females, and to detect possible adverse effects on their children. The study population comprises 1458 females exposed in utero to maternal diagnostic x-ray such as pelvimetry, 1458 individually matched unexposed females, and 189 exposed females for whom no controls were available. All were born in Baltimore City in 1947-1952.

Previous phases of the study have shown a 10-15% increase in fertility among women exposed in utero that occurs early in reproductive life. This statistically significant difference (p equals .011) remained after adjustment for differences between exposed and control women in economic, social and medical factors. Information about their survival, health, mental and physical development, reproductive history and child problems has now been obtained from these women by direct follow-up during their twenties (1973-1977). Preliminary analysis of questionnaire data suggests some possible exposure-related differences in growth, development, and reproductive experience.

We propose analysis of data from these questionnaires, linked with data from the previous studies and including a) details related to their mothers' pregnancies when they were born; b) details of registered births to the study women (1960-1972). The matched pair design, coupled with the rich variety of data from three generations, makes it possible to obtain exposed-control comparisons controlling most important extraneous independent variables. This will be accomplished by post hoc matching, by multiple cross-tabulations, and by multiple logistic regression analysis. A group of women for whom no controls were available because x-ray pelvimetry was so routinely used at the time of their births will be analysed for corroboration of positive or negative study findings.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Food & Drug Admin. $12,242

2.0418,

EPIDEMIOLOGICAL STUDIES TO INVESTIGATE THE POSSIBLE ASSOCIATION BETWEEN ARTIFICIAL SWEETENERS AND INCREASED RISK OF CANCER

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This investigation is being carried out in five states and four metropolitan areas: New Jersey, Connecticut, Iowa, New Mexico, Utah, Detroit, San Francisco-Oakland, New Orleans, and Atlanta. All but New Jersey are members of the nationwide Surveillance, Epidemiology, and End Results (SEER) network. Inclusion of New Jersey is necessary because of a unique population base and a reporting requirement. New Jersey has the highest bladder cancer mortality rates in the U.S. for males and females.

This study employs a case-control design using incident cases of newly diagnosed histologically confirmed primary carcinoma of the urinary bladder. All cases reside in one of the specified areas. Non-carcinomas are not included, e.g. paragaglioma, melanoma, sarcoma, lymphoma. Malignant papillomas and carcinomas in situ are included. Cancer of other sites in the urinary system are not included. The study population consists of subjects between the ages of 28 and 85 years.

Approximately 3000 cases enrolled in the study, two-thirds of them 65 years old or older, three-fourths of them males, and most of them white. An additional 800 cases are expected from New Jersey. The control series is a stratified random sample of the general population in each area defined by sex, race (white and non-white) and age (in five year intervals). In each area, twice as many controls as there are cases (6000 from the SEER program and 1600 from New Jersey) were randomly drawn from each stratum.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Food & Drug Admin. funds n.a.

2.0419,

EPIDEMIOLOGICAL STUDIES OF OUTBREAK OF METHYLMERCURY POISONING IN IRAQ

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In preliminary studies of dose-effect and dose-response relationships in the Iraq outbreak of mercury poisoning, it was noted that the type of effect depended on the dose (estimated in terms of maximum body burden). Paresthesia was the first symptom with ataxia, dysarthria, and deafness manifesting themselves at higher body burdens. Although several previous findings have been confirmed in the preliminary studies, many questions remain unanswered. It is expected that the extensive followup studies will more precisely determine the dose-effect, dose-response relationship for pre- and early post-natal exposure. More detailed retrospective analysis will be made of clinical data already collected on infant-mother pairs where exposure took place during pregnancy. The clinical effects shall include evidence of delayed development and neurological signs of damage. Symptoms in the mother, such as paresthesia, will be included. The hypothesis to be tested is that the frequency of adverse effects in the infant should be elated to: 1) the peak concentration of mercury that occurred during pregnancy, and 2) the time during pregnancy when mercury attained a peak level. The cohort of children now under study has just entered school. Further interviews will include the school teachers who will be questioned concerning the children's behavior, learning ability, and class standing.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Food & Drug Admin. funds n.a.

2.0420,

LONG-TERM HEALTH EFFECTS OF PBB EXPOSURE IN MICHIGAN

K. Wilcox, State Dept. of Public Health, *3500 N. Logan St., Lansing, Michigan* 48914

Polybrominated biphenyls (PBB) were dispersed widely in Michigan in a 1973 shipping accident through which PBB was introduced into cattle feed. Human exposure resulted principally from ingestion of contaminated dairy food products. To determine whether PBB exposure has caused illness, a prospective cohort study of 4,545 persons was undertaken. Three exposure groups were sought: all persons living on PBB quarantined farms; persons who received food directly from such farms; and workers (and their families) engaged in PBB manufacture. Enrollment rates were 95.6, 95.1 and 78% respectively. Also enrolled were 725 persons with low level PBB exposure. All were queried concerning 16 symptoms related possibly to PBB. Venous blood was drawn on 3,639 and analyzed for PBB by gas chromatography. Median serum PBB levels were 4.5 ppb in workers, 4.0 ppb in quarantined farm families, 3.0 ppb in recipients and 2.0 ppb in the low exposure groups. Preliminary evaluation failed to show associations between serum PBB levels and symptom prevalence rates.

Subsets of the cohort have participated in studies concerning human reproduction, biochemical abnormalities, and PBB distribution in human tissues. Data collected during the initial phase of the study is being evaluated with the assistance of outside statistical consultation. The study has now entered the long-term follow-up phase. Regular cycles of medical information update, medical diagnostic confirmation of reported problems, blood collections for PBB testing, and continuous registry update are under way. In addition, a cohort of 200 rural subjects in Iowa is being established as a comparison group.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Food & Drug Admin. funds n.a.

2.0421,

INVESTIGATION OF THE INFLUENCE OF HORMONAL CONTRACEPTIVES ON THE CYTOLOGY OF THE CERVIX AND ON OUTCOME OF PREGNANCY

G. Zarcovic, Inst. of Hygiene & Social Medicine, *Sarajevo, Yugoslavia* (02-603-F)

One portion of the study is attempting to determine whether there is any relationship between oral contraceptive drug use and abnormal Papanicolau smears or cervical histology by comparison with a control group using mechanical contraceptives. The second portion of the study will seek to determine whether any relationship exists between oral contraceptive drug use and the occurrence of congenital anomalies in offspring.

Since the mission of the Food and Drug Administration is consumer safety, it is hoped that this study will contribute to our knowledge of the effects of oral contraceptives.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Food & Drug Admin., Bureau of Drugs funds n.a.

2.0422,

STUDY OF LONG-TERM EFFECTS OF DRUGS USED IN THE TREATMENT OF CHRONIC DISEASE

D. Slone, Boston University, School of Medicine, Dept. of Medicine, *80 E. Concord St., Boston, Massachusetts* 02215

The primary objective of this study is to determine increased risks of common chronic diseases, such as cancer and heart disease, in individuals who are exposed to regular and long-term drug therapy. A non-specific case control surveillance methodology is employed in which individuals entering the hospital are routinely questioned by trained nurse-surveillance officers about lifetime drug use, pertinent patient demography, medical and other exposure histories. Admission and discharge diagnoses are obtained. These data are computerized, screened and statistically/medically analyzed for the presence of causal relationships suggestions between drug use and subsequent development of disease. Over 30,000 individuals have been monitored thus far, and a number of articles on the methodology as well as specific findings produced by employment of this drug surveillance approach have been published.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Food & Drug Admin., Bureau of Drugs $480,000

2.0423,

HEALTH SIGNIFICANCE OF FOODBORNE PARASITES

G.J. Jackson, U.S. Dept. of Health & Human Services, Public Health Service, Food & Drug Admin., Bureau of Foods, *200 C St. S.W., Washington, District of Columbia* 20204 (04137)

STATEMENT OF OBJECTIVE: Determine the incidence and pathogenic potential of parasitic animals that occur in foods and in such food-contact materials as sewage that has been recycled as fertilizer or irrigant. Study methods for the inactivation of parasites in the food chain. Prepare technical and general information on the safety of foods in respect to parasites.

DESCRIPTION OF WORK: 1. Ascaris and Trichuris. Infections from Recycling of Fecal Wastes into the Food Chain. Due to legislation, wastes can no longer be disposed of into inland waters and, after 1981, into the ocean. Burning is expensive and contrary to clean air regulations. Consequently, more municipal, industrial and agricultural waste is being disposed of on land or is purposely entering the food chain. Eggs of such roundworms as Ascaris and Trichuris are the longest-surviving pathogenes in sewage, wastelage, soils and crops. Methods for monitoring have been studied. The choice method, Nacconol centrifugation, will now be tested and standardized in a collaborative study. Allergic symptoms similar to asthma, are frequent consequences of ascariasis and related roundworm (nematode) infections: these will be studied in experimental hosts (minings). 2. Giardia. Infections from Fecally Contaminated Foods. These flagellated protozoa have become, in recent years, the most common cause of parasitic diarrhea. Epidemics have been traced to water, but the survival of Giardia cysts on foods has been suspected rather than proven. The possibility of recovering Giardia cysts with the Nacconol centrifugation method developed for roundworm eggs will be studied jointly with MCMI. The food-related epidemiology of giardiasis will be studied collaboratively with the Medical Academy of Poznan (through PL-480 Collaborative Agreement 05-639-F with Poland). Judging the viability of Giardia cysts will be studied in-house using cultures and experimental animals. 3. Fishborne Anisakine Infections. Due to the increasing consumption of raw and semiraw fish, human anisakiasis is being reported in the USA. While FDA has already accomplished much work on these parasitic nematodes, several problems remain to be solved. This year we will determine the incidence of anisakines in the growing Hawaiian fish supply (contract); Standardize (in collaboration with t (Text Truncated - Exceeds Capacity)

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Food & Drug Admin., Bureau of Foods funds n.a.

2.0424,

FOOD CONSUMPTION, DIET AND HEALTH

R.G. O'Dell, U.S. Dept. of Health & Human Services, Public Health Service, Food & Drug Admin., Bureau of Foods, *200 C St. S.W., Washington, District of Columbia* 20204 (10219)

STATEMENT OF OBJECTIVE: To obtain data on mans dietary and environmental exposure to essential nutrients and other substances which affect the absorption and metabolism of these nutrients for the purpose of assessing the effect of the interrelationships on the general nutritional and health status of selected populations.

DESCRIPTION OF WORK: Food Consumption Habits, Nutrient Intake and Health (contract): A steering committee will be established by the contractor to conduct an in-depth study of FDA's needs for data on nutritional status as affected by food consumption. The contractor will also devise alternative methods for obtaining information on food consumption, study factors associated with food consumption patterns and design a model system for combining data on food consumption and nutritional health status.

Monitor Amino Acids for Inborn Error Diets (contract): In order to better monitor inborn errors of amino acid metabolism information on the clinical usage of special dietary products is needed. The contractor shall provide expert advice on the safety and usefulness of these products in the dietary management of children with inborn errors of amino acid metabolism. Also in cooperation with the Genetic Centers directors, the contractor will develop a system to collect uniformly pertinent clinical, biochemical and dietary data from the usage of new amino acid products in the management of patients with inborn errors of amino acid metabolism.

Food Consumption Data on Children Identified as Having High Blood Lead (contract): In this study, the contractor will compile information on the amounts of various foods consumed by children having high blood lead levels from dietary records recorded during case studies. Records on approximately 5,000 children will be compiled to provide the data base from which correlation studies will be accomplished. Although the main emphasis of contract will be to provide information about the dietary intake of children with high lead levels, the data will be compiled in such a manner as to provide information on food intake of children as influenced by social and economic factors as well.

Diet and Cadmium-Exposed Workers (PL-480): One hundred fifty industrial workers (100 exposed to cadmium, 50 unexposed) will be studied for a 24 month p (Text Truncated - Exceeds Capacity)

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Food & Drug Admin., Bureau of Foods funds n.a.

2.0425,

MICROBIAL CONTAMINATION AND PRESERVATION OF COSMETICS

J.P. Lucas, U.S. Dept. of Health & Human Services, Public Health Service, Food & Drug Admin., Bureau of Foods, *200 C St. S.W., Washington, District of Columbia* 20204 (10151)

STATEMENT OF OBJECTIVE: Develop laboratory testing methods and establish standards of performance, based on data obtained from comparative testing under conditions of use, suitable to determine the adequacy of protection of cosmetics against microbial contamination during manufacture and use by consumers. Investigate clinical cases of corneal ulceration associated with contaminated eye area cosmetics.

DESCRIPTION OF WORK: The contract study will be an extension of the work done by Wilson and Ahearn at Emory University, Atlanta, GA under contract #223-74-2016 which will terminate during the first quarter of FY 78. It will encompass a comparative study of several types of challenge tests (single, multiple, sequential challenges, etc.) on facial cosmetics containing various types of preservative systems and testing of the same cosmetics for microbial contamination under customary conditions of use. On the basis of the data obtained in these in-vitro and in-vivo tests, the challenge testing procedure which predicts most accurately the performance of a cosmetic under use conditions will be selected, and standards of performance which will assure adequate preservation under use conditions will be established for the selected challenge procedure. The laboratory work involving challenge testing will be supported by in-house efforts.

The clinical portion of contract #223-74-2016 will be continued to permit investigation of additional cases of corneal ulceration associated with eye area cosmetics.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Food & Drug Admin., Bureau of Foods funds n.a.

2.0426,

IRON IN HUMAN NUTRITION

J.C. Fritz, U.S. Dept. of Health & Human Services, Public Health Service, Food & Drug Admin., Bureau of Foods, *200 C St. S.W., Washington, District of Columbia* 20204 (10208)

STATEMENT OF OBJECTIVE: To determine the quantitative need for dietary iron, and to determine how this is affected by other dietary components; to determine the extent of anemia among the United States population, and to identify those cases in which the anemia is due to lack of sufficicnt available iron in the diet; to select suitable foods to be fortified with iron, and to determine the feasibility of such iron fortification; and to identify suitable iron sources for such fortification.

DESCRIPTION OF WORK: These studies will be conducted under contract to the FDA, because FDA lacks clinical facilities of its own.

The purpose of Contract No.-223-73-2236, with Tulane University, is to study the efficacy of sources and levels of iron added to bread to meet the dietary needs of adult women and children. One group is receiving the usual commercial enriched bread with about 12.5 mg iron per pound with the iron furnished by FESO4, a second group is receiving similar white bread enriched to 25 mg iron per pound with the iron furnished by electrolytic iron, a third grup is receiving white bread enriched with ferrous sulfate to 25 mg iron per pound, and a fourth grgup is receiving white bread enriched to 75 mg iron per pound with ferrous sulfate. Various hematological parameters are being observed, including serum ferritin.

Contract No. 223-76-2112, with the Kansas Medical Center, was planned to develop a method which would measure iron storage in man. The serum ferritin method was compared with various other parameters of iron nutrition. This was done in an effort to establish a method, which could be applied in nutrition surveys, to evaluate iron status. Levels of serum ferritin below the normal level indicate iron deficiency, and values above the normal level indicate iron overload. Blood samples collected in the course of Northwest Nutrition Survey, HANES I, and HANES II were studied. Serum ferritin values were compared with othher hematological parameters on the same samples. Extensive inter-laboratory studies were made to standardize and validate the serum ferritin method.

Contract No. 05-001-0 was established with Lodz Medical Academy, under PL-480 provisions, to study the efficacy of iron fortification of floods to meet the dietary needs of adult women and of children. Preliminary studies were made to select suitable foods for fortification.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Food & Drug Admin., Bureau of Foods funds n.a.

2.0427,

MERCURY CONTAMINATION IN FOODS

S.I. Shibko, U.S. Dept. of Health & Human Services, Public Health Service, Food & Drug Admin., Bureau of Foods, *200 C St. S.W., Washington, District of Columbia* 20204 (00011)

STATEMENT OF OBJECTIVE: Epidemiological Study of Outbreak of Methylmercury Poisoning in Iraq.

DESCRIPTION OF WORK: Contract U. Rochester: 1) Segmental analysis of hair samples obtained in Iraq, following the accidental poisoning episode, to provide additional information for dose/response studies. 2. Follow-up study of infant-mother pairs having exposure to methylmercury. 3. Prospective studies of the long-term effects of methylmercury.

Interagency agreement (DOE/FDA): Complete fabrication, testing and delivery to U. Rochester of the X-Ray Fluorescence Apparatus to analyze hair samples for mercury and other heavy metals.

Division of Toxicology: Review of literature relating to toxicity of methylmercury and other mercurials.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Food & Drug Admin., Bureau of Foods funds n.a.

2.0428,

IN-DEPTH-REVIEW AND EVALUATION OF KEY PEDIATRIC PROBLEMS

J.G. Chopra, U.S. Dept. of Health & Human Services, Public Health Service, Food & Drug Admin., Bureau of Foods, *200 C St. S.W., Washington, District of Columbia* 20204 (09110)

STATEMENT OF OBJECTIVE: To obtain expert advice on specific pediatric nutrition problems which impact upon, or are affected by regulatory decisions.

DESCRIPTION OF WORK: The contractor will provide expert advice on specific pediatric nutrition problems which impact upon or are affected by regulatory decisions. the problems in question will be ones for which it is desired to: (a) develop guidelines for enrichment or fortification of foods for infant and preschool age children; (b) obtain suggestions, recommendations, and reinforcement relative to proposals and actions of the Bureau of Foods regarding pediatric nutrition problems and their solution; (c) review and analyze specific set of questions developed by the OADNICS for selected problem areas in pediatric nutrition of direct concern to the Agency; and (d) review (with necessary permission of sponsors) petitions related to pediatric topics submitted to the Agency for consideration.

Formal reports of state-of-the-art review and scientific interpretation of selected areas (three reports each year) are requested each year. In 1979 the reports on the following topics will be prepared: (1) Health Hazard from the overuse of Vitamin D; (2) Use of medium chain triglyceride in infant foods; (3) Effect of taste on Nutritional Status of Children.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Food & Drug Admin., Bureau of Foods funds n.a.

2.0429,

LEAD CONTAMINATION IN FOOD

K.R. Mahaffey, U.S. Dept. of Health & Human Services, Public Health Service, Food & Drug Admin., Bureau of Foods, *200 C St. S.W., Washington, District of Columbia* 20204 (05356)

STATEMENT OF OBJECTIVE: To provide knowledge on the mechanisms of lead absorption and to determine what nutritional factors influence the absorption of lead and to determine the impact of high lead levels on the absorption and metabolism of essential nutrients.

DESCRIPTION OF WORK: The research in this project involves a series of studies on various factors known or suspected of affecting lead absorption and metabolism. An Interagency Agreement with the Center of Disease Control seeks to relate blood lead levels of various age groups with various hematological parameters. This information will provide baseline data on the status of the population and potentially indicate hematological relationships. Research will be continued under contract to identify dietary interrelationships such as lead and 1,25 (OH)2D3 and lead and calcium. The impact of these relationships in humans will also be investigated. A new effort will seek to determine the impact of calorie and/or protein deprivation on the mobilization of lead from body tissues. This research will attempt to assess the impact of negative calorie and protein balances which could occur during weight reduction, pregnancy or during times of severe illness. In-house efforts will be devoted to defining ascorbic acid in lead metabolism, the assessment of lead absorption from water and beverages having low levels of nutrients and assessment of the influence of age on lead distribution in body tissues.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Food & Drug Admin., Bureau of Foods funds n.a.

2.0430,

NEOPLASMS IN IRRADIATED HUMAN POPULATIONS

E.D. Woodard, University of Rochester, School of Medicine & Dentistry, Dept. of Radiology, *601 Elmwood Ave., Rochester, New York* 14627 (5R01-FD-00634-15)

The long-term goal of this project is to determine the life-time risk of radiation-induced morbidity and mortality in three well-defined human populations treated many years ago for benign medical conditions (enlarged thymus gland, lymphoid hyperplasia of the nasopharynx, and acute post-partum mastitis). The observations of primary concern include cause-specific mortality, incidence of neoplasia, incidence of illnesses with abnormal immunologic features, and incidence of psychiatric illness.

Health data are collected by mail questionnaires from treated persons and from their untreated controls. Significant illnesses are verified by contacting the attending physician and/or hospital. Periodic screening by mammography and thermography of the breast-irradiated women and of eligible controls (NCI guidelines) is offered.

Histological sections of tumors of primary interest (thyroid, breast, and salivary gland) are reviewed. A comparison of the histopathology of breast cancers in breast-irradiated and in the control women is nearly completed.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Food & Drug Admin., Bureau of Radiological Health $28,807

2.0431,

CULTURAL FACTORS IN HYPERTENSION OF SPANISH-SPEAKERS

R.L. Ailinger, George Mason University, College of Professional Studies, Dept. of Nursing, *4400 University Dr., Fairfax, Virginia* 22030 (R01 NU 00624-02)

Hypertension is a mass public health problem in the U.S.; it afflicts twenty-three million people. Numerous studies have focused on the problem. However, there are no known studies of the epidemiology of hypertension in the Spanish-speaking population in this country. The proposed research examines the prevalence of high blood pressure in a Spanish-speaking population.

The literature suggests that acculturation has marked influences on the health status of individuals involved in culture change. But there is a dearth of reports in the nursing and medical literature on cultural factors in hypertension. The investigator will measure the association between acculturation level and prevalence of high blood pressure of respondents. She will describe their knowledge of hypertension and identify selected risk factors associated with it.

The research population will be selected from high density Spanish-speaking enclaves in Arlington County, Virginia. A systematic random sample of 330 households will be selected for hypertension screening and interviewing. The interview will be conducted in Spanish concerning acculturation, knowledge of hypertension, selected risk factors and demographic features.

It is anticipated that analysis of the data will produce new insight into hypertension in this rapidly emerging ethnic minority. The results of the study will contribute to the body of knowledge on acculturation and the nurses role in high blood pressure control.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Health Resources Admin., Div. of Nursing $65,094

2.0432,

MATERNAL AND CHILD HEALTH STUDIES

M.W. Pratt, Information Sciences Research Inst., *8720 Georgia Ave., Suite 1006, Silver Spring, Maryland* 20910 (MCR-110387-04-0)

This project prepares research studies and reports of special interest to the Bureau of Community Health Services, Office for Maternal and Child Health, HSA, DHEW. The primary work for 1979 will include: 1) High Risk Birth (and Infant Death) Characteristics with an Index of Need for States, HSAs and Counties, 1971-1975. 2) Child Mortality Rates, ages 1-4, 5-9, 10-14 and 15-17 years, 1972-1976 for States, HSAs and Counties. 3) Health Facilities and Resources Information for States, Counties, HSAs, 1975 or 1976. 4) Data on Physicians by Selected Specialty for the States, HSAs and Counties, 1974 and 1975. 5) Selected morbidity data by state.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Health Services Admin., Bureau of Community Health Services $250,000

2.0433,

BLOOD PRESSURE IN INFANTS OF TOXEMIC MOTHERS

J.S. Mausner, Medical College of Pennsylvania, School of Medicine, Dept. of Community & Preventive Medicine, *3300 Henry Ave., Philadelphia, Pennsylvania* 19129 (MCR-420399-03)

This project is designed to yield information on blood pressure of infants in relation to blood pressure of the mother, with particular interest in the offspring of women with toxemia of pregnancy. Women who meet specified criteria for pre-eclampsia or other hypertensive disorder are eligible for the study, as are normotensive women delivered at the same institution, matched for race and service (i.e., private vs. ward) who serve as a comparison group. Study subjects include both white and black women and represent private and service patients.

Blood pressure of the infant is measured by a Doppler ultrasound instrument (Arteriosonde) on the third day of life and subsequently at and 18 months of age. Where possible, infants born early in the period of enrollment will also be studied at 2 years.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Health Services Admin., Bureau of Community Health Services $104,454

2.0434,

ASSESSMENT OF THE IMPACT OF THE IPO PROJECT

D.M. Strobino, Johns Hopkins University, School of Hygiene & Public Health, Dept. of Maternal & Child Health, *615 N. Wolfe St., Baltimore, Maryland* 21205 (MC-R-240421-02-0)

The objective of the study is to evaluate the impact of the Improved Pregnancy Outcome Project in two states, Mississippi and West Virginia, that are implementing the project on a regional or district basis. The Bureau of Community Health Services initiated this project in 1976 with the purpose of improving perinatal care and pregnancy outcomes in 13 states contributing excessively to the incidence of infant mortality in the U.S. A schema for the evaluation is developed using principles of evaluation including the use of control and treatment groups and investigation of alternative explanations for program effects. It is based on a social area analysis approach, using counties as the basic unit of analysis, and assumes that programs are implemented on a regional basis. the study period includes 3 years prior to implementation of the project and the 5 years of the project. Several diverse sources of data will be used including program data, general MCH and IPO activities, vital statistics data, census and intracensal data, general MCH and IPO activities, vital statistics data are the source of measures of the outcome of the project including several measures of pregnancy outcomes. Some vital statistics data will be used to control for changes in events other than the IPO Project, although census data will be the major source of data for these controls. Presence and absence of the program as well as program activities will be analyzed by county and region, controlling for concomitant variation. The analysis consists of several stages of progressively more sophisticated analyses including cross-tabulations, regression analysis and analysis of covariance.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Health Services Admin., Bureau of Community Health Services $83,941

2.0435,

A CONTROLLED EVALUATION OF REGIONAL PERINATAL CARE

E. Siegel, University of North Carolina, Chapel Hill Campus, School of Public Health, Dept. of Maternal & Child Health/Pediatrics, *Rosenau Hall, 201H, Chapel Hill, North Carolina* 27514 (MC-R-370424-02-0)

The goal of the research is to design and carrout out a population-based evaluation to assure the impact of a regionalized perinatal care program in a rural North Carolina area. The major objectives are: (1) to determine how closely selected perinatal processes of care adhere to accepted standards in the study and control region, (2) to assess whether compliance to accepted standards of care influences perinatal short and long-term outcomes, and (3) to determine the impact of regionalized perinatal care on perinatal-mortality; postneonatal mortality; maternal and newborn morbidity; and physical, neurologic, developmental and maternal attachment status at 1 year conceptual age.

The process of care analysis will be accomplished by analyzing data from selected matched samples of mother-infant pairs in both the control and study regions through retrospective chart review. These same mother-infant pairs will be used to assess maternal and neonatal morbidity. Vital statistics data will be used to compare mortality and birthweight trends from 1947 through 1980 between the study and control region(s). One year outcome analysis will be carried out on samples of 250 survivors in both regions using a battery of interview and observation instruments to assess physical, neurologic, developmental, and maternal attachment status.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Health Services Admin., Bureau of Community Health Services $162,286

2.0436,

A COLLABORATIVE EPIDEMIOLOGICAL STUDY OF EPILEPSY IN INDIA

B. Ramamurthi, Madras Medical College, *Madras, Madras, India* (01-479-S)

SCOPE: A nationwide conference is under consideration to give the attendees some idea of the scope of the problem of epilepsy, the possibility of effective management, and the role of the Principal Investigator and his Institute in such activity.

A long-term prospective study of the frequency, distribution, and nature of epileptic seizures among patients in each of five hospitals. The institutions are uniquely capable of observing the particular effects of the socio-economic, cultural, religious, and emotional environment of each patient on the causes of seizures and the effectiveness of patient management. For example, the institutions will be able to observe seizure therapy as affected by religious beliefs which prescribe dietary restrictions.

This project is under a bilateral agreement.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Health Services Admin., Bureau of Community Health Services funds n.a.

2.0437,

A COLLABORATIVE EPIDEMIOLOGICAL STUDY OF EPILEPSY IN INDIA

B. Singh, All India Inst. of Medical Sciences, *Ansari Nagar, New Delhi 110016, Delhi, India* (01-477-S)

SCOPE: A nationwide conference is under consideration to give the attendees some idea of the scope of the problem of epilepsy, the possibility of effective management, and the role of the Principal Investigator and his Institute in such activity.

A long-term prospective study of the frequency, distribution, and nature of epileptic seizures among patients in each of five hospitals. The institutions are uniquely capable of observing the particular effects of the socio-economic, cultural, religious, and emotional environment of each patient on the causes of seizures and the effectiveness of patient management. For example, the institutions will be able to observe seizure therapy as affected by religious beliefs which prescribe dietary restrictions.

This project is under a bilateral agreement.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Health Services Admin., Bureau of Community Health Services funds n.a.

2.0438,

A COLLABORATIVE EPIDEMIOLOGICAL STUDY OF EPILEPSY IN INDIA

A.D. Desai, King Edward V I I Memorial Hospital, *Parel 400012, Bombay, India* (01-478-S)

SCOPE: A nationwide conference is under consideration to give the attendees some idea of the scope of the problem of epilepsy, the possibility of effective management, and the role of the Principal Investigator and his Institute in such activity.

A long-term prospective study of the frequency, distribution, and nature of epileptic seizures among patients in each of five hospitals. The institutions are uniquely capable of observing the particular effects of the socio-economic, cultural, religious, and emotional environment of each patient on the causes of seizures and the effectiveness of patient management. For example, the institutions will be able to observe seizure therapy as affected by religious beliefs which prescribe dietary restrictions.

This project is under bilateral agreement.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Health Services Admin., Bureau of Community Health Services funds n.a.

2.0439,

A COLLABORATIVE EPIDEMIOLOGICAL STUDY OF EPILEPSY IN INDIA

Unknown, Bangur Inst. of Neurology, *Calcutta, West Bengal, India* (01-480-S)

SCOPE: Disease control is the HEW goal. A nationwide conference is under consideration to give the attendees some idea of the scope of the problem of epilepsy, the possibility of effective management, and the role of the Principal Investigator and his Institute in such activity.

A long-term prospective study of the frequency, distribution, and nature of epileptic seizures among patients in each of five hospitals is the scope. The institutions are uniquely capable of observing the particular effects of the socio-economic, cultural, religious, and emotional environment of each patient on the causes of seizures and the effectiveness of patient management. For example, the institutions will be able to observe seizure therapy as affected by religious beliefs which prescribe dietary restrictions.

This project is under a bilateral agreement.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Health Services Admin., Bureau of Community Health Services funds n.a.

2.0440,

EPIDEMIOLOGY OF ESSENTIAL HYPERTENSION AMONG VARIOUS ETHNIC GROUPS IN YUGOSLAVIA

V. Josipovic, Inst. of Chronic Diseases & Gerontology, *Slobodana Penezica 35/2, Belgrade, Yugoslavia* (02-125-S)

SCOPE: The primary goal of this project is to follow subjects identified as borderline hypertensives during its initial stages so as to determine the natural history of their disease. In addition, it will evaluate the effects of cultural and ethnic differences on the natural history of borderline hypertension. The ongoing case-controls epidemiological study has assessed 9,600 subjects (divided into normotensive, hypertensive and borderline groups) on the basis of explicity defined criteria. Division into six ethnic groups, two age groups, (30-45 and 45-60 years), two sexes, and two places of residence (rural or urban) will provide approximately 200 subjects in each of the resulting 48 cells with a total of 9,600 subjects. The situation in Yugoslavia provides a unique opportunity to follow this group of subjects where nothing is known about their natural history.

Extensive epidemiological surveys have been conducted in the United States on hypertension and hypertensive heart disease in adults. It is estimated that twenty-four million Americans have hypertension with only one-half identified, and three million controlled with adequate therapy. In particular, the U.S. Public Health Service Cooperative Studies on Hypertension and Renal Disease has conducted an evaluation of the effect of treatment on morbidity and mortality in mild to moderate essential hypertension. Because one of the outcomes of the project will be an analysis of the role of borderline hypertension and pulse rate as a predictor of essential hypertension, it will contribute significantly to the understanding and management of this disease, prevalent in practically all nations.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Health Services Admin., Bureau of Medical Services funds n.a.

2.0441,

EPIDEMIOLOGY, NATURAL HISTORY, AND CONTROL OF TRACHOMA IN TUNISIA

T. Daghfous, Institut dOphthalmologie, *Tunis, Tunisia* (07-075-S)

OBJECTIVE: Project is aimed at developing better methods to prevent blindness and visual loss in trachoma. It is concerned with infectious eye diseases, particularly trachoma. Main thrust of the studies will be aimed at the rural population and will be particularly concerned with preventing blindness complications in children under the age of 10. Studies will also be carried out on infections of the eye with herpes simplex virus infections of the eye which often have chronic and recurrent occurrences. Thus it is intended to study the natural history of this disease so as to determine the best methods of treatment and prevention.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Health Services Admin., Indian Health Service $58,176

2.0442,

A COLLABORATIVE EPIDEMIOLOGICAL STUDY OF EPILEPSY IN INDIA

K.S. Mani, National Inst. of Mental Health & Neuro Sciences, *Bangalore, India* (01-481-S)

SCOPE: A nationwide conference is under consideration to give the attendees some idea of the scope of the problem of epilepsy, the possibility of effective management, and the role of the Principal Investigator and his Institute in such activity.

A long-term prospective study of the frequency, distribution, and nature of epileptic seizures among patients in each of five hospitals. The institutions are uniquely capable of observing the particular effects of the socio-economic, cultural, religious, and emotional environment of each patient on the causes of seizures and the effectiveness of patient management. For example, the institutions will be able to observe seizure therapy as affected by religious beliefs which prescribe dietary restrictions.

This project is under a bilateral agreement.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Health Services Admin., Office of Maternal & Child Health funds n.a.

2.0443,

A COLLABORATIVE EPIDEMIOLOGICAL STUDY OF EPILEPSY IN INDIA

P.N. Wahi, Indian Council of Medical Research, *P.B. 4508, New Delhi 16, Delhi, India* (01-482-S)

SCOPE: A nationwide conference is under consideration to give the attendees some idea of the scope of the problem of epilepsy, the possibility of effective management, and the role of the Principal Investigator and his Institute in such activity.

A long-term prospective study of the frequency, distribution, and nature of epileptic seizures among patients in each of five hospitals. The institutions are uniquely capable of observing the particular effects of the socio-economic, cultural, religious, and emotional environment of each patient on the causes of seizures and the effectiveness of patient management. For example, the institutions will be able to observe seizure therapy as affected by religious beliefs which prescribe dietary restrictions.

This project is under a bilateral agreement.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Health Services Admin., Office of Maternal & Child Health funds n.a.

2.0444,

HEALTH HAZARD APPRAISAL IN INDUSTRY

J. Leveton, Enviro Control Inc., *11300 Rockville Pike, 1 Central Plaza, Rockville, Maryland* 20852

No summary has been provided to the Smithsonian Science Information Exchange.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health $150,000

2.0445,

CHRONIC SEQUELAE OF NON-A, NON-B HEPATITIS

J. Hoofnagle, U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, Clinical Center, Immunology Section, *9000 Rockville Pike, Bethesda, Maryland* 20205 (Z01 CL 02010-05 BB)

All patients developing non-A, non-B hepatitis following open heart surgery will be followed with serial studies of SGPT to determine the incidence of chronic liver disease and to compare this incidence with those having type B hepatitis. Liver biopsy will be obtained when the SGPT is elevated for more than 6 months and then again at one and three years. Biopsy material will be obtained for fluorescent and EM studies, as well as light microscopy with multiple stains.

BIBLIOGRAPHIC REFERENCES: Berman, M., Alter, H.J., Ishak, K.G., Purcell, R.H., and Jones, E.A.: The Chronic Sequelae of Non-A/Non-B Hepatitis. Annals of Int. Med. 91:1-6, 1979.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, Clinical Center funds n.a.

2.0446,

EVALUATION OF ANTI-CORE ANTIBODY AND SERUM TRANSAMINASE AS INDICATORS OF THE INFECTIVITY OF HBSAG-NEGATIVE DONORS

H.J. Alter, U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, Clinical Center, Immunology Section, *9000 Rockville Pike, Bethesda, Maryland* 20205 (Z01 CL 02016-02 BB)

Despite sensitive radioimmunoassay tests for HBsAg applied to all donor blood, some type B hepatitis continues to occur following transfusion. It has previously been suggested that HBsAg negative individuals who have anti-core antibody may transmit the hepatitis B virus. The availability of a new sensitive radioimmunoassay for anti-core antibody allows this postulate to be tested in our prospectively followed, open heart surgery patients. Similarly, we can ascertain if chronic carriers of non-A, non-B hepatitis have elevated serum transaminase; and, if so, whether

this could be employed to screen donors and reduce the frequency of post-transfusion hepatitis due to this agent.
SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, Clinical Center funds n.a.

2.0447,
PROSPECTIVE STUDY OF POST-TRANSFUSION HEPATITIS IN OPEN HEART SURGERY PATIENTS
H.J. Alter, U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, Clinical Center, Immunology Section, *9000 Rockville Pike, Bethesda, Maryland* 20205 (Z01 CL 02005-10 BB)
To prospectively follow all adult patients undergoing open heart surgery for the development of post-transfusion hepatitis and by appropriate serologic tests to determine the causative agents. Primarily interested in investigating the incidence of 'non-A, non-B' hepatitis and to see if there are any epidemiologic or serologic clues to its prevention. This study will also compare the clinical course of the various forms of PTH and determine the frequency with which chronic hepatitis develops.
BIBLIOGRAPHIC REFERENCES: Alter, H.J., Purcell, R.H., Feinstone, S.N., Holland, P.V., Morrow, A.G.: Non-A, Non-B Hepatitis: A Review and Interim Report of an Ongoing Prospective Study. Proc. of the Second UCF Symposium on Viral Hepatitis in Vyas, G.N., Cohen, S.N. and Schmid, R. (Eds.): Viral Hepatitis, Philadelphia, Franklin Institute Press, 1978, pp. 359-369.
SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, Clinical Center funds n.a.

2.0448,
THE DUFFY BLOOD GROUP DETERMINANT AND SUSCEPTIBILITY TO MALARIA
L.H. Miller, U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, Clinical Center, Immunology Section, *9000 Rockville Pike, Bethesda, Maryland* 20205 (Z01 CL 02011-05 BB)
Working with an in vitro model for invasion of red cells by malaria merozoites, this study has demonstrated that human red cells lacking the Duffy a and b antigens are resistant to invasion. This corresponds well with epidemiologic studies which show that approximately 70% of West African and American blacks are resistant to Vivax malaria. A similar proportion of these blacks are Duffy a and b negative whereas the Duffy negative genotype is extremely rare in other racial groups. The close association between the Duffy negative genotype and resistance to Vivax malaria has also been confirmed by retrospective analysis of 11 volunteers experimentally inoculated with P. vivax. A retrospective study of U.S. servicemen who contracted malaria in South East Asia has been completed and confirmed again our original hypothesis. A second study conducted by CDC in Honduras has also been completed and is another in-vivo study in-proof.
BIBLIOGRAPHIC REFERENCES: Miller, L.H., McGinniss, M.H., Holland, P.V., and Sigmon, P.: The Duffy-Group Phentoype in American Blacks Infected with Plasmodium vivax in Vietnam. Am. J. of Trop. Med. and Hyg. 27:1069-1072, 1978. Spencer, H.C., Miller, L.H., Collins, W.E., Knud-Hansen, C., McGinniss, M.H., Shiroishi, T., Labos, R.A., and Feldman, R.A. The Duffy Blood Group and Resistance to Plasmodium vivax in Honduras. Am. J. Trop. Med. and Hygiene. 27: 664-670, 1978.
SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, Clinical Center funds n.a.

2.0449,
STATISTICAL RESEARCH IN CLINICAL PATHOLOGY
E.K. Harris, U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, Div. of Computer Research & Technology, Laboratory of Applied Studies, *9000 Rockville Pike, Bethesda, Maryland* 20205 (Z01 CT 00007-11 LAS)
In cooperation with Dr. G.Z. Williams and staff of the Health Research Institute (San Francisco), records of some 30 different biochemical and hematological tests performed annually over a 4-7 year period on several hundred healthy volunteers have been analyzed to test the adequacy and usefulness of 3 statistical forecasting models described in previous reports and publications. An initial report of this work is in preparation. The theory of Empirical Bayesian estimation has been explored to determine its usefulness as a way of improving estimates of individual mean values of biochemical constituents. Initially, applications to epidemiological studies have been investigated (Ref. 1). Work currently in progress tests the application of this theory to patient data from hospital laboratories. Another cooperative study examines the distribution of within-person variance in healthy volunteers and its effects on reference ranges and other medical diagnostic criteria. Finally, joint studies with cooperating pathologists have begun on the power of various statistical models and tests to detect short-term trends in biochemical quantities.
BIBLIOGRAPHIC REFERENCES: Harris, E.K. and Shakarji, G.: Use of the population distribution to improve estimation of individual means in epidemiological studies. J. Chronic Diseases, 1978, in press.
SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, Div. of Computer Research & Technology funds n.a.

2.0450,
INCIDENCE OF GALLSTONES IN PATIENTS WITH PROSTHETIC HEART VALVES
K.A. Merendino, University of Washington, School of Medicine, Dept. of Surgery, *A-300 Health Sciences Ctr., SC-64, Seattle, Washington* 98195 (M01 RR 00037-190149)
This project is part of a broader program (RR 00037).
SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, Div. of Research Resources funds n.a.

2.0451,
PULMONARY DISEASE IN A RURAL POPULATION
G.S. Davis, University of Vermont & State Agricultural College, School of Medicine, Dept. of Medicine, *85 S. Prospect St., Burlington, Vermont* 05401 (M01 RR 00109-160035)
This project is part of a broader program (RR 00109).
SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, Div. of Research Resources funds n.a.

2.0452,
PROSPECTIVE STUDY ON FETAL ALCOHOL SYNDROME
S. Miller, Case Western Reserve University, School of Medicine, Dept. of Medicine, *2109 Adelbert Rd., Cleveland, Ohio* 44106 (M01 RR 00210-150098)
This project is part of a broader program (RR 00210).
SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, Div. of Research Resources funds n.a.

2.0453,
PATHOGENESIS OF HYPERURICEMIA - CORRELATE IN A GOUTY POPULATION (HUMAN)
E.W. Holmes, Duke University, School of Medicine, Dept. of Surgery, *Box 3711, Durham, North Carolina* 27710 (M01 RR 00030-190222)
This project is part of a broader program (RR 00030).
SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, Div. of Research Resources funds n.a.

2.0454,
EPIDEMIOLOGY AND IMMUNOLOGY OF HEPATITIS B ANTIGEN CARRIER STATE (HUMAN)
R.A. Schaefer, Cornell University, Medical Center, Cornell Medical College, Dept. of Medicine, *1300 York Ave., New York, New York* 10021 (M01 RR 00047-190076)
This project is part of a broader program (RR 00047).
SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, Div. of Research Resources funds n.a.

2.0455,
INCIDENCE OF CYTOMEGALOVIRAL INFECTION IN INTENSIVE CARE NURSERY
A.S. Yeager, Stanford University, School of Medicine, Dept. of Pediatrics, *Stanford, California* 94305 (M01 RR 00081-170041)
This project is part of a broader program (RR 00081).
SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, Div. of Research Resources funds n.a.

2.0456,
FEMALE PREPONDERANCE OF HEMOGLOBIN S IN SICKLE CELL SCREENING
M.S. Kramer, Yale University, School of Medicine, *333 Cedar St., New Haven, Connecticut* 06510 (M01 RR 00125-160377)
This project is part of a broader program (RR 00125).
SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, Div. of Research Resources funds n.a.

2.0457,
PATHOGENESIS OF OCCUPATIONALLY INDUCED ISOCYANATE REACTION (HUMAN)
I.L. Bernstein, University of Cincinnati, School of Medicine, Dept. of Internal Medicine, *Eden & Bethesda Aves., Cincinnati, Ohio* 45221 (M01 RR 00068-170122)
This project is part of a broader program (RR 00068).
SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, Div. of Research Resources funds n.a.

2.0458,
FAMILIES AT HIGH RISK FOR COLORECTAL CANCER
E.A. Murphy, Johns Hopkins University, School of Medicine, Dept. of Medicine, *725 N. Wolfe St., Baltimore, Maryland* 21205 (M01 RR 00722-070059)
This project is part of a broader program (RR 00722).
SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, Div. of Research Resources funds n.a.

2.0459,
HEALTH DATA ON MOLYBDENUM
P.A. Walravens, University of Colorado, Medical Center, School of Medicine, Dept. of Pediatrics, *4200 E. 9th Ave., Denver, Colorado* 80262 (M01 RR 00069-170151)
This project is part of a broader program (RR 00069).
SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, Div. of Research Resources funds n.a.

2.0460,
CHRONOEPIDEMIOLOGY OF BREAST CANCER (HUMAN)
F. Halberg, University of Minnesota, Minneapolis Campus, School of Medicine, Dept. of Medicine, *1305 Mayo, Minneapolis, Minnesota* 55455 (M01 RR 00400-110082)
This project is part of a broader program (RR 00400).
SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, Div. of Research Resources funds n.a.

2.0461,
HAWAIIAN FRESHWATER SHRIMP AS VECTOR FOR HUMAN ENTERIC BACTERIA
J.G. Chan, University of Hawaii System, Manoa Campus, School of Arts & Sciences, Dept. of Chemistry, *2444 Dole St., Honolulu, Hawaii* 96822 (S06 RR 08073-090001)
This project is part of a broader program (RR 08073).
SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, Div. of Research Resources funds n.a.

2.0462,

EVALUATION OF EPIDEMIC ARTHRITIS IN THE LYME AREA

A.C. Steere, Yale University, School of Medicine, Dept. of Internal Medicine, *333 Cedar St., New Haven, Connecticut* 06510 (M01 RR 00125-160319)

This project is part of a broader program (RR 00125).

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, Div. of Research Resources funds n.a.

2.0463,

WOODWORKER'S ASTHMA AND HYPERSENSITIVITY LUNG DISEASE (HUMAN)

E.J. Bardana, Oregon State Higher Education System, University of Oregon Health Sciences Center, School of Medicine, Dept. of Surgery, *3181 S.W. Sam Jackson Park Rd., Portland, Oregon* 97201 (M01 RR 00334-130082)

This project is part of a broader program (RR 00334).

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, Div. of Research Resources funds n.a.

2.0464,

MEDICAL IMPLICATIONS OF IODINATED WATER SUPPLY

W.C. Thomas, State University System of Florida, University of Florida, School of Medicine, Dept. of Medicine, *1600 Archer Rd., Box J-266, Gainesville, Florida* 32610 (M01 RR 00082-170186)

This project is part of a broader program (RR 00082).

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, Div. of Research Resources funds n.a.

2.0465,

GONADAL DYSGENESIS SURVEY (HUMAN)

H.O. Williamson, Medical University of South Carolina, School of Medicine, Dept. of Medicine, *80 Barre St., Charleston, South Carolina* 29401 (M01 RR 01070-030029)

This project is part of a broader program (RR 01070).

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, Div. of Research Resources funds n.a.

2.0466,

ETIOLOGY OF MEAT-WRAPPER'S ASTHMA

E.J. Bardana, Oregon State Higher Education System, University of Oregon Health Sciences Center, School of Medicine, Dept. of Surgery, *3181 S.W. Sam Jackson Park Rd., Portland, Oregon* 97201 (M01 RR 00334-130091)

This project is part of a broader program (RR 00334).

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, Div. of Research Resources funds n.a.

2.0467,

FETAL EXPOSURE TO LEAD, MERCURY AND CADMIUM AN URBAN INDUSTRIAL ENVIRONMENT

P.M. Kuhnert, Case Western Reserve University, Graduate School, Dept. of Medicine, *2040 Adelbert Rd., Cleveland, Ohio* 44106 (M01 RR 00210-150104)

This project is part of a broader program (RR 00210).

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, Div. of Research Resources funds n.a.

2.0468,

HYPOGLYCEMIA IN A 'NORMAL' POPULATION (HUMAN)

M.A. Permutt, Washington University, School of Medicine, Dept. of Internal Medicine, *660 S. Euclid Ave., St. Louis, Missouri* 63110 (M01 RR 00036-190384)

This project is part of a broader program (RR 00036).

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, Div. of Research Resources funds n.a.

2.0469,

GENERAL CLINICAL RESEARCH CENTER

S. Kupfer, City University of New York, Mount Sinai School of Medicine, School of Medicine, Dept. of Medicine, *5th Ave. at E. 100th St., New York, New York* 10029 (M01 RR 00071-16)

The facilities and support provided by this research grant make it possible for clinical investigators in all departments to study various pathophysiological states and diseases under controlled environmental and metabolic conditions.

Such studies include research on neurological and myeloproliferative disorders, purine metabolism and gout, renal and electrolyte and fluid disorders, catecholamine metabolism in relation to hypertension and affective disorders, altered adrenal cortical and gonadal hormonal balances, malabsorption, hepatic and biliary tract secretory disturbances, obesity, inborn errors of metabolism and diabetes mellitus.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, Div. of Research Resources $816,430

2.0470,

GENERAL CLINICAL RESEARCH CENTER

P. Sunshine, Stanford University, School of Medicine, Dept. of Pediatrics, *Stanford, California* 94305 (M01 RR 00081-17)

To acquire information regarding the characteristic physiologic parameters and regulatory mechanisms of the premature infant, and contrast the changes of these parameters in those infants who grow successfully with those infants who adapt inadequately to their environment. In addition, we are actively investigating diagnostic and therapeutic means of facilitating the adaptation of critically ill infants to their extrauterine environment.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, Div. of Research Resources $120,954

2.0471,

GENERAL CLINICAL RESEARCH CENTER (CHILDREN)

T.K. Oliver, Childrens Hospital of Pittsburgh, *125 De Soto St., Pittsburgh, Pennsylvania* 15213 (M01 RR 00084-17)

This is a 5-year grant renewal application for the Clinical Research Center of Children's Hospital of Pittsburgh's 6-bed unit.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, Div. of Research Resources $440,856

2.0472,

GENERAL CLINICAL RESEARCH CENTER

W.H. Luginbuhl, University of Vermont & State Agricultural College, School of Medicine, Dept. of Pathology, *85 S. Prospect St., Burlington, Vermont* 05401 (M01 RR 00109-16)

The Clinical Research Center at the University of Vermont consists of a six-bed research ward including a special diet kitchen, core laboratory and special procedure rooms which provide inpatient and limited outpatient facilities for the conduct of original investigation by members of the medical faculty. It is staffed by full-time nursing, dietary and laboratory personnel who are highly trained in patient care and research techniques. Thus, the Center provides an environment where suitable patients may be studied under optimum conditions for experimental control and accurate data collection.

Proposed research projects must be approved by the Committee on Human Experimentation for the Medical Science and are subjected to critical review by the Program Director and CRC Advisory Committee prior to final approval. They are rated on the basis of scientific merit, methodology and appropriateness for human investigation. A priority rating is established for each research project and admission of patients to the Center is determined accordingly.

The Clinical Research Center serves multiple subspecialty disciplines in the medical center. Current areas of interest include: 1. Overfeeding and Experimental Obesity in Man. 2. Absorptive Defects and Immune Mechanisms in Regional Enteritis. 3. Diffuse Interstitial Lung Disease. 4. Effects of Over- and Undernutrition on Thyroid Hormone Physiology. 5. Nutritional Assessment and Energy Balance of Hospitalized Patients with Anorexia nervosa, Malignancy, and other Chronic Diseases. 6. Multiple Sclerosis.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, Div. of Research Resources $423,050

2.0473,

GENERAL CLINICAL RESEARCH CENTER

W.B. Deal, State University System of Florida, University of Florida, School of Medicine, Dept. of Medicine, *1600 Archer Rd., Box J-266, Gainesville, Florida* 32610 (M01 RR 00082-17)

This 7-bed unit, in operation since 1962, continues to function at a high level of activity with over 40 active protocols involving many collaborative efforts with members of the departments of medicine, pediatrics, surgery, neurology, psychiatry, ophthalmology, radiology, and obstetrics/gynecology of the College of Medicine, College of Pharmacy, Nursing and Health Related Professions. Current studies include investigation of Vitamin B12 absorption mechanism and blind loop syndrome with new diagnostic techniques including breath and pharmaceutical tests to describe pancreatic insufficiency; visual function and zinc deficiencies as related to malabsorption problems; alteration in biologic mineralization including renal stone formation and prevention, hyperparathyroidism and rickets and alteration of thyroid function studies from iodination of the water supply; multiple and collaborative in-depth investigations of patients who have undergone bypass surgery; the body's metabolism and disposal of a variety of drugs in the treatment of epilepsy; gastric ulcer studies of absorption of drugs in malabsorption situations; oncology studies; the natural history of diabetes mellitus and relationship between metabolic and vascular problems in diabetes; investigations of new pathways of metabolism; insulin receptor binding studies; salivary insulin secretion; mechanisms and treatment of sexual precocity; intestinal perfusion studies, gastrin secretion, electrolyte balance in athletes and nutritional studies.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, Div. of Research Resources $427,331

2.0474,

GENERAL CLINICAL RESEARCH CENTER - ADULT AND CHILDREN

A. Ebbert, Yale University, School of Medicine, Dept. of Internal Medicine, *333 Cedar St., New Haven, Connecticut* 06510 (M01 RR 00125-16)

The objective of this grant is to support the Clinical Research Center at the Yale-New Haven Medical Center, Inc. and Yale University School of Medicine. The Center permits the full-time staff and their postgraduate fellows to conduct clinical investigation in order to obtain a better understanding of the mechanisms of disease. Therapeutic measures are developed or tested in this Unit. In addition, it is most valuable to the medical education and training of the future practitioners and faculty members.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, Div. of Research Resources $1,206,919

2.0475,

GENERAL CLINICAL RESEARCH CENTER (MATERNAL-CHILD)

F.C. Robbins, Case Western Reserve University, School of Medicine, Dept. of Medicine, *2109 Adelbert Rd., Cleveland, Ohio* 44106 (M01 RR 00210-15)

The PCRC is an environment providing support for clinical research programs, involving mother, fetus and neonate, as well as a setting for educational programs. Such programs at the Doctoral, postgraduate medical and post-residency fellowship (Maternal-Fetal Medicine and Neonatology) levels continue to be active in the Center. To extend our educational efforts, in this Application we are requesting a Clinical Associate Physician (CAP) position for a qualified junior investigator, who has completed his Maternal-Fetal Medicine fellowship training, to continue the development of his research expertise, while simultaneously supplementing professional care for Center patients. The CAP will be directly supervised by the PCRC Program and Assistant Program Directors and the Co-director for Engineering. The proposed study is summarized below.

Electronic monitoring before and during labor is used for detecting fetal distress; the sensitivity and specificity of these techniques are limited. Our experience with antepartum electronic fetal monitoring over a three year period in the PCRC has led to the description of new methods in fetal evaluation as reflected by the fetal heart rate, fetal movements and fetal respiratory activity. These same interrelated physiologic variables have been described in the newborn in sleeping and waking periods as behavioral states. In the neonate, these states reflect maturation and development of the human brain and have

been found to be altered in instances of abnormal growth, such as the small-for gestational age infant and the infant of the diabetic mother. We hypothesize that the organization of active and quiet periods begins in utero, that this can be quantitated and described statistically and that detectable alterations in the organization of these periods before birth will provide a useful method for the earlier identification of the sick fetus.

Moreover, Dr. Dierker, the CAP Applicant, has been one of the senior investigators in the study of one of these variables, fetal respiratory movement. This continuing program will allow him to more clearly describe the ontogeny of fetal respiratory movement and its relationships after birth.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, Div. of Research Resources $735,058

2.0476,

GENERAL CLINICAL RESEARCH CENTER

M.R. Grover, Oregon State Higher Education System, University of Oregon Health Sciences Center, School of Medicine, Dept. of Surgery, *3181 S.W. Sam Jackson Park Rd., Portland, Oregon* 97201 (M01 RR 00334-13)

The Clinical Research Center at the University of Oregon Health Sciences Center is currently conducting human research across a wide number of human disease states as well as numerous physiologic and pharmacologic observations on normal volunteers. Subjects under active investigation at the present time include: (1) solid tumor chemotherapy, (2) progesterone, prolactin and estrogen interaction and manifestations in metastatic breast carcinoma, (3) hyperlipidemia and cholesterol metabolism, (4) Raynaud's syndrome and other vasospastic diseases, (5) autoimmune diseases, (6) bronchial asthma, (7) effect of methadone on respiration, (8) investigations of new diuretic agents, (9) studies on growth hormone, (10) agammaglobulinemia, (11) hyperlipidemia of renal disease, (12) evaluation of floctafenine, (13) blood pressure control, (14) parathormone secretion in end-stage renal disease and parathyroid secretory function after parathyroidectomy, and (15) evaluation of hypersecreting pituitary tumors.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, Div. of Research Resources $675,885

2.0477,

GENERAL CLINICAL RESEARCH CENTER

F.C. Goetz, University of Minnesota, Minneapolis Campus, School of Medicine, Dept. of Medicine, *1305 Mayo, Minneapolis, Minnesota* 55455 (M01 RR 00400-11)

The Center is a self-contained unit for the study of human disease and of normal body function. It contains 8 beds for hospitalization of normal subjects or patients under controlled conditions of diet, activity, and temperature, with facilities in the same unit for careful collection, handling and analysis of body fluids. More than 136 protocols are being or have been actively carried out in the Center, directed by members of medicine, pediatrics, surgery, dental school, laboratory medicine, pathology, psychiatry, genetics, and cell biology, obstetrics, gynecology, and other departments or divisions of the Minnesota Health Sciences Center.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, Div. of Research Resources $747,561

2.0478,

EPIDEMIOLOGY AND LABORATORY DIAGNOSIS OF STREPTOCOCCAL DISEASES

L.M. Shields, Navajo Community College, Undergraduate School, *Tsaile, Arizona* 86556 (S06 RR 08163-020003)

This project is part of a broader program (RR 08163).

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, Div. of Research Resources funds n.a.

2.0479,

ENVIRONMENTAL PULMONARY DISEASE (HUMAN)

A.P. Fishman, University of Pennsylvania, School of Medicine, Dept. of Medicine, *36th & Hamilton Walk, Philadelphia, Pennsylvania* 19174 (M01 RR 00040-190165)

This project is part of a broader program (RR 00040).

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, Div. of Research Resources funds n.a.

2.0480,

EPIDEMIOLOGY OF INSULIN DEFICIENCY DIABETES

L. Kuller, Childrens Hospital of Pittsburgh, *125 De Soto St., Pittsburgh, Pennsylvania* 15213 (M01 RR 00084-170072)

This project is part of a broader program (RR 00084).

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, Div. of Research Resources funds n.a.

2.0481,

SEROEPIDEMIOLOGIC STUDY OF NON-A, NON-B HEPATITIS (HUMAN)

W.C. Maddrey, Johns Hopkins University, School of Medicine, Dept. of Medicine, *725 N. Wolfe St., Baltimore, Maryland* 21205 (M01 RR 00722-070091)

This project is part of a broader program (RR 00722).

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, Div. of Research Resources funds n.a.

2.0482,

EFFECT OF MSG ON GROWTH HORMONE, LH AND PROLACTIN (HUMAN)

T. Fuller, Washington University, School of Medicine, Dept. of Internal Medicine, *660 S. Euclid Ave., St. Louis, Missouri* 63110 (M01 RR 00036-190442)

This project is part of a broader program (RR 00036).

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, Div. of Research Resources funds n.a.

2.0483,

BIOLOGICAL EFFECTS OF ENVIRONMENTAL CHEMICALS (HUMAN)

S.M. Daum, City University of New York, Mount Sinai School of Medicine, School of Medicine, *5th Ave. at E. 100th St., New York, New York* 10029 (M01 RR 00071-160100)

This project is part of a broader program (RR 00071).

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, Div. of Research Resources funds n.a.

2.0484,

BLOOD LEAD AND DELTA ALAD ACTIVITY IN THE URBAN MOTHER AND HER FETUS

P.M. Kuhnert, Case Western Reserve University, Graduate School, Dept. of Medicine, *2040 Adelbert Rd., Cleveland, Ohio* 44106 (M01 RR 00210-150101)

This project is part of a broader program (RR 00210).

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, Div. of Research Resources funds n.a.

2.0485,

BIOMEDICAL SCIENCES

J.K. McNeley, Navajo Community College, Undergraduate School, Dept. of Social Sciences, *Tsaile, Arizona* 86556 (S06 RR 08163-02)

The program involves Navajo Community College students in research on significant health problems among the Navajo population. The Navajo Drinking Behavior project, having arrived at a cultural definition of alcohol abuse through the use of ethnoscience ethnographic procedures, will investigate the incidence of alcohol abuse of a sample of the Navajo population through the use of social survey research techniques. Clinical applications of research findings will also be explored. The Gastroenteritis project is investigating the incidence of diarrhea among newborn lambs and young children on the Navajo reservation with the objectives of identifying the agent(s) causing diarrhea within the two target populations as well as the environmental factors contributing to diarrhea. The Streptococcal Diseases project is engaging students in the isolation of beta-hemolytic streptococci from clinical sources and identification through presumptive grouping of A strain by bacitracin sensitivity and B strain by the cAMP test and hippurate hydrolysis followed by verification of presumptive grouping results by the fluorescent anti-body technique.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, Div. of Research Resources $128,900

2.0486,

GENERAL CLINICAL RESEARCH CENTER

T.E. Gaffney, Medical University of South Carolina, School of Medicine, Dept. of Pharmacology, *80 Barre St., Charleston, South Carolina* 29401 (M01 RR 01070-03)

This is a continuation of our proposal for NIH support of our seven-bed General Clinical Research Center at the Medical University of South Carolina. This unit is utilized for both adult and pediatric patients. Areas of study will again include: platelet aggregation abnormalities in diabetes mellitus; vasoactive abnormalities in acute myocardial infarction and unstable angina; the pathophysiology of prostaglandins in renal physiology and disease; the role of sodium in the pathogenesis of pre-eclampsia; collagen metabolism in connective tissue disease; the kallikrein-kinin system in hypertention; the role of hypoxia in pulmonary hypertension; calcium metabolism in bone, fibroblast and other disorders; the sympathetic nervous system and arterial pressure control mechanisms; ascorbic acid therapy for dyskinesias; central hypotensive mechanisms of alpha methyldopa; the mechanism of action and disposition of propranolol; the mechanism of action and disposal of varied drugs used in the control of hypertension, and the control of prolactin.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, Div. of Research Resources $409,762

2.0487,

SUPPORT FOR STUDY OF BIOMEDICAL SCIENCES

J.M. Verrett, Dillard University, Undergraduate School, Dept. of Biology, *New Orleans, Louisiana* 70122 (S06 RR 08064-09)

The research program is designed to increase research training capability and experimental productivity in the Natural Sciences Division at Dillard. Three individual research problems involving three (3) faculty members and eleven (11) students will be studied as follows: (1) Water Balance in the American Cockroach - a project designed to determine how the frontal ganglion keeps the body fluids of the cockroach in a homeostatic state; (2) Skin Testing Program - to develop an antigen useful in skin testing to study the epidemiology of Sporothrix schenckii, and to isolate spores from soil to study the ecology of the fungus; and (3) Characterization of Corneal Mucoproteins - to extract and fractionate corneal acidic polysaccharides, chondroitin-4-sulfate and keratan sulfate and ascertain the hydration of each fraction.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, Div. of Research Resources $146,320

2.0488,

BIOMEDICAL, CLINICAL MASS SPECTROMETRY RESOURCE

A.L. Burlingame, University of California, Berkeley Campus, Space Sciences Lab., *3 Leuschner Observatory, Berkeley, California* 94704 (P41 RR 00719-03S2)

This proposal seeks continued pilot-level support for a biomedical-clinical mass spectrometry research resource for the San Francisco Bay area which would effectively service northern California by virtue of collaborative liaison with clinicians--routinely treating patients in this entire geographical area.

It is the expressed purpose of this program to spearhead West Coast exploration of the scope and exploitation of the applications of existing know-how and continually upgraded analytical capabilities of computerized mass spectrometry (both high and low

resolution, gas chromatography/high resolution mass spectrometry, chemical ionization, field desorption) and related separation techniques to problem areas of importance to the clinicians of the San Francisco Bay area.

The ingredients which are necessary in order to implement the program as envisaged include: 1) mobilization and utilization of core of expertise in existing mass spectrometry group and its augmentation with added biomedically oriented personnel; 2) upgrading of existing mass spectrometry and computer software capability and its tailoring to tractable medical priorities set by advisory committee and Principal Investigator; 3) implementation of a routine mass spectrometry service and accessible interpretative expertise for collaborating clinicians and clinical pathology laboratories; and 4) active program in the dissemination of knowledge of scope and extent of center analytical capabilities into the clinical and biomedical community through an elective medical scientist and M.D. training program.

Some of the areas of clinical importance which are being investigated include the study of genetic diseases, the screening of potentially mentally retarded children, screening for inborn errors in metabolism, the detection of cancer prior to clinical symptoms, appraisal of metabolic profiles in physiological fluids and tissue, etc. The use of mass spectrometry emergency diagnosis in drug and toxin overdose cases is of great interest.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, Div. of Research Resources $150,853

2.0489,

GENERAL CLINICAL RESEARCH CENTER

R.L. Van Citters, University of Washington, School of Medicine, Dept. of Medicine, *A-300 Health Sciences Ctr., SC-64, Seattle, Washington* 98195 (M01 RR 00037-19)

The Clinical Research Center at the University Hospital was activated in 1960 and has been maintained through support by the National Institutes of Health. This multidisciplinary facility provides a milieu for the conducting of clinical research encompassing a broad spectrum of human physiopathology and disease. The specific purposes are to provide an environment for investigation of human physiology in health and disease under carefully monitored conditions and to provide optimal medical supervision and protection of the human subjects' rights and welfare. This facility also enables the study of unusual diseases or unique opportunities to study commonly encountered clinical disorders under conditions or supervision which could not be readily obtained in primary clinical care facilities. The Center also constitutes a place where postgraduate and undergraduate students in medicine, nursing, and diabetics can obtain in-service experience in clinical research under established investigators.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, Div. of Research Resources $646,072

2.0490,

BIOLOGICAL, BIOCHEMICAL, BIOPHYSICAL STUDIES

S.P. Sood, University of Hawaii System, Manoa Campus, School of Arts & Sciences, Dept. of Chemistry, *2444 Dole St., Honolulu, Hawaii* 96822 (S06 RR 08073-09)

This proposal encompasses a wide spectrum of projects of Biological, Biochemical, Biophysical, Behavioral, Environmental and Cancer Studies with a common theme of biomedical relevance. The projects are so conceived as to allow a meaningful and productive training and research of minority undergraduate student participants.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, Div. of Research Resources $23,800

2.0491,

BIOCHEMICAL AND PHARMACOLOGICAL INVESTIGATIONS

L.P. Tserlikkis, State University System of Florida, Florida Agricultural & Mechanical University, School of Pharmacy, Dept. of Pharmaceutics, *Tallahassee, Florida* 32307 (S06 RR 08111-08)

The overall objective of the program is to establish a bonafide investigation in biochemical and pharmacological aspects of biomedical research. The proposed research program will encompass studies from subcellular to organism level, since any pharmacological response is caused by various biochemical and physiological contributing factors. The response might be due to an agent or to an environmental stress; thus, one must monitor several interlocking aspects of the biochemical factors involved. The projects are all involved in directly monitoring the following factors: (a) cytological changes of various animal organs due to the deficiency of Vitamin B6 with respect to the role of pyridoxal phosphate and also several kinetic properties, (b) investigation delineating physiological and pharmacological conditions through corticosteroid metabolism which produces acidic metabolites and will be monitored by mass-fragmentographic technique, (c) optimization of the therapeutic index of cancer chemotherapeutic agents through cell kinetic and pharmacokinetic approaches and (d) synthesizing of various ketodeoxyhexosyl uracils and determining the structural activity of these synthetic potential cancer agents.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, Div. of Research Resources $291,480

2.0492,

OUT-PATIENT CLINICAL RESEARCH CENTER

R.S. Ross, Johns Hopkins University, School of Medicine, Dept. of Medicine, *725 N. Wolfe St., Baltimore, Maryland* 21205 (M01 RR 00722-07)

Partial support is proposed for a special facility for ambulatory clinical investigation through The Johns Hopkins Out-patient Department-Clinical Research Center. Based on a 16-year previous experience of long-term out-patient investigation in a large number of disorders the proposed Center will provide facilities and financing for continual studies in acute and chronic medical surgical illnesses of potential significance, the nature of which precludes in-patient investigation and for which clinical research can be most effectively and economically conducted on ambulatory subjects. Patients of all age groups will be included. Special resources contributing to the understanding of such diseases will include biomathematics, epidemiologic, and clinical pharmacologic units. A volume of 10,000 patient-visits per year is anticipated.

From among research protocols covering a wide variety of disciplines representing essentially all departments of the Medical School a standing Clinical Research Center Committee will select and approve specific investigations. Administrative organization, financial aspects of support for patient visits and ancillary services, personnel and staffing, specialty units, and required renovation have been presented in the original application. Of special interest are the use of case assistants and development of a records system with computer-based methods for storing and analyzing research data.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, Div. of Research Resources $242,902

2.0493,

GENERAL CLINICAL RESEARCH CENTER

F.H. Epstein, Beth Israel Hospital, *330 Brookline Ave., Boston, Massachusetts* 02215 (M01 RR 01032-04)

Clinical research will be performed in the Beth Israel Hospital General Clinical Research Center in the fields of Endocrinology, Cardiology, Gastroenterology, Hematology, Nephrology, Computer Medicine, Nuclear Medicine, Core Laboratory, Nutrition, Clinical Pharmacology, Behavioral Medicine, and Oncology.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, Div. of Research Resources $589,713

2.0494,

GENERAL CLINICAL RESEARCH CENTER

L.E. Earley, University of Pennsylvania, School of Medicine. Dept. of Medicine, *36th & Hamilton Walk, Philadelphia, Pennsylvania* 19174 (M01 RR 00040-19)

The Clinical Research Center at the Hospital of the University of Pennsylvania provides a core clinical research facility for the use of clinical investigators in all departments of the medical school. There are more than 40 active protocols representing participation by members of the Departments of Medicine, Surgery, Obstetrics and Gynecology, Neurology, Orthopedics, Psychiatry, Medical Genetics, Radiology. Studies, conducted both on outpatients and inpatients, relate to basic physiological and biochemical processes of disease, and the elucidation of new diagnostic and therapeutic techniques.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, Div. of Research Resources $738,759

2.0495,

GENERAL CLINICAL RESEARCH CENTER

T. Cooper, Cornell University, Medical Center, Cornell Medical College, Dept. of Medicine, *1300 York Ave., New York, New York* 10021 (M01 RR 00047-19)

The objective of the General Clinical Research Center at The New York Hospital-Cornell Medical Center is to maintain and operate a multidepartmental and multicategorical research center for the study of disease mechanisms in man under controlled conditions of environment, collection of samples, and methods of medical care. The Clinical Research Center will be utilized by the several clinical departments of Cornell University Medical College and, when applicable, combined studies will be carried out with preclinical departments. The Center is housed within geographically separate, essentially autonomous clinical research areas (an eight bed adult unit, a six bed pediatric unit, supporting core laboratories, and other ancillary space), and is staffed by a complement of physicians, nurses, dieticians, technicians, and other personnel necessary to provide the Cornell Medical Center with integrated units for meritorious clinical investigation of the institution's own choosing.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, Div. of Research Resources $1,437,289

2.0496,

GENERAL CLINICAL RESEARCH CENTER

R. Ross, Johns Hopkins University, School of Medicine, Dept. of Medicine, *725 N. Wolfe St., Baltimore, Maryland* 21205 (M01 RR 00052-18)

At the present time, this Pediatric Department operates on a total budget for research of over 2.25 million dollars, and the efficiency of the use of this money for health-related research is greatly increased by the existence of the Research Unit. In addition, this Research Unit provides both motivation and opportunity for young scientists, already well trained in basic science, to gain experience as clinical fellows in applying their biochemical and physiological knowledge to pediatric problems, and for students and house officers to become familiar with the needs and rewards of research. Our large postdoctoral training programs in Pediatric Endocrinology and in Medical Genetics could not exist without this unit.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, Div. of Research Resources $567,264

2.0497,

GENERAL CLINICAL RESEARCH CENTER

S.A. Wells, Duke University, School of Medicine, Dept. of Surgery, *Box 3711, Durham, North Carolina* 27710 (M01 RR 00030-19)

The Clinical Research Unit is a facility where patients may be admitted for special investigations ranging from the evaluation of new surgical techniques to studies of cardiac aberrant conduction, mechanisms of endocrine pathophysiology, elucidation of immunological deficiency diseases, and drug assessment. Each of the studies on the Unit are aimed at evaluating or evolving new methods of treatment and diagnosis so that the management of specific clinical diseases can be improved. The facility provides a meeting place for investigators whose different ideas and approaches can be joined on specific problems. Investigators form all clinical departments and most basic science departments are active in the Clinical Research Unit, as housed in an area specifically designed for its use.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, Div. of Research Resources $844,596

2.0498,

GENERAL CLINICAL RESEARCH CENTER

D.M. Kipnis, Washington University, School of Medicine, Dept. of Medicine, *660 S. Euclid Ave., St. Louis, Missouri* 63110 (M01 RR 00036-19)

The Washington University Clinical Research Center has now been in operation for 12 years and consists

of a 25-bed adult unit and an 8-bed pediatric facility operated as independent nursing services but functioning under a single administration and sharing dietary and core laboratory resources. Both the adult and pediatric units are designed so that the acutely ill as well as the ambulatory patient and normal volunteer can be studied. The Center provides for the hospitalization of patients in a setting in which expert dietary control, skillful intensive nursing care and facilities for specialized studies can be performed. The Clinical Research Center Core Laboratories provide assistance for specialized determinations used by multiple investigations and represents a research resource for the development of new analytical procedures. All faculty members of the clinical and basic science departments of the Washington University School of Medicine who wish to pursue clinical investigation and have research protocols approved by the University Committee on Human Experimentation and by the Advisory Committee of the Clinical Research Center may use the resources of the Center. Although the major function of the Clinical Research Center is clinical investigation, it also provides opportunities for undergraduate and postgraduate training in clinical investigation.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, Div. of Research Resources $1,478,526

2.0499,

GENERAL CLINICAL RESEARCH CENTER

J. Steinfeld, Virginia Commonwealth University, Medical College of Virginia, *1200 E. Broad St., Richmond, Virginia* 23298 (M01 RR 00065-15)

The present application describes a multidisciplinary Clinical Research Center. Major projects are related to acute and subacute liver diseases, hypertension, protein metabolism, calcium metabolism, diabetes, atopic dermatitis and renal disease.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, Div. of Research Resources $476,634

2.0500,

GENERAL CLINICAL RESEARCH CENTER

H.C. Knowles, University of Cincinnati, School of Medicine, Dept. of Internal Medicine, *Eden & Bethesda Aves., Cincinnati, Ohio* 45221 (M01 RR 00068-17)

The clinical Research Center is involved in the following major active projects from among 123 active protocols: 1. Lipo- and apo-lipoprotein metabolism: Studies focused on diet and drug therapy of familial dyslipoproteinemias, pediatric precursors of atherosclerosis, genetics of dyslipoproteinemia, apo-lipoproteins, and triglyceride catabolism. 2. Diabetes and pregnancy: A prospective study of the effect of maternal diabetic control on fetal morbidity, mortality, and congenital malformations is being carried out. 3. Cholesterol lowering compounds: The cholesterol and LDL cholesterol lowering effects of a non-absorbable synthetic fat, Sucrose Polyester, are being assessed. Cholesterol balance studies are being carried out. 4. Diabetes and renal transplantation in end-stage diabetic renal disease: Metabolic studies pre- and post-dialysis and renal transplantation in diabetics with end-stage renal disease are being carried out. 5. Nephrotic syndrome: A study of HDL and Apo CII lipoproteinuria and their relationship to lipoproteinemia of nephrotic syndrome is being carried out. 6. Care of infants in high risk pregnancies: This study is designed to study infants born to diabetic mothers and mothers whose metabolic diseases make pregnancy high risk. These infants room in with the mothers and are monitored closely by plasma and urine specimens. 7. A correlation of tubular function and morphology in lupus nephritis: Studies of renal tubular functions in patients with lupus nephritis. 8. Study of growth and development in children: Relationship of infantile nutrition and growth in the 1st yr of life to subsequent obesity, lipoprotein status and mental acuity.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, Div. of Research Resources $746,382

2.0501,

GENERAL CLINICAL RESEARCH CENTER (CHILDREN)

B.C. Paton, University of Colorado, Medical Center, School of Medicine, Dept. of Pediatrics, *4200 E. 9th Ave., Denver, Colorado* 80262 (M01 RR 00069-17)

The Children's General Clinical Research Center at the University of Colorado Medical Center is a 6-bed facility designed to provide hospitalization with superior nursing and laboratory support for the investigation of disease in childhood. In the last year there has been a significant change in many aspects of the research conducted. The Children's GCRC now has the largest group of infants with biliary atresia, outside of Japan, on which the Kasai procedure has been carried out. The utilization of the Center for the evaluation of new metabolic disease has increased with cases of glyceroluria and glutaric aciduria. Bone marrow transplants are being attempted again in children with aplastic anemia and certain immune deficiency diseases.

At the same time, long standing studies on essential fatty acids and prostaglandins in cystic fibrosis and on trace metal disorders continue vigorously. There is, in addition, an active outpatient effort, and the Core Laboratory continues its essential supportive role.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, Div. of Research Resources $452,122

2.0502,

EPIDEMIOLOGY OF FUNCTIONAL PSYCHOSES

Z. Kulcar, Inst. of Public Health of the Socialist Republic of Croatia, *Zagreb, Yugoslavia* (02-504-N)

SCOPE: Preparation of a critical review of the epidemiology of functional psychoses to bring together the published results of a number of completed epidemiological studies of the psychoses with data collected from outstanding scientists in this country and in Europe who currently are engaged in research projects related to the subject. The clinical information and epidemiological data collected are to be reviewed and evaluated for the purpose of identifying problems and methodology in unresolved clinical problems associated with endogenic psychoses and to recommend areas in need of additional research.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, Fogarty International Center funds n.a.

2.0503,

ORAL CANCER AND ASSOCIATED ORAL CONDITIONS

F.S. Mehta, Tata Inst. of Fundamental Research, *Homi Bhabha Rd., Bombay 400005, Maharashtra, India* (01-022-N)

SCOPE: To determine prevalence of submucous fibrosis, leukoplakia, and oral cancer in adults from four villages in which habits of tobacco usage vary; to record location of lesions within the oral cavity; to observe and correlate occurrence and site of oral lesions with habitual use of tobacco smoked or chewed, clinical appearance and histologic character of lesions of leukoplakia, oral cancer, and submucous fibrosis, and occurrence and site of oral lesions with other customs and habits; to establish a register of individuals with clinical leukoplakia negative for malignancy on histologic examination, and a control register of individuals for prospective study.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, Fogarty International Center funds n.a.

2.0504,

PROSTATIC CANCER - GENETIC AND ENDOCRINE RISK FACTORS

A.W. Meikle, Utah Higher Education System, University of Utah, School of Medicine, Dept. of Internal Medicine, *1400 E. 2nd S., Salt Lake City, Utah* 84112 (R26 CA 25031-02)

Our major goal is to determine the role of genetic factors in the development of prostatic cancer. Our hypothesis is that genetic factors affect secretion of sex-hormones and prolactin and predispose men to the early development of prostatic cancer in response to endogenous hormones and environmental carcinogens. Our probands will be less than 61 years of age when the diagnosis of prostatic cancer is made. We will determine whether (1) the plasma concentrations of sex steroids (estradiol-17beta, estrone, testosterone and dihydrotestosterone) and prolactin are abnormal in probands and first-order relatives as compared to age-matched in-law controls and whether the plasma concentrations of the hormone are affected by heredity; (2) the risk of the development of prostatic cancer is higher in first-order relatives and maternal and paternal relatives of the index cases than in age-matched controls; (3) the prevalence of some apparent epidemiologic risk variables are observed more commonly in probands and their first-order relatives as compared to age-matched controls. The investigation is novel in that the hereditary, endocrine and epidemiologic risk variables for the development of prostatic cancer will be investigated in younger men with the cancer and their relatives.

The investigation is feasible because of the availability of a population with large families and a high incidence of prostatic cancer.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. $118,618

2.0505,

EXPLORATORY STUDIES OF CANCER PATIENT DATA CONTROL

S.J. Cutler, Georgetown University, School of Medicine, Dept. of Community & Family Medicine, *3800 Reservoir Rd. N.W., Washington, District of Columbia* 20007 (R10 CA 25146-02)

This application provides for support to enable the Epidemiology and Statistics Unit of the Georgetown University component of the Georgetown University-Howard University Comprehensive Cancer Center (the Vincent T. Lombardi Cancer Research Center), under the direction of Sidney J. Cutler, Sc.D., Professor, Department of Community and Family Medicine, to further develop and maintain an effective computerized cancer information system and epidemiologic research program. The system, using codes, definitions, and procedures compatible with the Centralized Cancer Patient Data System, will help promote active collaboration between Georgetown University and Howard University and will be the basis for the development of a community-oriented epidemiological research program. Data on more than 800 new cancer patients plus information on an additional 2500 active cases are entered into the data base and utilized for analyses of patient characteristics, treatment and its end-results, and other descriptive reports. These analyses should provide clues on trends and patterns which warrant special studies, and any pertinent data will provide Georgetown Medical Center committees and the Cancer Coordinating Council of Metropolitan Washington means for implementing or changing cancer control programs or medical care policies.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. $34,716

2.0506,

COLORECTAL CANCER AMONG CALIFORNIA MORMONS

L. Breslow, University of California, Los Angeles Campus, School of Public Health, Health Service & Hospital Administration, *405 Hilgard Ave., Los Angeles, California* 90024 (R26 CA 25157-01)

Based on our analysis of Church records, religiously active Mormon males in California and Utah compared with U.S. white males have standardized mortality ratio of 60% for colon cancer, 40% for rectum cancer, and 55% for colorectal cancer. Active Mormons abstain from tobacco, alcohol, and caffeine by Church prescription. However, the specific reasons for their low colorectal cancer rates are unknown.

The first objective is to pursue this descriptive mortality data with a prospective epidemiologic study of active California Mormon adults of both sexes. Using a questionnaire survey, demographic, lifestyle, dietary, occupational, and medical history data relevant to colorectal cancer etiology will be obtained on about 20,000 active Mormons, who will subsequently be followed for mortality over a four-year period. Furthermore, Church-based mortality rates covering the years 1960-67 and 1976-79 will be ascertained for all 350,000 California Mormons in order to supplement the existing rates for the years 1968-75. The questionnaire data on dietary and other lifestyle characteristics will be related to the colorectal cancer mortality rates. In addition to intra-Mormon comparisons, active Mormons as a whole will be compared with other California, U.S., and international populations which already have been studied with respect to colorectal cancer.

The second objective is to do a correlation analysis of extensive dietary and lifestyle data from the 1971-73 U.S. Health and Nutrition Examination Survey (HANES) with U.S. and California colorectal cancer mortality rates by country of birth and state of residence. Several etiologic variables of interest, including beef, fat, fiber, and beer consumption, will be examined for consistency with international correlations and previous epidemiologic findings. Special emphasis will focus on Spanish Americans born in Mexico, who have colorectal cancer death rates as low as those of active Mormons. The above analy-

ses should yield new understanding of the etiology and prevention of large bowel cancer in the United States.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. $49,031

2.0507,

REGRESSION ANALYSIS TECHNIQUES FOR CANCER RESEARCH

D.A. Schoenfeld, Sidney Farber Cancer Center Inc., *44 Binney St., Boston, Massachusetts* 02115 (R23 CA 25162-01)

The paper 'Regression Models and Life Tables' published by D.R. Cox in 1972 introduced an important new statistical methodology that has considerable application to cancer research. It provides a method for determining the effect of explanatory variables, such as patient characteristics, on survival. The object of this reseach is to develop supplementary statistical methodologies. In particular, methods will be developed to examine goodness-of-fit, measure strength of prediction, select variables from a large set, account for missing data, model random effects and perform small sample permutation tests. These methods have been developed for the usual 'Least Squares Regression' and have been invaluable in areas of scientific research. The analogous methods for life table regression will put important new statistical tools in the hands of clinical researchers and biostatisticians. the necessary computer software will be developed so that the new methodologies can be used by other investigators.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. $39,200

2.0508,

MONITORING FOR CANCER RISKS

J.W. Berg, Colorado Regional Cancer Center Inc., Division of Epidemiology & Statistics, *1655 Lafayette St., Suite 301, Denver, Colorado* 80218 (R18 CA 25254-02)

The ultimate objective is to identify environmental causes producing new increases in cancer risk among residents of the area served by the Colorado Regional Cancer Center. The focus will be on increases of previously rare cancers since large relative increases should be visible even with only early (i.e., incomplete) case ascertainment. A computer program will be created to analyze the monthly-updated tape file of the Colorado Central Cancer Registry for increases in cancers of unusual histology or in patient groups in which the cancers had been uncommon. Entities showing a suspicious increase will be selected for two kinds of interview investigation: follow-back on cases already in the Registry files and interviews of new patients as they are admitted to regional hospitals.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. $76,423

2.0509,

CANCER CONTROL DEVELOPMENT - CINCINNATI STRATEGY

C.R. Buncher, Childrens Hospital Medical Center, Cincinnati Cancer Control Program, *3245 Burnet Ave., Cincinnati, Ohio* 45229 (R18 CA 25299-01)

The Cancer Control Support and Demonstration effort represents a community-wide program to impact Cincinnati's higher mortality rate and lower level of organized cancer management treatment and service resources. The proposal requests funds to: (1) geographically map cancer in Cincinnati, (2) plan community resources, (3) develop a comprehensive occupational/industrial worker education and survey program and (4) a program to develop basic treatment capabilities within the medical community.

This will be accomplished with a small core staff, a broad base of community nurses and hospital administrators and specialist expertise such as that within Cincinnati's Kettering Laboratory.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. $143,428

2.0510,

HEPATOCELLULAR CARCINOMA RISK IN HEPATITIS B CARRIERS

R.P. Beasley, University of Washington, School of Public Health & Community Medicine, Dept. of Epidemiology, *4000 15th Ave. N.E., Seattle, Washington* 98105 (R01 CA 25327-01)

This study is designed to determine: 1) Incidence and relative risk of primary hepatocellular carcinoma (PHC) among hepatitis B virus (HV) carriers compared to non-carriers, and 2) whether alpha-fetoprotein (AFP) can be used as a practical screening method for early PHC detection. The population cohort is 20,000 male Chinese government employees in Taiwan age 40-59 who have mandatory health and life insurance which assures medical care for illness and detection of disease. HBV carriers constitute 15 percent of this population and are at increased risk of developing PHC, the leading malignant neoplasm in Taiwan. HBV carriers and a matched cohort of non-carriers are tested yearly for HBV markers to determine changes in infection status and for AFP (radioimmunoassay) to detect preclinical PHC.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. $156,529

2.0511,

CERVICAL CANCER EPIDEMIOLOGY IN PANAMA

W.C. Reeves, Gorgas Memorial Inst. of Tropical & Preventive Medicine Inc., Dept. of Virology, *2007 I St. N.W., Washington, District of Columbia* 20006 (R01 CA 25419-01)

In this application we propose to evaluate an unusually high uterine cervical cancer incidence in the Republic of Panama. Panama not only has the highest reported cervical cancer incidence in the world but also demonstrates geographic clustering and a marked shift in age specific incidence (most invasive cervical cancer occurs in 20-39 year old women). We plan to evaluate this by first recording all cervical cancer cases which occurred between 1974-1977, in a standardized national cancer registry. We will then do a seroepidemiologic case-control study comparing socioeconomic, sexual and herpes group virus risk factors in cases and controls. In addition we plan to measure other variables which might account for the unique aspects of cervical cancer seen in Panama. Lastly we will evaluate the effects of the existing Pap smear program and collaborate in initiation of a more intensive screening program.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. $88,592

2.0512,

STUDY OF MALES EXPOSED IN UTERO TO DIETHYLSTILBESTROL

L.T. Kurland, Mayo Foundation, Dept. of Medical Statistics & Epidemiology, *200 1st St. S.W., Rochester, Minnesota* 55901 (R01 CA 25441-02)

DES (diethylstilbestrol) has been shown, in studies of animals and on a small scale in humans, to be associated with genitourinary abnormalities and possible reduced fertility in males exposed to the drug in utero. Human studies to date do not demonstrate an association with cancer in the DES-exposed male. However, preliminary reports of case control studies in progress have suggested such an association. Whether the exposed young men will have an increased propensity to develop cancer at a later date remains speculative.

The proposed study is primarily designed to determine if DES-exposed males are at a higher risk of genitourinary problems or infertility than non-exposed males. This would be accomplished by identifying and examining a cohort of 700 DES-exposed and 700 non-exposed males and by a follow-up over a 2-year period. The DES-exposed males will be identified through the cooperative efforts of three institutions currently collecting data for the DESAD Project (the study of DES-exposed females): Baylor College of Medicine, Mayo Clinic, and the University of Southern California. The young men will be examined for clinical abnormalities and variations in levels of FSH, LH and testosterone. It is expected that the study will provide further information regarding the prevalence of abnormalities in DES-exposed males - information relating to the role of DES in teratogenesis and the public health aspects of the problem. Ultimately, this study should lead to greatly increased accuracy of assessment of the health status of the DES-exposed men and to recommendations regarding their long-term surveillance (and health care, if needed).

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. $142,048

2.0513,

CANCER IN WOMEN RECEIVING EXOGENOUS ESTROGENS

M. Arnold, Colorado Regional Cancer Center Inc., *1655 Lafayette St., Suite 301, Denver, Colorado* 80218 (R18 CA 25478-01)

The aims of this program are: 1) to reduce delay in diagnosis and treatment of endometrial and breast cancer in postmenopausal women, especially those receiving exogenous estrogens, and 2) to increase the quality of diagnosis, treatment and follow-up of patients with these diseases. A demonstration program will be organized in collaboration with the Colorado Regional Cancer Center, the Denver Medical Society, and the Colorado Division of the American Cancer Society, in which physicians and other health care professionals who see postmenopausal women and prescribe estrogens will participate in a cancer surveillance plan. These professionals will be provided with professional information and consultation and with technical assistance in patient education, and will contribute data for evaluation of the program. A supporting and reinforcing community education program directed at women over 45 years of age will also be developed.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. $87,844

2.0514,

CANCER INCIDENCE IN MOTHERS OF DIZYGOTIC TWINS

G. Wyshak, Harvard University, Boston Campus, School of Medicine, Dept. of Preventive & Social Medicine, *25 Shattuck St., Boston, Massachusetts* 02115 (R01 CA 25623-02)

The purpose of this study is to determine whether mothers of twins, who have a higher level of gonadotropins that other mothers, have cancer incidence or cancer mortality rates different from those of controls. The study will be based on a follow-up of the experience of a study group of 3982 mothers who had male-female twins or other polyzygous births in Connecticut during the years 1925-1959; a control group of 3982 women matched pairwise on year of childbirth, age, number of previous children, race and national origin; and a second control group of 3982 women randomly selected from mothers of singletons. In addition, the Connecticut Twin Registry will be searched for male-female twins and other polyzygous births occurring during 1960-1974; we expect to identify mothers of 2500-3000 male-female twins from this search. The Vital Statistics Records will be searched for controls chosen in the ratio of 4:1, and matched on age, race, and index year of birth. These women will be added to the study and the Connecticut Tumor Registry searched for the women in the study and control groups recorded for since 1966 for cancers of all sites. The observed incidence of site-specific cancer will be compared with that expected among Connecticut residents of the same age and sex.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. $49,335

2.0515,

EPIDEMIOLOGY OF CANCER OF THE RENAL PELVIS AND URETER

R.K. Ross, University of Southern California, School of Medicine, Dept. of Community & Family Medicine, *2025 Zonal Ave., Los Angeles, California* 90033 (R01 CA 25669-02)

The proposed research is a continuation of a case-control study of the epidemiology of cancer of the renal pelvis and ureter in Los Angeles County. The study is designed to test for multiple antecedent risk factors or these diseases with special emphasis on prior heavy analgesic consumption, occupational exposures, cigarette smoking, and coffee consumption. The study is in year 2 of a proposed five-year program. The final case group will consist of 200 cases of carcinoma of the renal pelvis and ureter identified by the Los Angeles County/USC Cancer Surveillance Program. Controls are neighborhood controls individually matched to the cases by date of birth (plus or minus 5 years), sex, and race.

Data are obtained by telephone interviews conducted by a trained nurse epidemiologist with question-

naire information focusing on the above items. The study will evaluate the relative importance of each of these suspected risk factors in disease development and, for analgesic usage, the specific analgesic component responsible for increased risk.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. $23,948

2.0516,

EVALUATION OF LOW LEVEL PLUTONIUM & CANCER

C.J. Johnson, Jefferson County Health Dept., *260 S. Kipling St., Lakewood, Colorado* 80226 (R01 CA 25729-01)

Because of documented contamination of about 50 square kilometers of land with plutonium in the vicinity of the Rocky Flats nuclear weapons plant, there is community concern regarding possible health effects for populations living in this area as well as concern for the safety of further residential depelopment near the plant. A preliminary study of age-corrected death rates from leukemia in eight census tracts around the plant and in the city of Golden (a small city near Rocky Flats) compared with a control area consisting of 19 census tracts with a similar population in the relatively uncontaminated part of the county disclosed a significant increase in deaths from leukemia in the contaminated areas.

An evaluation of age-specific death rates (45-64 years) for each of the contaminated areas compared with the control area disclosed a death rate from lung cancer more than twice as great as that for the control area.

I propose to expand the study by evaluating death rates and incidence rates of leukemia, lung cancer, and other types of tumors in these and other study areas in the Denver metropolitan area, by census tracts. Study areas will be selected by known levels of plutonium in surface respirable dust and for inventory levels. This phase of the study will continue through the census year 1980, and will be completed by the end of the calendar year 1981. Cancer death and incidence data will be supplied by the Colorado Health Department, Division of Vital Statistics. The effects of exposure to low levels of plutonium on a general population living in a contaminated area has never yet been evaluated with this epidemiological approach, and the results will be of considerable value in selecting sites for plutonium processing plants and nuclear electric generating plants in relation to population centers.

This study will be followed by a prospective study extending to 1991.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. $33,738

2.0517,

HEPATITIS B VIRUS AND HEPATOCELLULAR CARCINOMA

L.I. Lutwick, University of Iowa, School of Medicine, Dept. of Internal Medicine, *Jessup Hall, Iowa City, Iowa* 52240 (R01 CA 25811-01)

A substantial amount of information linking the hepatitis B virus and hepatocellular carcinoma has been generated along epidemiological and serological lines. The objectives of the research proposed here are to obtain data to more strongly link the virus in the direct production of hepatocellular carcinoma.

Using the techniques of in vitro and in situ nucleic acid hybridization, homologous DNA will be sought to the hepatitis B Dane particle DNA in hepatitis B associated and nonassociated chronic liver disease and malignancy. Attempts will be made to directly localize the homologous DNA to the cell genome by 1) in situ hybridization to metaphase chromosomal spreads from human hepatocellular carcinoma tissue culture line and 2) further evaluation of high molecular weight DNA from chronically infected liver which is hybridizable to viral DNA probe.

In addition, to further understand the events leading from acute infection to chronic infection to malignant transformation, a newly described animal model involving Marmota monax, the common woodchuck, will be investigated for its applicability to the hepatitis B setting. Also, human hepatoma tissue cell lines will be transplanted into nude athymic mice to further observe anti-viral, anti-tumor and immunologic manipulation of the malignant cells.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. $58,270

2.0518,

MICROBIOLOGICAL FACTORS CONTRIBUTING TO COLON CANCER

H.F. Mower, University of Hawaii System, Manoa Campus, John A. Burns School of Medicine, Dept. of Biochemistry & Biophysics, *2444 Dole St., Pacific Biomedical Res. Ctr., Honolulu, Hawaii* 96822 (R26 CA 25859-01)

Chemical causes of colorectal cancer are being sought by the use of bacterial mutagen assay to detect potential carcinogenic substances in human fecal samples. Preliminary epidemiologic work has been done on the incidence of mutagens in feces of Japan Japanese, and Hawaii Japanese, populations of low and high risk for large bowel cancer respectively. We have discovered five classes of fecal mutagens, four are present in higher amounts in the high risk Hawaii-Japanese than in the low risk Japanese population. Two of these four mutagens are closely associated with the fecal transnitrosase. This is an enzyme which we have discovered in certain strains of E. coli, various fecal bacteria and in human colon and stomach tissue. This enzyme can transfer nitroso groups from a wide variety of nitrosamines to a diverse group of amide acceptor molecules such as simple primary and secondary amides, ureas and urethanes. The structure of the product is unknown but different from the structure of the N-nitroso-N-alkyl amides, ureas or ureathanes. All products are direct acting mutagens on the Ames Salmonella tester strain TA98. The enzyme is increased when beef is added to the diet of man or experimental animals.

The identification and structure of these products will be carried out using the techniques of modern chemical investigation such as various procedures of chromatography, NMR, IV, UV, and mass spectrometry.

A newly discovered enzyme, nitrosohydrolase, is also present in fecal bacteria. The enzyme will specifically destroy the product of the transnitrosase, converting these substances into N2, esters, or NO2-and the original acceptor molecule. Mutagen formation is thereby prevented. Both enzymes will be purified, characterized and studied by the modern techniques of biochemistry.

Mechanisms whereby diet and environmental effects alter the fecal mutagens, fecal transnitrosase and fecal nitrosohydrolase will be sought.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. $0

2.0519,

MUTAGENS AND LOWER URINARY TRACT CANCER IN HAWAII

A.M. Nomura, University of Hawaii System, Manoa Campus, Pacific Biomedical Research Center, Epidemiology Unit, *2538 The Mall, Honolulu, Hawaii* 96822 (R26 CA 25903-01)

This case-control study will investigate the association of lower urinary tract cancer with chenical mutagens in the urine in two ethnically-distinct groups in Hawaii which have different levels of risk for this disease (high risk for Caucasians and intermediate risk for Japanese). It will also include data on the association of this cancer with smoking cigarettes, drinking coffee, occupational exposures and the use of artificial sweeteners.

Lower urinary tract cancer cases will be identified in the seven major civilian hospitals on Oahu for a period of five years (approximately 104 Caucasian and 92 Japanese cases). We will also recruit surviving prevalent cases who were diagnosed within two years of the start of the study (30 Caucasian and 27 Japanese cases). For each case, two neighborhood controls matched by race, sex and age within five years will be selected and interviewed. Over-night urine samples for battery of mutagen tests (Ames) will be collected from all subjects.

The questionnaires and format for this study will be similar in design to an ongoing case-control study being conducted by the Harvard School of Public Health in three different populations (including the low risk Japanese in Nagoya, Japan). By this arrangement, we will be able to compare the findings between the Japanese in Hawaii and Nagoya in an attempt to identify factors which account for the increase in lower urinary tract cancer among the Japanese in Hawaii. In addition, we will compare data of the Caucasians and Japanese in Hawaii to identify factors which may account for the difference in risk between these two groups which reside on the same island.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. $63,468

2.0520,

FIBROCYSTIC BREAST DISEASE - EPIDEMIOLOGY AND HISTOLOGY

J.L. Kelsey, Yale University, School of Medicine, Dept. of Epidemiology & Public Health, *333 Cedar St., New Haven, Connecticut* 06510 (R01 CA 26021-01)

This case-control epidemiological study will examine the relationship between use of oral contraceptives and fibrocystic breast disease categorized histopathologically according to the extent of epithelial atypia; the specific hypothesis stating that there is a positive association between long-term use of oral contraceptives and the degree of epithelial atypia will be tested. Cases will be women who have had fibrocystic breast disease diagnosed from biopsy at four large Connecticut hospitals over a 22-month period. Their slides will be read by a pathologist associated with the study, and classified according to extent of epithelial atypia. Controls will comprise women admitted as inpatients or outpatients to certain surgical services of these same hospitals. Information on oral contraceptive use, demographic characteristics, and other variables of interest will be obtained from cases and controls by means of a structured questionnaire administered by trained interviewers, supplemented by queries to physicians. Previous use of oral contraceptives and exposure to other factors of interest will be studied in four groups categorized according to extent of epithelial atypia, as well as in controls, and the results will be compared. This study should increase our knowledge of the epidemiology of fibrocystic disease and potentially our understanding of the epidemiology of breast cancer, since fibrocystic disease with marked epithelial atypia has been found to be the form of fibrocystic disease most strongly associated with subsequent breast cancer.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. $224,440

2.0521,

EPIDEMIOLOGIC STUDY OF CHILDHOOD GLIOMAS

P.C. Nasca, State Dept. of Health, *Empire State Plaza, Tower Bldg., Albany, New York* 12237 (R01 CA 26194-01)

Our general objective is to determine, by means of an epidemiologic case-control study, the importance of various prenatal and childhood environmental exposures in the etiology of childhood gliomas. Special emphasis will be placed on prenatal and early childhood exposures to drugs, chemicals, radiation, tobacco, immunizations and animals. Selected birth characteristics including maternal age, parity and season of birth will also be examined.

Approximately 400 patients with childhood gliomas should be available for study. This sample size and a control to case ratio of 2:1 shall enable us to investigate the study variables with respect to the more common histologic subtypes. Demographic, pathologic and clinical data will be collected from the hospital records of each patient, utilizing a standardized form. Further data will be collected through telephone interviews with the mothers of each patient and control. These will be validated by comparing the mothers' responses with physician and hospital records.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. $171,134

2.0522,

EPIDEMIOLOGY OF OVARIAN CARCINOMA

E.A. Mortimer, Case Western Reserve University, School of Medicine, Dept. of Community Health, *2109 Adelbert Rd., Cleveland, Ohio* 44106 (R01 CA 26252-01)

The purposes of this study are to confirm and extend or refute certain previously obtained epidemiologic characteristics of ovarian carcinoma, and to see whether direct medical student involvement in epidemiologic research is feasible and productive. The epidemiologic characteristics of ovarian carcinoma to be studied include its higher rates in never-married women, women of low parity and women who have not used oral contraceptives. The study is intended to provide clues as to whether low parity is somehow conducive to, or non-protective for, ovarian carcinoma or whether some unknown ovarian defect predisposes both to sterility or low parity and ovarian cancer. In addition, the previously noted lower rates of a history of mumps, rubella and measles will be

studied by serologic testing of patients with ovarian carcinoma and appropriate controls.
SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. $65,183

2.0523,
BLADDER CANCER RISK FACTORS IN UTAH

D.W. West, Utah Higher Education System, University of Utah, School of Medicine, Dept. of Family & Community Medicine, *1400 E. 2nd S., Salt Lake City, Utah* 84112 (R26 CA 26362-01A1)

Previous epidemiological studies have identified several risk factors in the etiology of bladder cancer and a national study has been completed recently to determine whether these factors are associated with the disease. This was a case-control study of incidence cases in defined geographic areas and randomly selected population controls. Utah participated in this 12-month study, but the number of cases identified in Utah in 12 months (127) will not allow adequate sample size to perform the multivariate analysis techniques needed to test several important hypotheses. Since coffee and tobacco consumption are low in the Utah population, hypotheses concerning these risk factors can be studied without the problems found in other populations where the groups of non-users are small. In particular, coffee can easily be studied in Utah, as well as caffeine and the interaction of both with tobacco in the etiology of bladder cancer. Urban-rural differences and an increasing incidence for older males have also been noted in the state and identification of risk factors for these findings may suggest new hypotheses. The proposed plan will utilize the same design as used in the national study, but collect more data on coffee consumption. This will be done for two years and a year will be necessary for data analysis.
SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. $66,671

2.0524,
EPIDEMIOLOGIC AND HLA STUDY OF LEUKEMIA

M. Szklo, Johns Hopkins University, School of Hygiene & Public Health, Dept. of Epidemiology, *615 N. Wolfe St., Baltimore, Maryland* 21205 (R01 CA 26500-01)

The major objective of this research is to study the epidemiology of chronic lymphocytic leukemia (CLL), focusing upon possible associations with sources of chronic antigenic stimulation, occupations and familial factors. A second objective is to define possible HLA associations with CLL.

To accomplish these objectives, the study will be divided into three components. In Part I all new cases of CLL first diagnosed in Baltimore SMSA from June 1969 through May 1979 will be identified. Medical chart review of all these cases and two groups of matched controls will be performed.

Part II will consist of an interview study of all cases and controls, identified in Part I, who are still alive. For cases and controls who have died or are lost to follow-up, a mailed questionnaire will be sent to next-of-kin, spouse or closest friend.

Part III has three components, all involving HLA testing. These components include an HLA case-control study, a prospective HLA study of 'rapidly progressive' versus 'indolent' cases of CLL, and HLA testing of families with two or more cases of CLL, lymphoproliferative diseases and/or autoimmune diseases.
SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. $220,072

2.0525,
PROSPECTIVE STUDY OF DIET AND CANCER IN WOMEN

F.E. Speizer, Harvard University, Boston Campus, Peter Bent Brigham Hospital, *721 Huntington Ave., Boston, Massachusetts* 02115 (R01 CA 26560-01)

This study is designed to address questions regarding the possible association between the intake of various dietary components and cancer of the breast and large bowel, as well as other disease outcomes. This is to be done by taking advantage of an existing prospective study of risk factors for breast cancer in 121,000 women who complete a mail questionnaire on a biennial basis. This investigation will require the development of a short dietary questionnaire, administration of this questionnaire to the entire cohort, and subsequent follow-up on a biennial basis to gather data on the development of specific cancers of interest.

The questionnaire will be designed to provide relative scores for individuals on: intake of animal fat, vegetable fat, cholesterol, protein, fiber, Vitamin A, and 'trans' fatty acids. Data on potential confounding factors, including physical activity, for risk of breast cancer and large bowel cancer is being collected and will be controlled by multiple logistic analyses. To validate the questionnaire, 200 subjects will complete detailed 7-day food use diaries four times over 1 year period. Blood specimen from 400 women at the extremes of consumption histories will be assessed for lipids, carotene, and vitamin A levels. These specimens will be preserved for possible subsequent endocrinologic determinations.

Outcome measures will include both fatal and non-fatal cancer incidence rates. Reported cases of cancer will be documented by obtaining copies of hospital records and causes of death will be obtained from death certificates as well as hospital records.

Over the course of 4 years of follow-up, sufficient cases of breast and large bowel cancers are expected to occur in the cohort to permit better than 90% chance of detecting a 1.5-fold risk for breast cancer and a 2-fold risk of large bowel cancer.
SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. $125,592

2.0526,
PROSTATIC CARCINOMA IN AMERICAN BLACKS

J. Kovi, Howard University, School of Medicine, Dept. of Pathology, *2400 6th St. N.W., Washington, District of Columbia* 20001 (R26 CA 26679-01)

The objective of the proposal is to identify some of the factors which may be etiologically related to carcinoma of the prostate in the high-risk American black population. About 200 cancer patients and 200 age-matched controls will be included in this study. Specifically, the study will 1) investigate by pretested questionnaires whether dietary and/or lifestyle habits of American blacks are related to the high incidence of prostatic carcinoma, 2) examine the association of carcinoma and morphologic manifestations of aging within the gland in necropsies, 3) explore by atomic absorption spectroscopy the relationship between certain trace metals and carcinoma, in prostate glands removed at autopsy, 4) analyze the vascular patterns in three dimensional reconstructions, in both incidental and invasive carcinoma from necropsy cases, 5) measure by radioimmunoassay free and bound testosterone, dihydrotestosterone, prolactin, estradiol and estrone levels in patients and controls, 6) correlate plasma hormone levels with presence or absence of androgen and estrogen receptors in prostatic tissue and with the clinical response, 7) evaluate the overall capacity of measurement of the counter immunoelectrophoresis (CIEP) method for detection of serum specific acid phosphatase in patients and controls. The clinical features of patients with cancer will be evaluated by established clinical methods and the disease will be staged. Whole prostate glands from necropsy cases will be analyzed for morphologic changes according to a specific protocol. Hormone receptors will be determined by sucrose density-gradients, ultracentrifugation and protamine precipitation. Significance of all the above data will be determined by appropriate statistical analyses.
SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. $120,612

2.0527,
PATTERNS OF CARE IN ONCOLOGY

E.R. Greenberg, Dartmouth College, School of Medicine, Dept. of Community Medicine/Medicine, *P.O. Box 833, Hanover, New Hampshire* 03755 (R18 CA 26630-01)

Members of the Norris Cotton Cancer Center, the Dartmouth Medical School, and the Vermont Regional Cancer Center propose to conduct an epidemiologic study of the patterns of lung cancer patient care in New Hampshire and Vermont. The study is designed to determine the nature of geographic variations in care among patients in our rural area and to test whether such differences are related to differences in the local availability of specialized cancer treatment facilities and whether they can account for geographic differences in survival. Using our two-state, population-based tumor registry to identify cases, we will conduct reviews of medical records to determine patient characteristics, functional status, tumor stage, and detailed treatment information. An independent slide review will provide information on tumor histology. We will analyze these data using univariate and multivariate methods to identify the interrelationship of the patterns of treatment with services available and patient survival. The study will allow us to test one of the basic assumptions underlying cancer control programs, i.e., that identifiable populations in the United States lack easy access to sophisticated cancer treatment facilities, and therefore, receive suboptimal care with resultant poor outcome.
SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. $139,230

2.0528,
POPULATION BASED STUDY OF LOWER URINARY TRACT TUMORS

J.W. Meigs, Yale University, School of Medicine, Dept. of Epidemiology & Public Health, *333 Cedar St., New Haven, Connecticut* 06510 (R26 CA 26692-01)

The general purpose of this proposal is to further knowledge of the etiology and epidemiology of bladder and other lower urinary tract tumors. Some of the particular questions we wish to answer are: 1) How important are the well documented risk factors in Connecticut? 2) How great are these risks and is the etiology of non-bladder lower urinary tract tumor the same as that of bladder tumor?

As part of a national study, data on a large number of suspected risk factors for bladder cancer have been collected by home interview on all new cases of lower urinary tract tumor diagnosed in Connecticut residents during 1978 (590 cases are expected: 540 bladder and 50 other). The statewide reporting system which supports the Connecticut Tumor Registry has been used for case identification and the Connecticut Tumor Registry will provide tumor data. Identical data have been gathered on a random sample of 1,980 Connecticut residents of the same age and sex. Risk factors included are smoking, occupation industrial exposures, artificial sweetener and coffee consumption, hair dye use, quality of drinking water, passive smoking, and skin exposure to a variety of industrial and household materials. Data on the latter two factors and inclusion of non-bladder lower urinary tract tumors are unique to Connecticut. Funds are herein being requested to analyze the Connecticut portion of this large body of data; to extend data collection to include another 15 months' cases of non-bladder lower urinary tract tumors; to reinterview a sample of controls and bladder cancer cases and all non-bladder lower urinary tract cases to obtain data on analgesic abuse; and to describe the pattern of incidence and mortality of bladder and other lower urinary tract tumors using data in the Connecticut Tumor Registry.
SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. $47,570

2.0529,
NUTRITION AND CANCER

T.C. Campbell, Cornell University, Ithaca Campus, New York State College of Agriculture & Life Science, Dept. of Nutritional Sciences, *Ithaca, New York* 14850 (P01 CA 26755-01)

The relationship of nutrition and cancer will be explored in separate studies which focus on biochemical mechanisms, on influences of specific dietary components, including protein, carbohydrates, vitamins, and dietary fiber, and on development of epidemiological information.
SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. $372,554

2.0530,
PROGRAM IN BIOMETRICS OF CANCER EPIDEMIOLOGY

I.D. Bross, Roswell Park Memorial Inst., *666 Elm St., Buffalo, New York* 14263 (R01 CA 27514-01)

We request renewal of support for this program in biometric research in cancer epidemiology. The aim of the program is to develop new technology or to extend previously developed technologies for scientific data-utilization. This includes computerized biostatistical and mathematical models capable of handling the complexities of epidemiological study situations. It also includes the application of the natural language technology developed in modern linguistics

to improve each of the 9 steps in the process of data-utilization. This new technology is designed to work on real (as opposed to hypothetical or ideal) data and to produce practical results in primary prevention that would provide immediate aid in cutting cancer death rates in future years. The technology would be initially applied to the following primary research targets: (1) Further studies of the health effects of low-level ionizing radiation, (2) follow-up studies of the iatrogenic diseases that may have been produced by the surgical adjuvant treatments for breast cancer, (3) applications of natural language computing systems to recoding of Tri-State Survey data, development of computerized archives, and planning of a largely automated procedure for rigorously assessing the validity of a scientific argument. After a two-year rebuilding period, further lines of research will be considered.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. $62,491

2.0531,

EPIDEMIOLOGY & CANCER REGISTRIES IN THE PACIFIC BASIN

B.E. Henderson, University of Southern California, School of Medicine, Dept. of Community & Family Medicine, *2025 Zonal Ave., Los Angeles, California* 90033 (R13 CA 27751-01)

This proposal requests funds for travel and per diem for fifty (50) participants to the Third Symposium on Epidemiology and Cancer Registries in the Pacific Basin. The first and second symposia (1975 and 1978) provided a forum for the exchange of information on 1) the design and conduct of cancer registries, and 2) the status of research in cancer epidemiology in nineteen participating countries and territories of the Pacific. In addition, important collaborative research on several cancers (e.g., lung, breast, nasopharynx and liver) was developed.

The Third Symposium will be designed to provide new demographic information from existing cancer registries (e.g., secular trends, occupational risk) and to introduce data from developing registries in the People's Republic of China, Korea, and the South Pacific. In addition, ongoing collaborative research will be reviewed and new projects designed during workshops on cancer sites of particular interest - liver, breast, stomach, colo-rectal, lung, urinary bladder, and prostate and testis. Dr. Henderson will visit several of the participating programs prior to the Third Symposium to provide added stimulus to the meeting preparations.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. $77,374

2.0532,

CLINICAL CANCER CENTER SUPPORT

P.P. Carbone, University of Wisconsin, Madison Campus, Center for the Health Sciences, Dept. of Human Oncology, *500 Lincoln Dr., Madison, Wisconsin* 53706 (P30 CA 14520-07)

Developmental laboratory projects in human-oriented cancer research include research into computed tomography imaging, effects of interferon, malignant transformations of human cells, changes in tissue caused by ultrasound, use of 99Tc scanning to detect early recurrence of cancer, intravesical therapy of early bladder cancer, molecular mechanisms underlying differing metabolism of carcinogens and use of gonadoliberin in mammary tumor treatment.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. $1,540,238

2.0533,

CHILDREN'S CANCER STUDY GROUP A

J.Z. Finklestein, University of California, Los Angeles Campus, Los Angeles County Harbor General Hospital, *1000 W. Carson St., Torrance, California* 90509 (R10 CA 14560-07)

This proposal is to continue to develop and increase the participation of Harbor-UCLA Medical Center and affiliated institutions in all phases of the Children's Cancer Study Group. Clinical research protocols are developed in the Children's Cancer Study Group to investigate pertinent questions regarding the natural history, treatment and epidemiology of childhood cancer. These studies will be carried out by means of a coordinated program involving chemotherapists, surgeons, radiotherapists, and pathologists. One major goal of the Children's Cancer Study Group is to design and coordinate clinical investigations for various neoplastic disorders of children. These investigations include controlled clinical trials in leukemia and solid tumors of childhood, evaluations of newly developed therapeutic agents, and studies of the effects of immunotherapy and immunosuppression.

BIBLIOGRAPHIC REFERENCES: Groncy, Paula K., and Finklestein, Jerry Z.: Neuroblastoma: A Challenge for the Oncologist, Pediatric Annals 7:73-89, 1978.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. $145,241

2.0534,

COMPREHENSIVE CANCER CENTER--CORE SUPPORT GRANT

G.D. Hammond, University of Southern California, School of Medicine, Dept. of Pediatrics, *2025 Zonal Ave., Los Angeles, California* 90033 (P30 CA 14089-06)

This is a Cancer Center Core support grant providing Core support for administration, program, and research efforts for the Los Angeles County/University of Southern California Comprehensive Cancer Center. This Center is one of the nineteen designated comprehensive cancer centers in the United States.

Cancer activities at this Center constitute one of the largest University-based cancer research and control efforts in the nation. Principal effort is focused in a Basic Research Program including activity in Chemical Carcinogenesis, Tumor and Cell biology, Lymphocyte Biology, and Immunology; in Clinical Cancer Investigations including Tumor Imaging, Radiopharmacy, Hematopathology, Clinical Immunology, Clinical Pathology; Surgery, Chemotherapy, Immunotherapy, Phase II and III Trials, and Clinical Pharmacology; in Biostatistical and Epidemiological studies of major import; and in an extensive Cancer Control Program reaching throughout the southwestern United States. In addition, the Center conducts an extensive training and education program in the above specialty areas.

Nearly 150 faculty members and scientific investigators of the University and affiliated institutions are involved in this effort, with extramural funding for research, education, and control. The Center also acts as the Operations headquarters for the National Children's Cancer Study Group.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. $1,652,069

2.0535,

GENETIC EPIDEMIOLOGY AND NATURAL HISTORY OF CANCER

N.L. Petrakis, University of California, San Francisco Campus, School of Medicine, Dept. of Epidemiology & International Health, *551 Parnassus Ave., San Francisco, California* 94122 (P01 CA 13556-08)

The proposed epidemiological and experimental studies of breast cancer will investigate host, agent and environmental factors in order to trace the etiology and pathogenesis of this disease. We will investigate host factors from the perspectives of genetics, cytopathology, physiology and biochemistry. We will analyze carcinogenic agents which may be secreted into the breast fluids of women and the role of these agents in the initiation and promotion of breast cancer. We will explore certain nutritional components of the environment and their possible role in breast cancer etiology. We will also investigate health practices of women with regard to early breast cancer detection.

These studies will hopefully allow us to suggest new hypotheses for the etiology of breast cancer and to predict more accurately the risk of breast cancer for asymptomatic women. Elucidation of processes of initiation and pathogenesis of breast cancer could lead to the development of preventive programs against this disease.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. $696,179

2.0536,

RESEARCH IN ENVIRONMENTAL CANCER

N. Nelson, New York University, School of Medicine, Dept. of Environmental Medicine, *550 1st Ave., New York, New York* 10016 (P30 CA 13343-07)

This proposal seeks continued support for a NCI Center Grant entitled 'Research in Environmental Cancer'. This Center Grant provides core support for the Institute in the area of cancer research, including partial salary support for professional staff, developmental funds, and limited support for items of shared equipment and central services. The research and teaching program in cancer at the Institute has the broad objective of identifying environmental causes of cancer and developing methods for the control of carcinogenic hazards. The program is interdisciplinary in character and ranges from studies at the subcellular level on mechanisms of action to whole animal, epidemiological and environmental studies.

This NCI Center Grant for 'Research in Environmental Cancer' is complementary to the larger National Institutes of Environmental Health Sciences Center Grant for 'Research in Environmental Health Sciences', and serves to strengthen the Institute's program in cancer. The activities of the Institute in the area of environmental cancer are included as one of the divisions of the NYU Cancer Center although funding for this purpose is provided solely through the present grant.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. $320,990

2.0537,

ENVIRONMENTAL CARCINOGENESIS

E.L. Wynder, American Health Foundation Inc., *320 E. 43rd St., New York, New York* 10017 (P01 CA 12376-08)

This program project grant has supported an integrated multidisciplinary program in environmental carcinogenesis relating retrospective case-control epidemiological studies and experimental research. The latter includes cell culture, animal model, and human subject investigations. Proposed studies by organizational division in the forthcoming period are: 1) Epidemiology: various cancer studies in the U.S. and overseas, emphasizing GI tract and breast cancer. 2) Nutrition: endocrine-related cancer studies via hormonal effects of high-fat diets in various human populations; also dietary studies on colon carcinogenesis utilizing fecal analyses. 3) Molecular Biology and Pharmacology: study of the mechanism of the high-fat effect on breast cancer development using animal models and cell cultures; also the mechanism by which alcohol may act as a cocarcinogen in oral cavity cancer. 4) Experimental Pathology: model systems for the study of the pathogenesis of tumor development. 5) Experimental Carcinogenesis: investigation of the carcinogenic action of hydrazines, nitrosamines, and methylated polynuclear hydrocarbons, in addition to bracken fern. 6) Occupational Health and Toxicology: assessment of cancer risk to welders as a model population.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. $587,179

2.0538,

SOUTHWEST ONCOLOGY GROUP (STATISTICS)

E.A. Gehan, University of Texas, University of Texas System Cancer Center, M.D. Anderson Hospital & Tumor Inst., Dept. of Biomathematics, *c/o Texas Medical Ctr., Houston, Texas* 77030 (R10 CA 12014-11)

The functions of the Statistical Office of the Southwest Oncology Group are: (1) To provide analyses of ongoing clinical studies in cooperation with the chairman of each study. Achievement of objective (1) provides for the central registration of all patients and studies, and provides for the surveillance, monitoring, storage, and processing of all data collected during group studies. (2) To provide for the review of all proposed protocols and to suggest an experimental design for each study. (3) To work in close cooperation with the Chairman of the Southwest Oncology Group in the administration of group studies. (4) To perform research on the statistical aspects of group studies to improve the efficiency of ongoing and future clinical trials. (5) To carry out long-term analyses of group studies to determine, for example, whether survival has been improving with time, and which clinical and laboratory variables seem important in relation to the response and survival of a cancer patient.

BIBLIOGRAPHIC REFERENCES: Sutow, W.W., Gehan, E.A., Dyment, P.G., Vietti, T. and Miale, T.: Multidrug adjuvant chemotherapy for osteosarcoma: Interim report of the Southwest Oncology Group studies. Cancer Treatment Reports, 62, 2:265-269, 2/78. Gehan, E.A. and Walker, M.: Prognostic factors for patients with brain tumors. NCI Monograph No. 46, Modern Concepts in Brain Tumor Therapy:

Laboratory and clinical investigations, pp. 189-195, 7/78.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. $762,124

2.0539,

NATIONAL WILMS' TUMOR STUDY

G.J. D'Angio, American Academy of Pediatrics, *1801 Hinman Ave., Evanston, Illinois* 60204 (R10 CA 11722-11S1)

Modern treatment methods have led to a major improvement in the survival rate of children with Wilms' tumor. Combined therapy using surgery, radiation therapy, and chemotherapy now cures more than 85% of patients. However, the outlook is poor for those with unfavorable histology, where the 2-year survival is less than 30%; and for those with any histology and metastases at diagnosis (about 50% survival). More effective means of treating these patients must be developed. At the same time, all treatments have their risks and complications, and refinements of therapy for those with a good prognosis are needed so as to achieve maximum survival with the least morbidity. NWTS-1 is now complete, and its primary and secondary objectives have been achieved. 'Natural history' and epidemiologic information has been reported. Gross and microscopic features associated with an unfavorable outlook have been identified. Combined therapy using actinomycin-D (AMD) and vincristine (VCR) is superior to the use of either agent alone. Routine radiation therapy (RT) is not needed in all children with early stage disease. Review of RT given to children with more advanced stages, however, left to be defined the role of radiotherapy in the modern management of these patients. NWTS-2 is now in the stage of data analysis. Preliminary results suggest that 6 months of AMD and VCR maintenance therapy is satisfactory for Group I children, none of whom receive RT, and that the addition of adriamycin to AMD and VCR gives better results than the use of AMD and VCR alone. NWTS-3 will build on the first two studies and use the staging system developed therefrom. The questions presently planned are: (1) Is two months of AMD and VCR maintenance therapy enough for Stage I? (2) Is RT needed for Stage II? (3) Does 1000 rad suffice for the treatment of Stage III? (4) Can a better drug regimen be devised for Stage IV and unfavorable histology? (5) What are the late adversities of successful treatment in NWTS patients?

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. $5,940

2.0540,

RESEARCH AND CLINICAL RADIATION THERAPY CENTER

S. Kramer, Thomas Jefferson University, Jefferson Medical College, Dept. of Radiation Therapy & Nuclear Medicine, *1025 Walnut St., Philadelphia, Pennsylvania* 19107 (P01 CA 11602-10)

Support is requested for an expanded multi-disciplinary integrated program of cancer research including studies of: (a) Cell and tissue response to hyperthermia, combinations of drugs and radiation, as well as environmental and other agents. (b) Physics and dosimetry of high energy photons, electrons and neutrons as well as treatment optimization with computer assisted tomography, ultrasound and computer treatment planning. (c) Clinical trials of aggressive radiation therapy based on observations and information from these and other scientific studies and clinical observations. (d) Assessment of the quality of life and function and late effects of long-term survivors after definitive radiation therapy. (e) Development of cancer patient information system for quality control of care and for research into clinical success and failure.

Emphasis will be placed on inter-disciplinary and inter-departmental exchange of information and understanding as well as clinical care and teaching.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. $737,936

2.0541,

CELL CONTROL IN INTEGUMENTAL CANCER

E.J. Van Scott, Temple University, School of Medicine, Dept. of Dermatology, *3322 Broad St., Philadelphia, Pennsylvania* 19122 (P01 CA 11536-11)

CANCER BIOLOGY: In vitro cell kinetics and growth potential of normal keratinocytes and fibroblasts and these cell types from benign and malignant hyperplastic skin disease of hyperplasia are compared. Cellular defects in these cell types, i.e., defect in DNA synthesis, response to hormones, DNA repair, mucopolysaccharide and collagen metabolism are studied. Blood levels of polypeptide hormone, epidermal growth factor, and its role in hyperplastic cutaneous disorders are determined.

CARCINOGENESIS: Carcinogenic potential of pharmacologic agents (e.g., mechlorethamine, psoralen-ultraviolet light) is monitored in laboratory animals which have received cutaneous administration of such agents and in patients receiving such agents therapeutically.

CANCER THERAPY: Therapeutic control of the lymphoma mycosis fungoides by single agents and combinations thereof is pursued. Agents include topical and systemic drug materials as well as physical agents.

BIBLIOGRAPHIC REFERENCES: Haynes, H. A. and Van Scott, E. J.: Chapter on cutaneous lymphomas in: Dermatology in General Medicine, ed. T. B. Fitzpatrick, et al., McGraw-Hill, New York, pp. 749-767, 1979. Tam, D. W., Van Scott, E. J. and Urbach, F.: Bowen's disease and squamous cell carcinoma in a patient with psoriasis after topical, systemic and PUVA therapy. Arch. Dermatol. 115:203-204, 1979.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. $544,879

2.0542,

SOCIAL EPIDEMIOLOGY AND CONTROL OF CANCER

S. Graham, State University of New York, Health Science Center at Buffalo, School of Medicine, Depts. of Sociology/Social & Preventive Medicine, *3435 Main St., Buffalo, New York* 14214 (P01 CA 11535-10)

OVERALL OBJECTIVE, BACKGROUND, AND RATIONALE: The prime objective of this program is to investigate the epidemiology of cancer at various sites, particularly those in which there is evidence of a significant social component. Cancer at a large number of sites has been shown to have a social component in its epidemiology. This is true of cancer of the upper GI tract, the lung, breast, testis and cervix, to name a few. Our concern is to examine further the social factors involved in these diseases and to further elucidate the meaning of relationships already discovered. Factors of particular interest include diet, alcohol ingestion, marital activities, and smoking, as they interact with both physiologic and behavioral variables to increase or decrease risk of cancer. Building on epidemiologic findings, our concern also will be to conduct inquiries into ways of obtaining behavior change, such as breast self-examination and stopping smoking, which will protect the public against cancer.

BIBLIOGRAPHIC REFERENCES: Saxon Graham: Social Epidemiology and the Control of Cancer. Dominant Issues in Medical Sociology, Howard Schwartz and C.S. Kart, editors, 1978. Gregg Wilkinson, Edwin Mirand, Debra Walsh, John Wilson, Saxon Graham: Utilization of a Cancer Telephone Information Facility: A Comparison of Callers and Non-Caller Controls. The American Journal of Public Health 68:1211-1213 (1978).

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. $510,903

2.0543,

CORE CANCER CENTER SUPPORT GRANT

R.A. Cooper, University of Rochester, School of Medicine & Dentistry, Dept. of Pathology, *601 Elmwood Ave., Rochester, New York* 14627 (P30 CA 11198-11)

The University of Rochester Cancer Center has developed and continues to use a Matrix Management Model to accomplish its specific goals, which include: (1) Development of a Community Based Treatment and Clinical Research Program in Monroe County, (2) Development of an Outreach Program in the adjoining eight counties of the Genesee-Finger Lakes Health Systems Area, (3) Development of a Comprehensive Cancer Education Program, (4) Development of a focused Basic Research Program emphasizing Biochemical Genetics, Biochemical Radiopharmacology, and (5) Effective participation in the National Cancer Institute above and beyond the Cancer Centers Program. The integrating research theme of the Center is the comparative study of damage and repair of macromolecules and organelles (DNA, RNA, and membranes) critical to cell survival and to an understanding of cancer cause and prevention and the design of new treatments.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. $1,435,081

2.0544,

CHILDREN'S CANCER STUDY GROUP A

R.L. Chard, Childrens Orthopedic Hospital & Medical Center, *4800 Sand Point Way N.E., Seattle, Washington* 98105 (R10 CA 10382-14)

This proposal is for continuation of four year renewal of research in the natural history, epidemiology, statistical conduct, design, collation and treatment of childhood malignant diseases in a sophisticated multimodal manner. This institution has been a member of the Children's Cancer Study Group since 1959. Over the past 20 years very strong referral pattern for children with malignant disease has been established throughout the Pacific Northwest and continues to grow. From October 1, 1978 through July 31, 1979, 92 children with childhood malignancies were examined and treated on Children's Cancer Group protocols. Thirty-one of these cases were leukemia and 61 were solid tumors. In addition, 12 more patients with acute leukemia were treated on a pilot protocol with the National Cancer Institute, Pediatric Division, in conjunction with Dr. A. Bleyer of this institution and Dr. Poplack of the NCI Pediatric Division. This study will be directed primarily at the use of high-dose intravenous methotrexate in an effort to treat CNS leukemia successfully. In addition to the Children's Cancer Study Group programs we are continuing collaboration with Dr. E. Donnall Thomas in bone marrow transplantation. Eighteen bone marrow transplants have been done in this hospital since October 1, 1978. Also continuing is Dr. I. Bernstein's work in tumor immunology, particularly with emphasis on monoclonal antibody studies done in mice and we hope to soon transfer this to human leukemia cells. Dr. W.A. Bleyer continues to work with the National Cancer Institute in his high-dose methotrexate pharmacologic studies and studies of intraventricular methotrexate and aminopterin. This program continues under the pediatric oncology unit at the Fred Hutchinson Cancer Research Center.

BIBLIOGRAPHIC REFERENCES: Bleyer W.A., Krivit W., Chard R.L., Hammond D.: Phase II study of VM-26 in acute leukemia, neurobiastoma and other refractory childhood malignancies. Cancer Treat. Rep. Vol. 63 6:977-981, 1979. Nesbit M., Chard., R, Evans A., Karon M., Hammond G.D.: Evaluation of intramuscular versus intravenous administration of L asparaginase in childhood leukemia. Am. J. Pediatr. Hematology/Oncology Vol. 1, 1:9-13, 1979.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. $175,296

2.0545,

CHILDREN'S CANCER STUDY GROUP A

M.E. Lahey, Utah Higher Education System, University of Utah, School of Medicine, Dept. of Pediatrics, *1400 E. 2nd S., Salt Lake City, Utah* 84112 (R10 CA 10198-13)

The above-named professional personnel propose to collaborate with other members of CCSG as well as with other members of other cooperative study groups, in research on leukemia, malignant solid tumors and closely related disorders in children. The chief purpose of the CCSG is to cooperate in several aspects of research in malignant disease in children (i.e., the natural history, epidemiology) and in particular to develop, evaluate and improve methods of diagnosis, prognosis and treatment of malignant disease in children.

Special emphasis will be placed on the study of new combinations and new schedules of already established chemotherapeutic agents as well as on the evaluation of new anti-cancer agents and new modalities of therapy.

The Principal Investigator is Chairman of the Histiocytosis Committee and has recently received approval by CIB of a new protocol designed to study this disorder in depth with particular attention to clinical and histologic features of prognostic significance, improved therapy and comprehensive immunologic evaluation. The prognostic significance of certain clinical features developed by CCSG has been tested and acclaimed by other chemotherapy groups.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. $84,351

2.0546,

A PROGRAM IN MEDICAL ONCOLOGY

M.J. Cline, University of California, Los Angeles Campus, School of Medicine, Dept. of Medicine, *2025 Zonal Ave., Los Angeles, California* 90024 (P01 CA 15688-06)

The research programs in the Division of Hematology-Oncology will continue to encompass four program areas: 1) chemotherapy-immunotherapy of selected malignant diseases (acute leukemia, lymphoma, lung, breast, and head and neck cancer); 2) allogeneic and autologous bone marrow transplantation in combination with intensive chemoradiotherapy; 3) studies of normal and malignant hematopoiesis; 4) studies of host defense mechanisms against microorganisms and neoplastic cells.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. $504,650

2.0547,

CANCER EPIDEMIOLOGY - STATISTICAL METHODS

N. Mantel, George Washington University, Columbian College Arts & Sciences, Dept. of Statistics, *2121 Eye St. N.W., Washington, District of Columbia* 20037 (R01 CA 15686-05S1)

The spontaneous occurrence of cancer in humans, or induced occurrence in laboratory animals, reflects the interplay of many variables. Also multivariate in nature are the factors influencing survival times or remission times of individuals with cancer, whether treated or left untreated. The multivariate statistical problems which arise may relate to identifying individually important variables which may be causative, making prognoses of survival or other predictions for cancer patients with a specified multivariate vector and seeking to identify optimal therapeutic procedures for such patients. Data available for such analyses may be prospective or retrospective in nature, and for the prospective case will generally involve incomplete observation. Recent developments in mathematical models and statistical approaches for relating response to multivariate regressors, specifically models involving hazard functions and generalized logistic regression, open the way to handling such problems, and it is the effective use of such models and approaches that I plan to study. In instances these approaches may bear modification as, say, using a classification approach when data are abundant but variables to be studied few in number. I anticipate that tie-ins with other problems of cancer epidemiology will develop. Related, or variant methods, may be appropriate in the study of potential environmental carcinogens. Methods for safety evaluation of such agents represent a preventive epidemiology approach.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. $22,896

2.0548,

CANCER CENTER SUPPORT GRANT

L.H. Piette, University of Hawaii System, Manoa Campus, Pacific Biomedical Research Center, *2538 The Mall, Honolulu, Hawaii* 96822 (P30 CA 15655-05)

This continuation proposal is in support of the CORE activities of the Cancer Center of Hawaii. Identified under CORE support are programs in Basic Cancer Research, Clinical Research, Cancer Epidemiology, Data Resources, and Cancer Control. The grant supports facilities in biochemistry, carcinogenesis, tumor cell culturing, electron microscopy and animal facilities. Research in the Cancer Center of Hawaii is focused on Cancer Epidemiology, Environmental Carcinogenesis, Cellular Immunology, Immunotherapy, Hyperthermia and Experimental Chemotherapy.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. $394,183

2.0549,

LEUKEMIA - LYMPHOMA PROGRAM

S.P. Balcerzak, Ohio State University, Columbus Campus, School of Medicine, Dept. of Medicine, *370 W. 9th Ave., Columbus, Ohio* 43212 (P01 CA 15147-06)

The overall objective of this program is to provide more effective therapy for patients with leukemia and lymphoma. Research will be conducted in two areas - immunology and chemotherapy. Immunologic studies will characterize further the immune defects in patients with untreated lymphoma, determine the effects of therapy on the immune system of these patients and employ an animal model of lymphoma to evaluate immunotherapy as an adjunct to chemotherapy. Chemotherapy studies will focus on adriamycin. Radiolabeled drugs will be used to study the pharmacokinetics of adriamycin and its metabolites. Adriamycin cardiotoxicity will be described in terms of structure, biochemistry and function in animal models and in man. Agents to ameliorate or treat adriamycin cardiomyopathy will be investigated.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. $265,710

2.0550,

CANCER CENTER SUPPORT GRANT

N.I. Berlin, Northwestern University, Chicago Campus, School of Medicine, Dept. of Obstetrics & Gynecology, *303 E. Chicago Ave., Chicago, Illinois* 60611 (P30 CA 15145-05)

The objective of the Cancer Center at Northwestern University is to maintain an organizational structure and an environment within the University which will bring together basic scientists, clinical investigators, clinicians and educators leading to: (1) collaborative basic and clinical research in cancer, (2) the most effective use of existing knowledge through collaborative programs for the care of the patient, (3) enhancement of the extent and quality of cancer care in the community, and (4) development of a physical facility.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. $483,927

2.0551,

ANOVULATION & EPIDEMIOLOGY OF HORMONE-RESPONSIVE TUMORS

R.B. Wallace, University of Iowa, School of Medicine, Dept. of Preventive Medicine & Environmental Health, *Jessup Hall, Iowa City, Iowa* 52240 (R01 CA 15104-07)

This proposal is for continuation of our work investigating the etiology and pathogenesis of important hormonally-responsive tumors using epidemiologic studies supported by relevant clinical endocrinologic investigations.

For years 07-09 of grant CA-15104, we propose to continue surveillance of a cohort of women, who have prospectively recorded detailed menstrual cycle patterns and reproductive events, for incident breast cancers. This is to determine if special antecedent patterns and events can be elucidated which are predictive of breast cancer and also yield clues to hormonal defects. In this cohort, we also plan to identify women with hysterectomy, obtain clinical and pathologic records, and correlate cycle patterns with benign uterine myomas.

We also propose a case-control to further explore the etiology and pathogenesis of uterine myomas, an important cause of surgery and female morbidity in the U.S.A. Variables to be studied include menstrual and reproductive events implicated in breast, endometrial and cervical cancer, the use of medications including gonadal hormones and other drugs affecting prolactin secretion or the pituitary-ovarian axis, demographic and occupational features, and related systemic morbid events.

It is further proposed to explore our 'anovulatory hypothesis' among selected patients with myomatous disease in the case-control study. Differential levels of estrogen and progesterone receptors will be sought in tumor tissue and control myometrial tissue. Further, to explore the possibility of luteal phase inadequacy among these patients, manifested by subnormal serum progesterone compared to estrogen levels, basal body temperatures and serum steroid hormone and gonadotropin levels be done through a menstrual cycle in a group of women with myomatous disease and an appropriate control group.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. $57,417

2.0552,

GENE EXPRESSION, VIRUS REPLICATION AND CELL GROWTH

P.I. Marcus, University of Connecticut, Storrs Campus, School of Liberal Arts & Sciences, Dept. of Microbiology, *Storrs, Connecticut* 06268 (P01 CA 14733-07)

Specific areas of research in this program project include: adaptive response of cells to the carcinogen/mutagen MNNG; role of MNNG-adaptation to DNA repair processes and protection against carcinogens/mutagens; molecular aspects of gene regulation by the cyclic AMP-dependent protein kinase system of lymphomas cells; cAMP-mediated alteration of cellular proteins; translation discrimination by cytoplasmic regulatory proteins; the relationship of stored mRNP to polysomal mRNA; characterization and function of translational control (tc)RNA; assembly mechanism for membrane-viruses; alterations in cellular gene expression by abnormal proteins; nonglycosylated membrane-associated viral protein; phosphorylation of ribosome-associated components in virus-infected cells; mechanism of inhibition of cellular macromolecular synthesis by viruses; phosphorylation of protein synthesis initiation factor; host factors in viral interference; the interferon system, mechanism of action and induction; dsRNA as the interferon inducer moiety of viruses; the mechanism(s) of cell killing by viruses, cell persistence in persistent infection; homotypic defective-particle interference; intrinsic interference.

Viruses and virus mutants used include: vesicular stomatitis, Sindbis, reovirus, mengo, herpes, pseudorabies, rabies defective particles, rubella, Newcastle disease, and vaccinia. Cell lines used include: mouse S49 lymphoma, mouse C3H/10T1/2, GMK-Vero and BSC, BHK, human trisomic 21, HeLa, HEp2 and mouse L(Y).

BIBLIOGRAPHIC REFERENCES: Persistent Infection. II. Interferon-Inducing Temperature-Sensitive Mutants as Mediators of Cell Sparing: Possible Role in Persistent Infection by Vesicular Stomatitis Virus. M.J. Sekellick and P.I. Marcus. Virology 95:36-47, 1979. Interferon Induction by Viruses. II. Sindbis Virus: Interferon Induction Requires One-Quarter of the Genome -- Genes G and A. P.I. Marcus and F.J. Fuller. J. Gen. Virol. 44:169-177, 1979.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. $309,633

2.0553,

EPIDEMIOLOGY OF CANCER IN A LOW RISK GROUP

R.L. Phillips, Loma Linda University, School of Health, Dept. of Biostatistics & Epidemiology, *Loma Linda, California* 92354 (R01 CA 14703-05S1)

It is difficult to study the relation of diet to cancer in the USA because of uniformity of dietary practices. Seventh-Day Adventists (SDAs) are a conservative religious group who do not smoke or drink by church proscription, and about 50% of them do not use meat or coffee. SDAs are very health oriented, and many of them abundantly use whole grains and other unrefined foods. For most cancer sites unrelated to smoking, previous studies have demonstrated that mortality rates in SDAs are about 70% of general population rates. This ongoing prospective study seeks to confirm these mortality differences with incidence data and to determine the specific component(s) of the SDA lifestyle which account for the low risk of non-smoking-related cancers in SDAs. Detailed demographic and lifestyle characteristics of 67,000 California SDAs over age 25 will be collected. For a 5-year perod, all deaths and new cancer cases will be ascertained via annual contacts and review of hospital records for reported hospitalizations. Detailed characteristics and cancer incidence and survival rates of SDAs will be compared to a general population sample. Furthermore, we will be able to compare risk of major cancer sites between subgroups of SDAs with different degrees of adherence, or duration of exposure, to various habits unique to SDAs (i.e. lifetime vegetarians vs heavy meat consumers, etc.).

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. $321,647

2.0554,

EXOGENOUS MATERNAL HORMONES AND CANCER IN DAUGHTERS

A.L. Herbst, University of Chicago, School of Medicine, Dept. of Obstetrics & Gynecology, *5801 S. Ellis Ave., Chicago, Illinois* 60637 (R01 CA 20084-04)

The Registry for Research on Hormonal Transplacental Carcinogenesis continues its investigation of the epidemiology, pathogenesis, biologic characteristics, management and prognosis of human genital cancers that develop after intrauterine exposure to exogenous sex hormones. A computerized data bank that contains carefully monitored and doubly checked details for each case forms the basis for this research. We shall continue active canvassing of treatment centers and tumor registries in order to obtain all cases of clear cell adenocarcinoma of the genital tract occurring in females born after 1940, with or without a history of hormone exposure, as well as all cases of other types of genital cancer that develop in individuals exposed to either diethylstilbestrol (DES) or any other type of sex hormones, including those of steroidal nature. Detailed clinicopathologic correlative studies will be directed toward a wide variety of host and cancer characteristics that may be related to the behavior of the tumor (i.e., histology, depth of invasion, mitoses, grade and location). Of particular interest are squamous cell carcinomas of the vagina and cervix that arise in the exposed. The investigation of lesions that precede clear cell adenocarcinoma will continue. Knowledge of treatment and prognosis of these lesions will be expanded. We shall remain a source of scientific information and consultation for this problem.

BIBLIOGRAPHIC REFERENCES: Herbst, A.L., Norusis, M.J., Rosenow, P.J., Welch, W.R., and Scully, R.E.: An analysis of 346 cases of clear cell adenocarcinoma of the vagina and cervix with emphasis on recurrence and survival. Gynecol. Onc. 7:111-122, 1979. Herbst, A.L., Scully, R.E., and Robboy, S.J.: Prenatal DES exposure and human genital tract abnormalities, in Proceedings of the Conference on Perinatal Carcinogenesis. Natl. Cancer Institute Monograph 51:25-35, 1979.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. $68,809

2.0555,

EPIDEMIOLOGY OF CANCER IN IMMUNODEFICIENCY FAMILIES

J.H. Kersey, University of Minnesota, Minneapolis Campus, School of Medicine, Dept. of Laboratory Medicine & Pathology, *1305 Mayo, Minneapolis, Minnesota* 55455 (R01 CA 18083-03S1)

This study is designed to use epidemiologic and laboratory methods to delineate the nature of the association between immunodeficiency and cancer. When successfully executed, our research will demonstrate to what extent the Wiskott-Aldrich syndrome gene(s) is associated with increased risk of cancer in affected males and carrier females, and whether the frequency of malignancy is higher in some Wiskott-Aldrich syndrome families than in others.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. $15,096

2.0556,

INTERNATIONAL CASE-CONTROL STUDY OF BLADDER CANCER

A.S. Morrison, Harvard University, Boston Campus, School of Public Health, Dept. of Epidemiology, *55 Shattuck St., Boston, Massachusetts* 02115 (R26 CA 18660-04)

The objectives of this study are: 1. Estimation of relative incidence of lower urinary tract cancer associated with coffee drinking in three areas - Boston, Massachusetts; Manchester, England; and Nagoya, Japan - which vary with respect to exposure rates and ethnic compositon. 2. Estimation of relative incidence associated with drinking other beverages, with smoking, with certain occupational exposures, and use of analgesics and artificial sweeteners. 3. Estimation of relative incidence for each exposure according to histologic type. 4. Estimation of incidence rates and attributable risk measures in each study area.

By home interview, exposure histories will be obtained for about 500 newly diagnosed cases, and an equivalent number of controls, drawn from a geographically defined population, in each study area. Interviewing has been completed in Boston, and will be completed in mid-1979 in both Manchester and Nagoya. Analysis of the Boston data is in progress.

BIBLIOGRAPHIC REFERENCES: Morrison, A.S., Cole, P.. Epidemiology of bladder cancer. In Tannenbaum, M. (ed.): Urologic Pathology: The Bladder. Lea and Febiger, Philadelphia, in press, 1979. Morrison, A.S., Cole, P.: Epidemiology of urologic cancer. In Javadpour N. (ed.): Principles and Management of Urologic Cancer. Williams and Wilkins, Baltimore, in press, 1979.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. $103,982

2.0557,

CANCER CENTER COMMUNITY OUTREACH DEVELOPMENTAL GRANT

J.E. White, Howard University, School of Medicine, Dept. of Oncology, *2400 6th St. N.W., Washington, District of Columbia* 20001 (R18 CA 18510-03S1)

The purpose of this Outreach Developmental Program is to facilitate the coordination of cancer control activities in the Matropolitan Washington, D.C., area. The vehicle for effecting this is the Cancer Coordinating Council for Metropolitan Washington (CCCMW). The Council is comprised of representatives from the followng five institutions: The Howard University Cancer Center, the Georgetown University Vincent T. Lombardi Cancer Research Center, the George Washington University, the District of Columbia's Department of Human Resources, and a single membership for the three American Cancer Society Divisions in this Metropolitan area.

Assisted by a Cancer Advisory Board consisting of community-based lay and professional organizations in this area, the Cancer Coordinating Council will attempt to promote, facilitate, and coordinate cancer control programs in the region. Additionally, the CCCMW will be responsible for identifying areas of unmet needs as they pertain to cancer programming and it will act to meet those needs by recommending outreach projects to be conducted by participating institutions or by separately funded projects under the sponsorship of the CCCMW.

To further accomplish its purpose in 1979 the Outreach Program will conduct specific cancer control activities in the areas of Communications, Health Education, Planning and Evaluation, and Epidemiology. All of these activities are designed to ultimately produce a comprehensive cancer control program for Metropolitan Washington.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. $16,557

2.0558,

CANCER CENTER SUPPORT (CORE) GRANT

E.L. Wynder, American Health Foundation Inc., *320 E. 43rd St., New York, New York* 10017 (P30 CA 17613-05)

The American Health Foundation, with its well established and functional interdisciplinary team, expects to have continued impact on the solution of major environmental cancer problems ranging from specific items with widespread usage such as tobacco and cosmetics, and food products such as saccharin, to hazards affecting limited groups like shipyard workers. We also hope to continue to make fundamental contributions to the understanding on the mechanisms by which various environmental forces relate to human cancers through in vitro and in vivo studies. Our major efforts will continue to be a comprehensive program of research leading to the prevention of major human cancers.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. $1,208,039

2.0559,

ADMINISTRATION OF NATIONAL PANCREATIC CANCER PROJECT

I. Cohn, Louisiana State University, Medical Center, School of Medicine, Dept. of Surgery, *1542 Tulane Ave., New Orleans, Louisiana* 70112 (R26 CA 17500-06)

This renewal application proposes continuation of the National Pancreatic Cancer Project for a period of five years (1980-1984). It is requested that Louisiana State University School of Medicine remain the Headquarters institution with Isidore Cohn, Jr., M.D., Professor and Chairman, Department of Surgery, as Project Director.

Since its founding in January, 1975, the Project has been increasingly active in the stimulation and coordination of research efforts in the field of pancreatic cancer. The Project Plan will continue to be directed toward reduction of the incidence, morbidity and mortality of the disease through basic and clinical research in the areas of epidemiology, experimental biology, diagnosis, immunology, pathology and treatment. At present, the search for improved methods of treatment is identified as the first priority of the Project's research plan.

The National Pancreatic Cancer Project will continue its effective use of the NIH system of peer review of grant applications with the assistance and cooperation of its Pancreatic Review Subcommittee, comprised of scientists who are especially interested and qualified in the study of pancreatic disease. The Headquarters staff will assist this body of scientists in carrying out their duties and will coordinate the daily activities of the Project.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. $280,941

2.0560,

FOLLOW-UP STUDY OF IRRADIATED TINEA CAPITIS CASES

R.E. Albert, New York University, School of Medicine, Dept. of Environmental Medicine, *550 1st Ave., New York, New York* 10016 (R01 CA 17188-03S2)

The purpose of the proposed research is to further characterize the nature and magnitude of late radiation damage due to X-ray therapy for ringworm of the scalp. A third survey of a population of 3,600 children with tinea capitis in the period 1940 to 1959, 2,200 of whom received X-ray therapy, is in progress. The survey consists of a health questionnaire completed by subjects with diagnostic confirmation of tumors and other significant conditions from medical sources. A clinical evaluation of a subsample of irradiated and unirradiated subjects will be undertaken, which will include tumor, hair, visual and auditory examinations. Major health effects will be related to dose and temporal patterns of occurrence.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. $116,256

2.0561,

USC CANCER CENTER EPIDEMIOLOGY AND BIOSTATISTICS UNIT

B.E. Henderson, University of Southern California, School of Medicine, Dept. of Pathology, *2025 Zonal Ave., Los Angeles, California* 90033 (P01 CA 17054-04A1)

This proposal requests continuing support for an Epidemiology and Biostatistics Research Program as a major component of the Los Angeles County/University of Southern California Cancer Center.

A large part of the research effort is the Cancer Surveillance Program (CSP) headed by Dr. Thomas Mack. The CSP provides prompt reporting and detailed demographic data on virtually all new cancer cases diagnosed in the entire population of seven million residents of Los Angeles County. A major function of the CSP is to provide cancer patient identification for etiologic field studies. The descriptive information from the CSP provides additional etiological clues and a system for checking the consistency of suggested causal associations with cancer rates in the population. The CSP also identifies high risk program targets, and constitutes a cancer research organization with a presence in each of the county's diagnostic facilities.

The Biostatistics Unit headed by Dr. Malcolm Pike supports some field staff as well as the analytic component of our field studies. Development of new statistical methods to deal with these field studies and other cancer related studies is also undertaken by this unit. Funds for most field studies are currently being obtained from several research contracts and grants. The desirability of having the capability of making a rapid and flexible response to newly suggested hypotheses demands some field staff without unalterable commitments.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. $1,033,533

2.0562,

HUMAN CANCER SEROLOGY

L.J. Old, Sloan Kettering Inst. for Cancer Research, *410 E. 68th St., New York, New York* 10021 (P01 CA 19765-03S1)

The goals of the Human Cancer Serology Program are: (1) Determine the role of viruses in the etiology of human cancer; (2) detect and analyze humoral immune reactions to cancer cells in patients with

cancer; (3) identify characteristic human tumor antigens with heteroimmune sera for the purpose of developing immunodiagnostic methods for early cancer detection. In approaching these goals, a group with expertise in the techniques of virology, serology, cell culture and biochemistry has defined seven specific projects. They are: (a) Serovirological studies of Kaposi's sarcoma, with emphasis on the suspected etiological role of cytomegalovirus; (b) search for interspecies antigens of mammalian leukemia-sarcoma viruses (oncornaviruses) in human cancer with immunofluorescence, absorption, and radioimmunoassay techniques; (c) preparation of serological reagents to human papovaviruses to determine whether these viruses are involved in the etiology of tumors of the CNS and urinary tract, as well as of tumors occurring in patients with primary immunodeficiency disease; (d) definition of a group-antigen of herpesvirus, its serological relatedness to mammalian oncornaviruses, and its possible occurrence in human cancer; (e) detection and analysis of humoral immune reactions to cell surface antigens of melanoma and renal cancer; (f) analysis of a new intracellular antigen (P5NA) of osteogenic sarcoma, and seroepidemiology of the P5NA antigen and antibody in normal individuals and in patients with cancer and other diseases; and (g) characterization of the antigens of ovarian cancer with heteroimmune sera, and determination of the frequency and biochemical nature of anomalous blood group-like antigens in ovarian cancer.

These studies are intended to provide fresh insights into the etiology, diagnosis, and therapy of human cancer.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. $240,016

2.0563,

HUMAN RADIATION CARCINOGENESIS STUDY

E.D. Woodard, University of Rochester, School of Medicine & Dentistry, Dept. of Radiology, *601 Elmwood Ave., Rochester, New York* 14627 (R18 CA 19764-03)

This represents a continuation of a long-term prospective study of radiation-induced carcinogenesis in three human populations: the first, persons who were treated in infancy with x-rays for alleged enlargement of the thymus gland; the second, women who received x-ray treatments to the breasts for postpartum mastitis; and the third, persons given x-ray and/or radium treatments to the head in early childhood for lymphoid hyperplasia of the nasopharynx. Health data are collected by mail questionnaires from treated persons and from their untreated sibling controls. Significant reported illnesses are verified through the attending physician and hospital. Histological reviews are performed on slides from tumors of primary interest in the studies.

A program of mammographic-thermographic screening of the women who received breast irradiation will be repeated. In addition, a sample of their untreated sisters (controls) who meet NCI recommended eligibility requirements for mammographic-thermographic screening will also be examined.

The objectives of the program are (1) to determine the qualitative nature and quantitative risk of radiation-induced neoplastic disease and of conditions with abnormal immunological features, and (2) to effect, by screening, the early diagnosis and treatment of breast cancer in a high-risk population.

BIBLIOGRAPHIC REFERENCES: Shore, R.E., Hempelmann, L.H., Kowaluk, E., Mansur, P.S., Pasternak, B.S., Albert, R.E., and Haughie, G.E., Breast Neoplasms in Women Treated with X-rays for Acute Post-Partum Mastitis, JNCI, 59, 813-822, 1977.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. $102,487

2.0564,

CANCER IN PARENTS OF CONGENITALLY DEFECTIVE CHILDREN

D.T. Janerich, State Bureau of Cancer Control, *Empire State Plaza, Tower Bldg. Rm. 565, Albany, New York* 12237 (R01 CA 19564-03)

This descriptive epidemiological study is designed to investigate unusual familial coexistence of cancer and congenital neural tube closure defects (anencephaly and spina bifida). A retrospective epidemiological cohort approach will be used to determine whether conceiving a child with anencephaly or spina bifida has any relationship to the parents' subsequent risk of developing cancer. Evidence of a positive association would enhance our understanding of the etiology of cancer in humans, and could have immediate value in developing preventive measures to reduce cancer mortality through early detection of high risk individuals. We are proposing to study the most direct and epidemiologically useful aspect of unusual familial coexistence between cancer and congenital malformations. There are two underlying biological bases for this study. First, the fact that carcinogenesis and teratogenesis can sometimes be caused by the same agents (i.e., radiation), as well as the fact that carcinogens can sometimes act through teratogenic-like mechanisms (i.e., diethylstilbestrol). Second, the limited available data on familial coexistence of cancer and congenital malformation theoretically implies that the control of abnormal embryological development and the control of malignant cellular change are genetically related. If so, it is likely that evidence of the association can be detected in these family studies.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. $62,522

2.0565,

CLINICAL CANCER

A.L. Watne, West Virginia University, School of Medicine, Dept. of Surgery, *Morgantown, West Virginia* 26506 (R25 CA 19530-03)

The objectives of the Clinical Cancer Education Program include acquiring an understanding of cancer biology, epidemiology, detection, diagnosis, treatment and control along with establishing attitudes for continuing education about cancer and concepts of multidisciplinary care for the cancer patient.

The methods include a Basic Cancer Course for clinical assistants utilizing a systems approach to curriculum and design, a continuing education program in cancer involving all phases of work each year, senior oncology electives to emphasize the multidisciplinary aspects of cancer care and comprehensive multidiscipline clinical associate program emphasizing care for the complex cancer patient.

The evaluation for the four components of the program will be developing process evaluating changes in student behavior in both the cognitive and affective domains.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. $80,438

2.0566,

CASE CONTROL STUDY OF CARCINOMA OF THE ESOPHAGUS

T.M. Mack, University of Southern California, School of Medicine, Dept. of Community Medicine & Public Health, *2025 Zonal Ave., Los Angeles, California* 90033 (R01 CA 19496-04)

The study proposed is a large case control study to be performed prospectively in Los Angeles County. It has been designed to permit simultaneous examination of multiple antecedent risk factors.

Cases with cancer of the esophagus will be identified by the LAC/USC Cancer Surveillance Program. A questionnaire has been designed to obtain data on environmental exposures - tobacco and alcohol consumption, diet, occupation and medical history and treatment. It will be administered to both cases and neighborhood controls as soon as possible after the cases have been diagnosed. Standard matched pair analyses of multiple variables will be performed on the data from the questionnaire.

BIBLIOGRAPHIC REFERENCES: Mack, T.M., Pike, M.C., and Casagrande, J.T.: Epidemiologic Methods for Human Risk Assessment in Origins of Human Cancer: Book C. Human Risk Assessment. Hiatt, H.H., Watson, J.D., Winsten, J.A. (eds); Cold Spring Harbor Conferences on Cell Proliferation Vol. 4, Cold Spring Harbor Laboratory, pp. 1749-1763, 1977. Mack T.M.: The Evaluation of Immunodiagnostic Tests in Immunodiagnosis of Cancer; Herberman, R.B., and MacIntire, K.R. (eds) Marcel Dekker, Inc., New York, 1978, in press.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. $81,281

2.0567,

STUDIES OF THE HISTOGENESIS OF PANCREATIC CARCINOMA

D.S. Longnecker, Dartmouth College, School of Medicine, Dept. of Pathology, *P.O. Box 833, Hanover, New Hampshire* 03755 (R26 CA 19410-05)

The histogenesis of carcinoma of the pancreas will be studied and compared in man and experimental animals. The epidemiology of association of putative preneoplastic lesions of human pancreas with risk factors will be analyzed to assess the significance of focal acinar cell dysplasia in human pancreas. One hundred human pancreatic cancers will be studied by electron microscopy to search for evidence of ductal vs. acinar cell origin. The reversibility of carcinogen-induced foci of atypical acinar cells will be assessed in rats. One hundred azaserine-induced pancreatic carcinomas will be classified histologically and compared to the histologic types of human pancreatic cancer. The histogenesis and histologic types of pancreatic cancers will be studied in a single species which responds to carcinogens which are reported to affect acinar cells, i.e., azaserine or N delta-(N-methyl-N-nitrosocarbamoyl)-L-ornithine, and ductal cells, i.e., N-nitrosobis(2-oxopropyl)amine. Species to be used for these studies are Mastomys natalensis and the Syrian golden hamster. RIA and immunohistochemical demonstration of pancreatic trypsin inhibitors will be employed to study their possible role in inhibition of carcinogenesis in pancreatic acinar cells. The response of transplantable acinar cell and ductal carcinomas of the pancreas to amino acid chemotherapeutic agents will be studied in rats and hamsters.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. $59,654

2.0568,

GENETIC EPIDEMIOLOGY OF CANCER

K.M. Weiss, University of Texas, Health Science Center at Houston, Graduate School of Biomedical Sciences, *P.O. Box 20334, Houston, Texas* 77025 (R01 CA 19311-03)

Genealogies from the Mexican-American city of Laredo, Texas are compiled from civil and church birth, death, and marriage records. The city will thus be ascertained more or less totally and without any bias relative to biomedical studies. Cause of death will be mapped onto these genealogies. The genealogies will be examined stastically to determine whether, and to what extent, there is familial clustering of death due to cancer in general or cancer at varius organ sites. Demographic data, including fertility, will be applied both to the assembly, by computer, of genealogies and to the analysis of the cause of death patterns. By parameterizing death rates by age, we hope to express this risk in terms which are meaningfully related to underlying biological processes related to human aging and to the causation of cancer itself. Competing causes of death will be taken into account in our analysis, which will also test for first-order environmental effects by examining the genalogies for cancer clustering when unrelated individuals (i.e. spouses) have been substituted into them. Our genealogies reach back to the 18th century, with cause of death information beginning about 1900.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. $153,688

2.0569,

CASE-CONTROL STUDY OF CARCINOMA OF THE PANCREAS

T.M. Mack, University of Southern California, School of Medicine, Dept. of Community & Family Medicine, *2025 Zonal Ave., Los Angeles, California* 90033 (R26 CA 19171-05)

This document describes a proposal to study the epidemiology of cancer of the pancreas to formulate causal hypotheses and to identify groups at high risk of developing this tumor.

The study proposed is a large case-control study to be performed prospectively in Los Angeles County. It has been designed to permit simultaneous examination of multiple antecedent risk factors.

Cases with cancer of the pancreas will be identified by the LAC/USC Cancer Surveillance Program. A questionnaire has been designed to obtain data on occupational and environmental exposures - tobacco and alcohol consumption, diet, and medical history and treatment. It will be administered to both cases and neighborhood controls as soon as possible after the cases have been diagnosed. Standard matched pair analyses of multiple variables will be performed on the data from the questionnaire.

BIBLIOGRAPHIC REFERENCES: Ross R, McCurtis JW, Henderson BE, Menck HR, Mack TM, Martin SP: Descriptive epidemiology of testicular and prostatic

cancer in Los Angeles. Br. J. Cancer 39:284-292, 1979.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. $47,187

2.0570,

SURVEILLANCE FOR DRUGS THAT MAY BE CARCINOGENIC

G.D. Friedman, Kaiser Foundation Research Inst., *1956 Webster St., Room 310 B, Oakland, California* 94612 (R01 CA 19939-04)

The objective of this project is to evaluate medicinal drugs for possible carcinogenic effects. Screening studies will be accomplished by following up a group of 149,000 patients in a prepaid health plan who had computer-sorted pharmacy records of prescriptions dispensed from July, 1969 through August, 1973. Increased incidence of any cancer among users of a drug as compared to expected incidence derived from the entire cohort, will indicate a drug-cancer association to be evaluated further. More definitive study of hypothesized drug-cancer relationships will be accomplished by case-control studies using the patients' longitudinal medical records.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. $105,070

2.0571,

SUPPORT FOR CANCER RESEARCH PROGRAM

R.A. Good, Sloan Kettering Inst. for Cancer Research, *410 E. 68th St., New York, New York* 10021 (P30 CA 08748-14)

This grant is to provide core support for the research program of the Sloan-Kettering Institute through provision of: salaries and benefits for essential scientific and administrative personnel; facilities, such as animal maintenance, secretarial services, required by many laboratories; consultant services; renovations, and initial funding for new developmental programs.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. $6,492,620

2.0572,

ONCOLOGY CENTER SUPPORT GRANT

A.H. Owens, Johns Hopkins University, School of Medicine, Dept. of Oncology, *725 N. Wolfe St., Baltimore, Maryland* 21205 (P30 CA 06973-16)

The Oncology Center serves as a resource dedicated to research and education in cancer and related disorders. Special efforts are made to apply new knowledge to improve the care of cancer patients and to prevent the occurrence of neoplastic diseases. 1. Research: In order to increase present understanding of human neoplasias and their effective clinical management, seven disease-oriented programs have been organized (leukemia, lymphoma, plasma cell dyscrasias, childhood neoplasia, breast cancer, small cell cancer of the lung, and sarcomas) to interact with seven laboratories (Transplantation Biology, Cell Proliferation, Immunochemistry, Cell Biology, Biochemical Virology, Pharmacology, and Cell Structure and Function). 2. Education: Programs of instruction in oncology are available to students at all levels. Special emphasis is placed on postgraduate education of physicians and laboratory scientists. 3. Clinical Services: Special consultation and treatment facilities are available for multidisciplinary programs, including an advanced radiation therapy unit. 4. Community Outreach: A network for cancer patient care and continuing education is being developed with regional hospitals and physicians. 5. National Cancer Program: This Center is linked with others to contribute toward the National Cancer Program.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. $1,977,527

2.0573,

COMPREHENSIVE CANCER CENTER SUPPORT

E. Frei, Sidney Farber Cancer Center Inc., *44 Binney St., Boston, Massachusetts* 02115 (P30 CA 06516-16)

Aims and purposes of the Center are as follows: 1) to fulfill its role as a Regional Cancer Center as well as its role as the primary cancer center in the Harvard Medical School area; 2) to provide a source of expertise in cancer chemotherapy, supportive care, cancer immunotherapy, etc.; 3) in association with affiliating institutions, to provide total care on an interdisciplinary basis to patients with cancer; 4) to foster and develop a new research program in basic science and clinical investigation as they relate to cancer, including prevention, diagnosis and treatment; 5) to add to the total oncology resources of the medical community in terms of available staff and available facilities; 6) to participate in teaching medical students, house staff and fellows, and pre- and post-doctoral candidates, and in the continuing education of practicing physicians; 7) to develop programs for the assistance of community hospitals and all practicing physicians in the care of their patients with cancer, and to develop programs of continuing lay as well as professional education.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. $2,468,545

2.0574,

GENETIC STUDIES OF HERITABLE COLORECTAL CANCER

B.S. Danes, Cornell University, Medical Center, Cornell Medical College, Dept. of Medicine, *1300 York Ave., New York, New York* 10021 (R26 CA 15973-05)

The identification of individuals at high risk for the development of large bowel cancer prior to clinical symptoms and the incidence/hazards of mutagenesis and transformation that their somatic cells are at risk for are the dual aims of this research proposal. These two aims are subdivided into 4 working objectives: (1) to identify a culture phenotype which consistently and reliably reflects the presence of a germinal mutation in a cultured somatic cell from individuals at risk for a hereditary colorectal cancer and to use this culture phenotype to determine how this mutation (a) affects cell function and (b) is expressed in tissue specificity, a property that all hereditary tumors appear to possess; (2) to develop a model system for testing the two-step hypothesis of carcinogenesis; (3) to study the mutagenesis in cell populations with and without known germinal mutations for colorectal cancer; (4) to study transformation in such genotypically abnormal cells in an attempt to evaluate the risk individuals with such genotypes run in exposure to known environmental agents inducing mutagenesis and transformation. Cell culture studies will be based on the family as the study unit.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. $85,896

2.0575,

CANCER CENTER SUPPORT GRANT (COMPREHENSIVE)

W.B. Hutchinson, Fred Hutchinson Cancer Research Center, *1124 Columbia St., Seattle, Washington* 98104 (P30 CA 15704-06)

The Fred Hutchinson Cancer Research Center is implementing the goals and objectives of the National Cancer Act of 1971 by encouraging and engaging in basic and clinical research directed toward the prevention, detection, diagnosis and treatment of cancer in man and by aiding in the development and coordination of both the professional and lay education by serving as a focal point for the demonstration and organization of methods for improving the health care of the cancer patient in the Pacific Northwest. The Center serves not only as an architectural entity but also as an institutional and a programmatic focus for these activities. Significant programs in basic and clinical cancer research and in the provision of health care for the cancer patient exist within the Pacific Northwest which includes the WAMI area (Washington, Alaska, Montana, Idaho) and the State of Oregon. Located within the Center are programs in tumor immunology, biochemical oncology directed toward tumor cell membranes, chemical carcinogenesis, related oncologic organic chemistry, medical oncology, viral oncology, basic immunology and genetics. In the extramural area studies in biostatistics/epidemiology, library services and information have been implemented. Affiliated programs in rehabilitation, regional cooperative cancer studies, therapeutic radiology, pediatric oncology and cancer detection are assisted by the Center.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. $2,150,737

2.0576,

CANCER EPIDEMIOLOGY AND PREVENTION RESEARCH CENTER

B. MacMahon, Harvard University, Boston Campus, School of Public Health, Dept. of Epidemiology, *55 Shattuck St., Boston, Massachusetts* 02115 (P01 CA 06373-18)

The proposed research is a program of studies of the epidemiology of the major human cancers, with the ultimate goal of developing knowledge which will lead to the prevention of these diseases.

The focus of the research will be on cancer of the breast, especially in relation to patterns of metabolism of endogenous estrogens in young adult life, oral contraceptive use, and other hormonal factors. Emphasis is on the detection of early markers characteristic of increased risk of cancer of the breast, prostate and colon. Other studies are on Hodgkin's disease, bladder cancer, cancer of the pancreas, and multiple myeloma. In addition, we plan to continue to develop epidemiologic methods, particularly those methods for application in the field of cancer epidemiology. Methodologic areas of investigation include life table analysis of survival data and various aspects of significance testing and interval estimation.

Using a variety of resources, the studies will employ different epidemiologic approaches including case-control studies, prospective cohort studies, and review of existing data in the Department. Many of these studies are developed on the basis of studies designed and completed in earlier years; some studies are supported for planning phase only; and others are continuations of ongoing data collection and analysis.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. $582,697

2.0577,

SOUTHWEST ONCOLOGY GROUP (PEDIATRIC)

D.J. Fernbach, Baylor College of Medicine, School of Medicine, Dept. of Pediatrics, *1200 Moursund Ave., Houston, Texas* 77025 (R10 CA 03161-23)

The year 1979 is the 22nd year that the Department of Pediatrics, Baylor College of Medicine, has participated in the activities of the Southwest Oncology Group (SWOG). The initial purpose of this group was to develop better methods of treatment for the control or cure of cancer in children. If a cure cannot be achieved, therapy is directed toward palliation of the disease, its consequences, prolonged survival, and perhaps most importantly, quality of survival. During the past few years multidisciplinary treatment programs have been developed and greater emphasis has been directed toward the etiology and pathophysiology of these diseases. This unit participates in all activities of the Pediatric Division. These activities include: Phase I studies of new chemical or biological agents; Phase II studies utilizing single or multiple agents in various disease categories; and Phase III studies, most of which are multidisciplinary, striving to determine the best combinations of therapy for control or cure of childhood cancer. Studies of the immunologic defects associated with various malignancies and immunotherapy directed toward eradication of various malignancies have been enlarged both within the Group and independently within this unit. Other areas of investigation relate to the epidemiology of malignant disease, the natural history of individual neoplastic disorders, and evaluations of methods to control the complications resulting from the disease or therapies. Particular emphasis has been given to determining prognostic factors and toward stratifying clinical case material accordingly in order to improve the basic study design. The biostatisticians have long been an integral part of the group's chemotherapy studies. Their role has been expanded to involve all multidisciplinary activities. Approximately 5 years ago the disciplines - radiotherapy, pathology, and surgery - began active participation in all group studies. During the past 2 years the representatives from these disciplines have provided invaluable expertise in their specialties from the time of inception of all appropriate studies.

BIBLIOGRAPHIC REFERENCES: Heideman, R.L., Falletta, J.M., Mukhopadhyay, N., and Fernbach, D.J.: Lymphocytic leukemia in children: Prognostic significance of clinical and laboratory findings at time of diagnosis. J. Pediatr. 92:540-545, 1978. George, S.L., Fernbach, D.J., and Lee, E.T.: Early deaths in newly diagnosed cases of pediatric acute leukemia: A Southwest Oncology Group Study. Cancer 42:781-786, 1978.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. $127,641

2.0578,

CANCER RISK AFTER IRRADIATION AND/OR CHEMOTHERAPY

D. Schottenfeld, Memorial Hospital for Cancer & Allied Diseases, *1275 York Ave., New York, New York* 10021 (R01 CA 17028-04)

The primary objective of this research is to test the hypothesis of whether Hodgkin's disease patients are exposed to an increased risk of the development of subsequent multiple primaries by the various intensities and/or ordered sequences of radiation therapy and chemotherapy (given singly or in combined regimens) which have served as therapeutic approaches to the management of Hodgkin's disease. Histopathologic classification of Hodgkin's disease and the extent of disease involvement at the time of first treatment will be studied in relation to the patterns of second primary cancer occurrence by organ site and histopathology.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. $71,493

2.0579,

DIET, FLORA AND COLON TUMORIGENESIS

S.A. Broitman, Boston University, School of Medicine, Dept. of Microbiology, *80 E. Concord St., Boston, Massachusetts* 02215 (R26 CA 16750-05)

The long-term objective of this laboratory work is to identify nutritional factors which contribute to the high incidence of colon cancer in Western culture. In this proposal, studies are focused on the role of dietary and endogenous cholesterol and its metabolites in the gut lumen in large bowel tumorigenesis in an experimental animal. Continuing studies are planned on the interrelationship between dietary polyunsaturated fat and saturated fat, particularly as it relates to the disbursement of cholesterol systemically and/or enterally. Various nutritional regimens containing 20% fat with and without cholesterol are fed to rats given an indirect acting carcinogen, 1,2 dimethylhydrazine (s.c. or orally), or a direct acting carcinogen, N-methyl-N'-nitro-N-nitroguanidine (intrarectally). These diets will allow an evaluation of the interrelationships between the quality of dietary fat, the enteral excretion of cholesterol and its metabolites and large bowel tumorigenesis. Effects of cholesterol and its metabolites will be evaluated in terms of tumor number, histological types and location, latency period and tumor incidence. An assessment of fecal excretion of neutral and acid sterols as well as fecal 7-alpha-dehydroxylase and cholesterol dehydrogenase activities occurring in rats fed the various dietary regimes will permit correlative studies with large bowel tumorigenesis. Using the Ames Salmonella/microsomal assay for mutagens/carcinogens, various fecal sterol metabolites will be evaluated to pinpoint those componets which may be carcinogenic or cocarcinogenic for further testing. These studies should provide: 1) a better understanding of the relationships between nutrition, microflora and colonic cancer; 2) additional information concerning the nutritional linkage between coronary heart disease and colon cancer and 3) additional guidelines for studies in human nutrition aimed at decreasing the incidence of colon cancer.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. $99,342

2.0580,

CANCER INCIDENCE AND RISK FACTORS BY KINSHIP

M.H. Skolnick, LDS Hospital, Dept. of Medical Biophysics & Computing, *325 8th Ave., Salt Lake City, Utah* 84103 (R01 CA 16573-06)

From a Utah Mormon genealogy of more than one million individuals linked to a Cancer Registry of more than 30,000 cases, we will: (1) Determine the genetic contributions to the occurrence of cancer for specific sites in a general population, including the estimation of heritability for specific age-sex categories. (2) Fit specific genetic models which will best explain any observed patterns of the occurrence of specific cancer sites or groups found to cluster in large pedigrees. Components of the models will include modes of inheritance and factors which influence gene expression (such as age, sex, and pertinent environmental factors when known). In-depth pedigree and chromosomal marker studies provide important additional data for this analysis. (3) Investigate the potential association of a large number of immunologic, biochemical, and anthropomorphic genetic markers to various forms of cancer in an effort to characterize these traits for people who are at high genetic risk for acquiring the disease and then attempt to use this information for early detection or prevention of the cancer.

BIBLIOGRAPHIC REFERENCES: Kravitz, K., Skolnick, M., Cannings, C., Carmelli, D., Baty, B., Amos, B., Johnson, A., Mendell, N., Edwards, C., Cartwright, G: Genetic Linkage between Hereditary Hemochromatosis and HLA. American Journal of Human Genetics 31:601-619, 1979. Hunt, S.C., Williams, R.R., Skolnick, M.H., Lyon, J.L., Smart, C.R.: Breast Cancer and Reproductive History from Genealogical Data. The Journal of the National Cancer Institute, 1980, in press.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. $207,910

2.0581,

CANCER CENTER SUPPORT GRANT

R.A. Cooper, University of Pennsylvania, School of Medicine, Dept. of Medicine, *36th & Hamilton Walk, Philadelphia, Pennsylvania* 19174 (P30 CA 16520-05)

The University of Pennsylvania Cancer Center (UPCC) study is a multidisciplinary program in cancer research, education and clinical care. Based in the School of Medicine, it involves faculty from many schools of the University. The UPCC is one component of the Fox Chase-U. of P. Comprehensive Cancer Center. Interdisciplinary clinical research programs of the UPCC exist in hemotology-oncology, radiation therapy, surgical oncology and gynecologic oncology. A multidisciplinary program has been established in head and neck tumors, and similar programs are developing in neuro-oncology and urologic cancer. Clinical research programs utilize the shared resources of the Center's inpatient Oncology Study Unit, Clinical Trials Data Center, Pharmacology Core and Nutrition Support Service. Interdisciplinary fundamental research programs exist in immunobiology, cell biology, virology, genetics, and radiobiology. Program development involving tumor immunology and bone marrow culture is planned. Fundamental research programs utilize the shared resources of an animal breeding colony and tissue culture core, and they are strengthened by a Visiting Scientist Program. Acquisition of a fluorescence activated cell sorter is also planned. The Center's Epidemiology and Statistics Unit includes epidemiologic studies of occupational carcinogenesis and biostatistical research. The Unit established a biostatistics shared resource for the UPCC and a patient data system compatible with the CCPDS. A multidisciplinary Psychosocial Program, recently established, addresses needs in areas of research, service and education. Other Educational Programs have been established as well, and the UPCC provides a range of opportunities for medical and nursing students, fellows, practicing physicians and other health professionals. The UPCC Cancer Control Program extends to community hospitals in Pennsylvania and New Jersey. An information letter, Cancer Update, provides UPCC news and cancer education for Center members and other professionals who relate to the UPCC.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. $550,749

2.0582,

HERPESVIRUS INFECTIONS IN HIGH RISK CANCER GROUPS

D.W. Reynolds, University of Alabama in Birmingham, School of Medicine, Dept. of Pediatrics, *1919 7th Ave. S., Birmingham, Alabama* 35233 (R01 CA 16424-05)

This project involves study of the natural history of herpesvirus infections in renal transplant patients and low income urban females, two target populations with increased risk of cancer. In renal transplant patients the natural history of cytomegalovirus (CMV), herpes simplex virus (HSV), Epstein-Barr virus (EBV), and varicella zoster virus (VZV) infections will be investigated. In the low income young women, the natural history of genital HSV and CMV infections will be studied. In both of these populations, particular attention will be payed to factors which lead to reactivation of apparently latent infections. In renal transplant patients the effect of immunosuppression and histocompatability on specific humoral and cellular immunity, viral excretion, and development of clinical manifestations of viral infection will be examined. Young women with cervical CMV and HSV excretions will be characterized by frequency of recurrences in relation to age, parity, presence of infection with more than one viral agent, and cervical cytology.

In both the renal transplant patients and in the normal low income women, an attempt will be made to correlate natural history of viral infections with development of malignancies, should any occur. Children born with congenital CMV who are born to young women in this study will also be compared to uninfected controls with regard to incidence of malignancy. In the case of transplant patients and young women the majority of subjects are expected to be infected with more than one herpesvirus; thus it is unlikely that any etiologic association between malignancy and viral infection can be established through epidemiologic study.

BIBLIOGRAPHIC REFERENCES: Pass, R.F., Whitley, R.J., Diethelm, A.G., Whelchel, J.D., Reynolds, D.W. and Alford, C.A.: Outcome of renal transplantation in patients with primary cytomagalovirus infection. Transplant. Proc., 1979, in press. Pass, R.F., Whitley, R.J., Whelchel, J.D., Diethelm, A.G., Reynolds, D.W. and Alford, C.A.: Identification of renal transplant patients with increased risk of postoperative herpes simplex virus infection. J. Infect. Dis., 1979, in press.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. $72,289

2.0583,

DEVELOPMENT OF REGIONAL CANCER CONTROL PROGRAM

R.O. Johnson, University of Wisconsin, Madison Campus, Center for the Health Sciences, *500 Lincoln Dr., Madison, Wisconsin* 53706 (R18 CA 16405-03)

The Wisconsin Clinical Cancer Center will develop a statewide cancer control program designed to: 1. Engage health care professionals in efforts to detect cancer earlier. 2. Develop a regional network of affiliated centers providing excellent diagnosis and treatment of cancer. 3. Conduct cooperative projects in cancer detection, diagnosis, therapy and rehabilitation. 4. Serve regional units with central data management resources. 5. Inform the public of advances in cancer control, ways they can improve outcome in cancer.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. $469,325

2.0584,

METABOLIC EPIDEMIOLOGY OF COLON CANCER

B.S. Reddy, American Health Foundation Inc., Naylor Dana Inst. for Disease Prevention, *Hammond House Rd., Valhalla, New York* 10595 (R26 CA 16382-05)

OBJECTIVE: The overall objective of the proposed research is to: (a) acquire significant information on the mechanisms related to, and the role played by: dietary components, intestinal microflora and their metabolites on the etiology of colon cancer in man, (b) identify specific environmental and dietary components that either directly cause colon cancer or indirectly promote the formation and development of colon neoplasms, and (c) develop key biochemical and/or microbial indicators which distinguish low- and high-risk populations for colon cancer.

APPROACH: The proposed study will determine: the fecal cholesterol and bile acid metabolites and fecal bacterial 7 alpha-dehydroxylase, cholesterol dehydrogenase and nuclear dehydrogenase activities and fecal bacterial transnitrozation reaction in members of high-risk cancer families, patients with familial polyposis and healthy controls consuming a mixed-Western diet. We also continue the present study in determining the metabolic activity of fecal microflora (above enzyme parameters) in patients with colon cancer and adenomatous polyps to permit an evaluation of these discriminants for colon cancer. In addition, we propose to isolate and identify the mutagens (presumptive carcinogens) in the feces of above study populations.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. $103,919

2.0585,

CANCER CENTER SUPPORT GRANT

J.W. Cole, Yale University, School of Medicine, Dept. of Surgery, *333 Cedar St., New Haven, Connecticut* 06510 (P30 CA 16359-05)

The Comprehensive Cancer Center for Connecticut at Yale was recognized and funded by NCI on July 1, 1974. Dr. Joseph R. Bertino, Professor of Medicine and Head of Yale's Medical Oncology Unit was appointed as the Center's Director and served in this

capacity during the 01 year. On July 1, 1975, Dr. Bertino accepted an ACS lifetime professorship and was replaced as Director of the Cancer Center by Dr. Jack W. Cole, Professor of Surgery and former chairman of the Department of Surgery at Yale. Dr. Cole is supported by three Associate Directors and an Executive Officer.

Dr. Sherman Weissman, Professor of Human Genetics, Medicine, and Molecular Biophysics and Biochemistry serves as Associate Director for Basic Research. Dr. James J. Fischer, Professor of Therapeutic Radiology and Chairman of the Department of Therapeutic Radiology serves as Associate Director for Clinical Services. Dr. C. Elton Cahow, Associate Professor of Clinical Surgery, Physician, University Health Services, serves as Associate Director for Regional Activities. Mr. Roland M. Glenn serves as the Center's Executive Officer.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. $2,115,890

2.0586,

EPIDEMIOLOGY FIELD STUDIES UNIT

B.E. Henderson, University of Southern California, School of Medicine, Dept. of Pathology, *2025 Zonal Ave., Los Angeles, California* 90033 (P01 CA 17054-040002)

This project is part of a broader program (CA 17054).

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. funds n.a.

2.0587,

TYLER ASBESTOS WORKERS STUDY

G.A. Spivey, Texas Chest Foundation, *Gladewater Hwy., Box 2003, Tyler, Texas* 75710

The basic objective of this contract is to study the carcinogenesis, early dysplasias and potential diagnostic 'markers' of asbestos-induced lung cancer in a cohort of approximately 875 Tyler asbestos workers.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. $2,205,131

2.0588,

STUDIES ON THE PATHOGENESIS AND TREATMENT OF BURKITT'S LYMPHOMA IN GHANA

R.J. Biggar, U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst., Clinical Studies Section, *9000 Rockville Pike, Bethesda, Maryland* 20205 (Z01-CP-04851-04-LVC)

Burkitt's lymphoma (BL) is of great importance to human tumor studies because of the epidemiologic, virologic and immunologic evidence that it is virus induced. The Burkitt Tumor Project (BTP) in Accra, Ghana, is an attempt to systematically study a series of BL patients in order to clarify the pathogenesis of the disease and develop better methods of control. Current studies are concentrated on the pathogenesis of EBV infection in newborns, and the comparison of the epidemiology of EBV and BL in West Africa (Ghana) with the reported pattern in East Africa. In addition, the project is looking at humoral and cell-mediated immunity to EBV and tumor-associated antigens as diagnostic and prognostic tools in BL, and investigating the role of malaria as a cofactor in disease etiology.

BIBLIOGRAPHIC REFERENCES: Pizzo, P.A., Magrath, I.T., Chattopadhyay, S.K., Biggar, R.J., and Gerber, P.: A new tumor derived transforming strain of Epstein-Barr virus. Nature 272: 629-633, 1978. Biggar, R.J., Henle, W., Fleisher, G., Bocker, J., Lennette, E.T., and Henle, G.: Primary Epstein-Barr virus infection in African infants: I. Decline of maternal antibodies and timing of infection. Int. J. Cancer 22: 239-243, 1978.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. funds n.a.

2.0589,

METROPOLITAN ATLANTA SEER PROGRAM

M.A. Child, Emory University, School of Medicine, Dept. of Medicine, *1364 Clifton Rd. N.E., Atlanta, Georgia* 30322

As a participant in the SEER Program, this Contractor is to provide data for incidence and end results reporting on all cancers diagnosed among residents of the Metropolitan Atlanta area. During the initial contract period, the Contractor will undertake the planning and development of data acquisition, coding, processing, and editing necessary to the implementation of the SEER Program in the Atlanta Metropolitan area. During the second contract period, the reporting system will concentrate on cases diagnosed during 1976 and may, as time allows, pick up cases diagnosed during 1972-1975 so that continuous incidence data from 1969 forward will be available by virtue of Atlanta's participation in the Third National Cancer Survey. The data are to be recorded in accordance with rules agreed upon by SEER Program participants and will periodically be submitted to the Biometry Branch, NCI, for analysis.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. $307,460

2.0590,

CANCER END RESULTS EVALUATION

M.S. Honeyman, State Dept. of Health, *79 Elm St., Hartford, Connecticut* 06115

As a participant in the Collaborative Program for Cancer Surveillance, Epidemiology and End Results Reporting (SEER Program), this contractor is to provide data for incidence and end results reporting on all cancers diagnosed among residents of Connecticut. The data are to be recorded in accordance with the current SEER program coding manual and periodically submitted to the Biometry Branch, NCI, for analysis. Data from all participants in the SEER Program are pooled and analyzed by NCI staff with attention to specific types of cancer in patients with selected characteristics.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. $288,946

2.0591,

STUDY OF ENVIRONMENTAL OCCURRENCE OF N-NITROSO COMPOUNDS

S.R. Tannenbaum, Massachusetts Inst. of Technology, School of Science, Dept. of Nutrition & Food Science, *77 Massachusetts Ave., Cambridge, Massachusetts* 02139

OBJECTIVES: Determine whether a direct relation can be established between formation of nitrite in the human stomach and gastric cancer. The types of studies to be conducted are as follows: characterization of the gastric contents of individuals from a high-risk gastric cancer area in comparison with a low-risk area; identification of factors controlling rate of nitrosation in human gastric juice; and characterization of mutagenic N-nitroso compounds formed from predominant Colombian foods.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. $0

2.0592,

BREAST CANCER DETECTION DEMONSTRATION PROJECT

H.P. Constantine, Rhode Island Hospital, *593 Eddy St., Providence, Rhode Island* 02903

The Contractor will continue to rescreen as many as possible of an original number of ten thousand women participating in this project. These women wil continue to be rescreened on a projected annual basis by means of three screening modalities - mammography, thermography, and physical examination, in accordance with the contract statement of work and NCI/ACS issued screening guidelines.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. $14,621

2.0593,

A PROSPECTIVE STUDY OF LYMPHOID TISSUES IN NEOPLASIA

I.I. Kessler, University of Maryland, Baltimore Professional Schools, School of Medicine, Dept. of Epidemiology & Preventive Medicine, *655 W. Baltimore St., Baltimore, Maryland* 21201 (R01 CA 25020-02)

A prospective epidemiological study on subsequent cancer risk, by site, among cohorts of individuals undergoing tonsillectomy/adenoidectomy and/or appendectomy between 1925 and 1936 is continuing. Because a large proportion of the cohorts can now be expected to be deceased, a reliable and valid estimate of specific cancer risks according to type of lymphoid tissue surgery is expected to be generated. At present, major efforts are continuing to trace the cohorts as completely as possible to death or to survival as of a recent date. Also continuing is a preliminary analysis, among individuals already traced, of specific cancer risks. The prospective design of this study permits the estimation of true cancer risks, as opposed to the relative risks or odds ratios which must be relied upon in retrospective studies.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. $31,750

2.0594,

IMMUNOBLASTIC LYMPHADENOPATHY AND HISTIOCYTIC LYMPHOMA

R.K. Ross, University of Southern California, School of Medicine, Dept. of Pathology, *2025 Zonal Ave., Los Angeles, California* 90033 (R01 CA 24082-02)

We are studying the epidemiology of histiocytic lymphomas, and a possibly related disease entity, immunoblastic lymphadenopathy (IBL), in Los Angeles County. The study is designed to test for multiple antecedent risk factors for these diseases, with special emphasis on therapeutic agents previously implicated. The study is a two-part case-control study. The case group will consist of 100 cases of histiocytic lymphoma identified by the Los Angeles County/USC Center Surveillance Program, plus 50 cases of immunoblastic lymphadenopathy identified by the pathologic consulting service of Dr. Robert Lukes. Data will be obtained by interviews conducted by a trained nurse epidemiologist. Questionnaire information will focus on therapeutic history, environmental exposures at work and at home, allergic and other possible relevant past disease history, and family history of tumors. Medication history will be validated by contacting personal dentists and physicians of cases and controls.

In addition, venous blood specimens will be obtained on a group of IBL and histiocytic lymphoma cases and controls in order to help characterize the immune responses and assist in determining the affected cell types of these patients.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. $90,671

2.0595,

ETIOLOGY AND EPIDEMIOLOGY OF HUMAN CANCER

M.B. Gardner, University of Southern California, School of Medicine, Dept. of Pathology, *2025 Zonal Ave., Los Angeles, California* 90033

Etiology and Epidemiology of Human Cancer. This is a multi-faceted study to determine the contributions of genetic susceptibilities, 'oncogenic' RNA and DNA viruses, and the influence of environmental carcinogens to the etiology of cancer. Approaches include search for and isolation of etiologic viral agents or evidence of viral antigenic activity, and the development of vaccines to protect against natural and induced cancers.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. $446,000

2.0596,

DETROIT SSMA POPULATION-BASED CANCER REGISTRY

M.J. Brennan, Michigan Cancer Foundation, *110 E. Warren St., Detroit, Michigan* 48201

Follow-up of all patients to determine their vital status will be accomplished on all registry cases to provide information on the end results of cancer treatment. The objectives are: Provide to NCI, in accordance with instructions from the Project Officer, computer tapes with data obtained from both incidence and end results reporting systems. Maintain a core staff, including professional and technical people, to complete the remaining tasks for the Third National Cancer Survey. Develop plans for a core staff, including both professional and technical people, who would facilitate planning and implementation of ad hoc studies. Produce a manual setting forth the activities and responsibilities of all registry personnel and a description of the procedures that will be followed for each specific activity such as abstracting, case-finding, editing, quality control, etc.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. $160,000

2.0597,

DEMOGRAPHIC CANCER RESEARCH PROGRAM IN HAWAII

L.H. Piette, University of Hawaii System, Manoa Campus, John A. Burns School of Medicine, Dept. of Biochemistry & Biophysics, *2444 Dole St., Pacific Biomedical Res. Ctr., Honolulu, Hawaii* 96822

The general plan of the Demographic Research Program is to: develop demographic/epidemiologic programs in collaboration with the Basic Science and Clinical Research Programs of the Cancer Center of Hawaii; work closely with Dr. Stemmermann on his Japan-Hawaii Cancer Study to fully utilize those data; and assist basic and clinical cancer research programs as well as all cancer control programs developed in the Cancer Center and in the community by providing expertise and personnel to assist in demographic/epidemiologic study designs, study surveillance, and study evaluation. Case-control interview work on Japanese migrant studies is included in this program.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. funds n.a.

2.0598,

ESTROGENS AND GENITAL ANOMALIES AND CANCER IN OFFSPRING

S.J. Robboy, Massachusetts General Hospital, *32 Fruit St., Boston, Massachusetts* 02114

A study of the incidence and natural history of genital tract anomalies and cancer in offspring exposed in utero to synthetic estrogens.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. funds n.a.

2.0599,

IMMUNODEFICIENCY-CANCER REGISTRY

J.H. Kersey, University of Minnesota, Minneapolis Campus, School of Medicine, Dept. of Laboratory Medicine & Pathology, *1305 Mayo, Minneapolis, Minnesota* 55455

Upon consultation between the members of the Epidemiology Branch of NCI and the members of the Immunodeficiency Registry, it was decided that a collaborative program between these two parties should be developed. The goals of this collaborative program would be as follows: to continue the registry's activities as outlined above; to explore in feasibility study two additional activities; and to conduct these activities, if deemed feasible. The two additional activities are: to determine better estimates than are currently available of the prevalence of immunodeficiency syntromes by types, age, and sex in general population (the feasiblity of an incidence survey would also be explored at this time); and to conduct a case-control study of the clinical, demographic, and laboratory characteristics of immunodeficient patients who developed a malignancy vs. those who didn't.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. $108,892

2.0600,

CANCER SURVEY IN THE PUERTO RICO AREA

I. Martinez, Puerto Rican Government, *1306 Ponce de Leon Ave., San Juan, Puerto Rico* 00908

Work under this contract includes: The establishment and maintenance of cancer reporting system in Puerto Rico (The system will utilize the standard abstracts of records of all patients with active disease seen in any of the Puerto Rican Hospitals.); the follow-up of patients to determine their vital status and end results of cancer treatment; providing National Cancer Institute with computer tapes containing cancer incidence and end results data; and setting up a working relationship with other registries in Latin American countries regarding ad hoc studies and epidemiological investigations.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. $93,125

2.0601,

MALE ROLE IN CERVICAL CANCER

I.I. Kessler, University of Maryland, Baltimore Professional Schools, School of Medicine, Dept. of Social & Preventive Medicine, *655 W. Baltimore St., Baltimore, Maryland* 21201 (R01 CA 25019-02)

Studies utilizing a variety of methods suggest that the male sex partner may play a role in the etiology of cervical cancer. Demographic analyses reveal higher cervical mortality rates among married than among single women or virgins. A possible association between penile and cervical cancer has been demonstrated. Considerable evidence has accumulated on the relationship between cervical cancer and the venerally transmitted genital herpesvirus, HSV-2. The results of these studies have increased the likelihood of a significant male role in cervical carcinogenesis.

Our ongoing study begins with the identificatin of a large group of women who had cervical cancer in greater Baltimore during the past 20 years. The husbands of these women are investigated to the extent of identifying all their previous and subsequent wives ('case' wives). A random sample of 'control' wives, similar to the 'case' wives in demographic and marital characteristics is then selected. The cohorts of 'case' and 'control' wives are traced prospectively to death or survival as of a recent time. The ultimate risk of cervical neoplasia among the two cohorts is compared, utilizing actuarial techniques. This approach affords a direct test of the role of any venereally transmitted male factor in cervical cancer, whether it be viral, chemical or other.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. $59,716

2.0602,

A PROSPECTIVE STUDY OF CANCER RISK IN TUBERCULOSIS

I.I. Kessler, University of Maryland, Baltimore Professional Schools, School of Medicine, Dept. of Epidemiology, *655 W. Baltimore St., Baltimore, Maryland* 21201 (R01 CA 25018-02)

Interest in the hypothesized association between tuberculosis and cancer has been intensified by studies demonstrating that tubercle bacilli (i.e., BCG) potentiates host immune responses to cancer challenge. Recent experiments in man suggest that BCG acts not only to evoke non-specific cell-mediated immunity but also to increase host resistance against specific tumors such as melanoma, sarcoma and breast cancer.

In view of the above, a type of natural experiment in cancer prevention is underway. A large cohort of tuberculosis patients is being followed prospectively through time to death or survival as of December 31, 1974. The outcome variables of interest are cancer mortality and morbidity. Observed cancer risks will be compared with those of the general population similar in age, sex and race. Additional analyses will focus upon cancer risk according to clinical severity of tuberculosis, with adjustment for smoking habits. Consideration will also be given to cancer risks among close family members as a further test of the antitumor immunogenicity of exposure to tuberculosis.

The prospective design of this study is relatively free of biases inherent in earlier efforts. This will also make possible the study of the association between tuberculosis and all types of cancer. A significant relationship between the two could suggest the possibility of BCG or tuberculin vaccination as a cancer preventive.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. $59,167

2.0603,

BREAST PARENCHYMAL PATTERNS AND BREAST CANCER RISK

P. Cole, Harvard University, Boston Campus, School of Public Health, Dept. of Epidemiology, *55 Shattuck St., Boston, Massachusetts* 02115 (R01 CA 24797-01)

The principal objectives of this study are: a. To evaluate the relationship between specific mammographic parenchymal characteristics and the incidence of female breast cancer; b. to evaluate the relationship between mammographic parenchymal characteristics and risk factors for breast cancer. Other objectives are to identify histologic correlates of mammographic parenchymal characteristics and to evaluate both right-left concordance of parenchymal pattern, and observer reliability in the assessment of these patterns.

All women (including 800 new cases of breast cancer) having xeromammograms in any of seven collaborating radiology units during 1978 or 1979 will be enrolled. Information on status with respect to breast cancer risk factors, parenchymal pattern (Wolfe's classification) and pathologic diagnosis will be obtained from the subjects' radiology records. From this series, 400 cases and 800 controls, equally divided between the age groups less than 55 and 55-74, will be selected for a detailed 'blind' review of both xeromammogram and histologic slides. For women in each age group relative risk of breast cancer according to parenchymal pattern, with the N1 pattern as the referent, will be estimated. If necessary, these estimates will be corrected for confounding by other risk indicators. Possible interactions will also be quantified.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. $105,794

2.0604,

CANCER STUDIES IN WASHINGTON COUNTY, MARYLAND

G.W. Comstock, Johns Hopkins University, School of Hygiene & Public Health, Dept. of Epidemiology, *615 N. Wolfe St., Baltimore, Maryland* 21205 (R01 CA 24758-02)

The proposed project has several related objectives. First is to maintain a serum-bank and cancer registry as a facility for studies of the epidemiology of major cancers, with special reference to serum factors antedating the diagnosis with serum assays of matched control specimens drawn at the same time, and also comparing serum assays of cancer cases before and after diagnosis which will identify risk factors, thereby adding useful knowledge of cancer etiology and helping to focus preventive practices. The second objective is to compare serum estrogen and androgen levels in serum specimens drawn in 1974 from breast cancer cases diagnosed since that time and their matched controls. The control experience will also be useful to see if serum hormone levels are related to other breast cancer risk factors. An additional study will measure disability and mood among breast cancer cases and age-matched controls. This will confirm and amplify a preliminary study that indicated that disability and mood changes observed in women several years after mastectomy resulted from age and not from their diagnosis or treatment.

A fourth objective is to study serum estrogen and androgen levels among groups of postmenopausal women from a general population. Sufficient numbers of serum specimens can be examined to allow reasonably firm conclusions about normal levels in this cancer-prone age group and to relate these levels to a variety of personal characteristics. Finally, it is proposed to ascertain if there are long-term changes in a variety of serum hormone levels with storage at minus 70 degrees C. This information is not currently available and is badly needed not only for this study but also for other investigations that rely on frozen serum specimens.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. $53,702

2.0605,

EPIDEMIOLOGY OF APLASTIC ANEMIA IN BALTIMORE

M. Szklo, Johns Hopkins University, School of Hygiene & Public Health, Dept. of Epidemiology, *615 N. Wolfe St., Baltimore, Maryland* 21205 (R01 CA 24757-02)

The overall objectives of this study are to examine the time trends and the environmental and host influences in aplastic anemia. In view of the association between aplastic anemia (AA) and acute myeloid leukemia (AML), an additional objective of the study is to compare the epidemiologic characteristics of these two disorders.

In order to accomplish these objectives, the study will be divided in two phases. In Phase I, all new cases of AA and AML occurring in metropolitan Baltimore will be identified from 1960 through 1979, and incidence and death rates will be calculated. In this phase of this study, the temporal trends of AA will be generated.

In Phase II, a case-control study will be conducted in which all new cases of AA occurring in metropolitan Baltimore from March 1980 through August 1982 will be compared with three groups: AML cases, and

both hospital and non-hospital controls. In this phase, specific hypotheses related to the etiology of AA will be examined, including past history of chemical exposure and viral diseases.

This investigation will attempt to define groups in the population who may be at a higher risk for AA, and possibly, also for AML. In addition, results may provide new leads in regard to the pathogenesis and natural history of AA, by assessing whether the occasional occurrence of AML among AA cases denotes a common epidemiologic pattern for these disorders.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. $135,774

2.0606,

RELATIONSHIP BETWEEN CHOLECYSTECTOMY AND ASCENDING COLON

L.H. Kuller, University of Pittsburgh, Graduate School of Public Health, Dept. of Epidemiology, *4200 5th Ave., Pittsburgh, Pennsylvania* 15260 (R01 CA 24739-02)

A previous study of the epidemiology of subsite colon cancer in the Pittsburgh SMSA was based on the Third National Cancer Survey. Individuals with carcinoma of the ascending colon were noted to have a higher prevalence of prior cholecystectomy than individuals with carcinoma of the other sites within the colon. The information was only obtained by review of hospital records. We propose to determine the relationship between cholecystectomy and right sided colon cancer by doing a case control study. Cases of right sided colon cancer and controls consisting of carcinoma of the sigmoid and descending colon will be identified by reviewing hospital records and interviews. A living neighborhood control will also be interviewed.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. $47,723

2.0607,

MUTAGENIC AND CARCINOGENIC POTENTIAL OF ESTROGENS

R.H. Purdy, Southwest Foundation for Research & Education, *8848 W. Commerce St., Box 28147, San Antonio, Texas* 78284 (R01 CA 24629-01)

Epidemiological studies on the association of estrogen treatment and cancer in postmenopausal women indicate a clear need for basic investigations of the carcinogenic potential of different types of estrogenic hormones. It is our working hypothesis that a cancer risk is associated with the metabolically activated intermediates of some types of estrogens, and that the mutagenic potential of these estrogens will correlate with their rate of metabolic activation. This hypothesis will be tested using two established mammalian cell culture systems in order to determine the mutagenic and carcinogenic potential of several important types of natural and synthetic estrogens. Their relative effects on single-strand breakage of DNA and mutagenesis at the thymidine kinase locus will be measured in the L5178Y mouse lymphoma cell line. The effects of the metabolic activation products of these estrogens will also be examined in Balb/c3T3 mouse fibroblast cells to determine induction of DNA repair replication, and chemical transformation in this carcinogen-transformable cell line. If our hypothesis is supported by results from one or more of these cellular assays, it will provide a major insight into the mechanism of mutagenesis or carcinogenesis associated with estrogens.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. $111,800

2.0608,

CONFERENCE ON HEALTH EFFECTS OF ASBESTOS EXPOSURE

I.J. Selikoff, New York Academy of Sciences, Dept. of Environmental Medicine, *2 E. 63rd St., New York, New York* 10021 (R13 CA 24516-01)

Three coordinated scientific conferences, collectively entitled, 'The Scientific Basis for the Public Health Control of Environmental Hazards' will be held from 6/21-30/78. The individual conferences are 'Health Effects of Asbestos Exposure', 'Health Effects of Halogenated Aromatic Hydrocarbons', and 'Public Health Control of Environmental Hazards'. This format will provide an opportunity to examine and discuss a complex problem: Scientists are able, with increasing sophistication, to evaluate the hazards to health associated with, for example, the mining and quarrying of asbestos and asbestos-containing materials, the processing and fabrication of industrial and consumer materials containing asbestos and the eventual disposal of such materials. But, at the same time, they share with society-at-large an inadequate understanding of how to make the regulatory decisions that would effectively deal with the risks and benefits that accompany the use of materials that both fulfill a social need and, at the same time, pose a real threat to the health of the worker at the site of production as well as to the customer at large.

The societal control of environmental hazards is the central theme of this coordinated series of conferences. The Conference on 'Health Effects of Asbestos Exposure' will examine new material in this area and will emphasize the identification and evaluation of asbestos hazards, with a view to their more successful and systematic control. At the same time the asbestos conference will dovetail with the conference entitled 'The Public Health Control of Environmental Hazards' by serving as a prototypical example of the problems confronting our scientists and citizens at large when they attempt to deal with the control of environmental hazards.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. $20,000

2.0609,

ENDOMETRIAL CANCER EPIDEMIOLOGY AND CONTROL

P. Greenwald, State Bureau of Cancer Control, *Empire State Plaza, Tower Bldg. Rm. 565, Albany, New York* 12237 (R01 CA 24367-02)

This epidemiologic study of endometrial cancer monitors the incidence, severity, and mortality trends in a sample of cases reported to the New York State Cancer Registry during the years 1971 through 1981. Cases will be validated through histologic re-examination and re-staging of this sample. This will indicate if incidence is increasing for both advanced and early stages of the disease, and what effect this may have on future mortality rates.

The epidemiologic case-control component of the research focuses on the association between endometrial cancer and the use of estrogens. Specifically, we wish to determine if estrogen use is associated with advanced stage disease, and if there is a risk decline following termination of use. Additionally, we will ascertain through multivariate methods the factors which discriminate low grade and/or early stage cases from high grade, advanced stage cases. One hundred and fifty advanced stage and 200 early stage newly diagnosed endometrial cancer patients will be interviewed. A case to control ratio of 1:2 for advanced stage cases and 1:1 for early stage cases will be used.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. $122,979

2.0610,

FARMING AS AN OCCUPATIONAL RISK FOR CANCER

L.F. Burmeister, University of Iowa, School of Medicine, Dept. of Preventive Medicine & Environmental Health, *Jessup Hall, Iowa City, Iowa* 52240 (R01 CA 24302-02)

Recent work by others and preliminary data from this department have suggested that farmers are at greater risk for certain types of cancer than had been generally recognized. Using the Iowa agricultural population as a base, further exploration will include an improvement in rate and quality of occupational recording. This will be done by linkage with drivers' license tapes, direct mail questionnaires, recently completed independent studies and completion of death certificate coding. Both proportionate and standardized incidence and mortality rates will then be caluculated for all cancers by main occupational groups.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. $158,438

2.0611,

PSYCHOSOCIAL FACTORS IN STUDENTS PREDICTIVE OF CANCER

R.S. Paffenbarger, Stanford University, School of Medicine, Dept. of Family Community & Preventive Medicine, *Stanford, California* 94305 (R01 CA 24255-02S1)

This epidemiologic study will utilize observations on approximately 51,500 former students from Harvard and the University of Pennsylvania to identify psychosocial and other characteristics in youth predictive of site-specific and total cancers later in life. Physical examination and other college records of the years 1916-1950 comprise the initial data to be examined for associations with fatal and nonfatal cancers identified on death certificates or on self-assessed mail questionnaires during a 25-60 year followup period. To date, approximately 1,350 cancer deaths have occurred among these former students in approximately 1.85 million person-years of observation. The number of surviving (nonfatal) cancer patients has yet to be assessed. The study affords prospective perspective for both hypothesis testing and hypothesis seeking. Analytic methods will include case-control univariate methods applied to the total population, and exposed-nonexposed multivariate methods applied to the entire University of Pennsylvania and portions of the Harvard population.

Characteristics to be examined for their association with cancer represent psychological, social, demographic, physical, familial, and occupational factors. Site-specific cancers to be studied include lung, colorectal, pancreas, stomach, prostate, blood, lymphaden, and skin among men; and breast (and perhaps ovary, cervix, and endometrium) among women.

Unlike cross-sectional and retrospective studies that would search for associations between psychosocial characteristics and cancer occurrence, the proposed study will utilize predocumented data on adolescents and young adults and thus avoid the need to infer previous from current behavior or to recall mood, thought, or behavioral characteristics antecedent to cancer diagnosis.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. $12,470

2.0612,

CARCINOGENS AND MUTAGENS IN COLON CANCER

J.H. Weisburger, American Health Foundation Inc., *320 E. 43rd St., New York, New York* 10017 (R26 CA 24217-02)

The objective of our work is to obtain information on the nature of the chemical carcinogens which may be ingested as part of the diet. Various epidemiologic studies have suggested that dietary factors, particularly high dietary fat and beef, are of major importance in the etiology of cancer of the colon. A two-stage model has been suggested wherein the combined action of carcinogens and promoters are necessary for the development of large bowel cancer. The ability of high dietary fat to induce increased excretion of bile acids has been shown to be related to the promotion of tumors in the colon. The initiating agent remains unknown, but epidemiologic evidence has implicated broiled meat.

Several groups have reported mutagenic activity in meat cooked either by charcoal broiling or by frying. Nagao et al. noted that the mutagen is formed during pyrolysis of protein. Commoner et al. suggested that a critical temperature of 150-200 degrees C must be passed before the mutagen forms. Since this temperature range is not reached in broiling, he concludes that this mode of cooking is 'safe.' We propose to demonstrate that all modes of cooking have the potential to produce mutagenic material and are isolating the mutagens in order to assay their carcinogenicity.

BIBLIOGRAPHIC REFERENCES: J.H. Weisburger and N.E. Spingarn, in Proceedings of the International Symposium of the Princess Takamatsu Cancer Research Fund, 1979.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. $68,491

2.0613,

AN EPIDEMIOLOGIC STUDY OF CANCER OF THE OVARY

G.B. Hutchison, Harvard University, Boston Campus, School of Public Health, Dept. of Epidemiology, *55 Shattuck St., Boston, Massachusetts* 02115 (R01 CA 24209-01S1)

A case-control study of ovarian cancer is involving 400 patients with this disease and 400 controls selected from the general population. The pathology for each case will be reviewed and classified according to specific histologic type by a recognized expert in ovarian cancer pathology. Personal, home interviews will be conducted to assess a variety of epidemiologic factors including general medical and family history, occupation, tobacco and alcohol habits, pregnancies, breast feeding, contraceptive experi-

ence, and drug use, including intrauterine exposure to drugs for the younger subjects. We will estimate the total number of ovulatory cycles as well as the longest series of consecutive ovulatory cycles uninterrupted by pregnancy, lactation, or oral contraceptive use and determine whether these measures correlate with ovarian cancer risk. Also of major interest are the relative risks associated with the use of oral contraceptives and hormones for the menopause. A doubling risk of cancer associated with several of the risk factors under study will be detectable in subgroups of ovarian cancer of size 75 or more. Our goal is to identify risk factors that may be modified to reduce disease occurrence primarily or that may be of clinical usefulness in defining the woman at risk of ovarian cancer to achieve better control of the course of the disease secondarily.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. $42,313

2.0614,

ENVIRONMENTAL EXPOSURES AND CHILDHOOD LEUKEMIA

T.W. Pendergrass, Childrens Orthopedic Hospital & Medical Center, Hematology & Oncology Division, *4800 Sand Point Way N.E., Seattle, Washington* 98105 (R23 CA 24186-02)

Little is known of the role of parental occupational exposures or perinatal drug ingestion in the subsequent development of childhood acute lymphocytic leukemia. This study has two goals: a) development of a method for obtaining parental occupational and perinatal drug exposures, and b) testing this method on parents of children diagnosed as having acute lymphocytic leukemia, between 1972 and 1979 in the State of Washington. Cases have been identified in the three major hospitals treating children with cancer in the State. For each case a hospital control has been selected to attempt to control for any differences in recall between parents of ill and presumably well children. General population controls will be obtained by use of a random digit dialing method. To date, 80% of case parents have been interviewed. Occupational data include a detailed review of occupational history and review of each job-related exposure. A detailed review of perinatal drug ingestion is obtained.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. $31,595

2.0615,

RELATION OF CANCER RATES AND SOURCE OF DRINKING WATER

I. Cech, University of Texas, Health Science Center at Houston, School of Public Health, Dept. of Environmental Sciences, *6515 Freeman, Houston, Texas* 77025 (R01 CA 24138-02)

One of the most controversial issues of concern to public health and water resources personnel is the relation between drinking water and cancer. This problem was highlighted when Robert Harris of the Environmental Defense Fund reported that higher rates of total cancer, cancer of the urinary system and of the gastrointestinal tract were observed among individuals drinking treated surface water from the Mississippi River in Louisiana, New Orleans area, compared to others, drinking ground water in the same state. Significant, however, has been the rapid shift from the basic issue, i.e., is the difference observed in cancer rates among the users of different water supplies limited to Louisiana or is it initial evidence of a more general phenomena? Apparently the Louisiana observation has been accepted as a causal association, since focus has shifted to a search for the particular water contaminant(s) responsible for the observed differences, specifically, to the health risk from waterborne chloro-organic compounds, some of which were shown to be a product of chlorine-disinfection process.

Although evaluation of the health risk of water chlorination has merit, the narrowing of the entire research focus on the matter of chlorination has been hasty. If the observations in Louisiana hold true in other areas, it increases the likelihood of the existence of a water related causal factor which may well be other than chlorination. The fact is, however, that the evidence of the link between cancer and source of drinking water is insufficient for acceptance. A promising and appropriate line of investigation would be to critically and thoroughly examine this basic issue by analyzing cancer mortality rates among the users of both categories of water supplies. The objective of this proposal is to examine cancer mortality and patterns of water utilization in Texas, and to assess the cancer risk in populations using surface and ground sources of drinking water within and among Texas' 254 counties, with geographic references to specific river basins and major ground water aquifers from which the supply is derived.

BIBLIOGRAPHIC REFERENCES: Temporal Variations of Trihalomethane Content of Drinking Water, by Virginia L. Smith, Irina Cech, James H. Brown, and Gregory F. Bogdan. Accepted (November 1979) by J. of Environmental Sciences and Technology.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. $54,541

2.0616,

CASE-CONTROL STUDY OF URINARY CANCER, COPENHAGEN

J. Clemmesen, Finseninstitutet, Danish Cancer Registry, *Strandboulevarden 49, DK2100 Copenhagen, Denmark* (R26 CA 24119-02)

Rates for urinary bladder tumors are known to be relatively high for Copenhagen, and have proved to considerable extent associated with tobacco smoking. While rates for lung cancer are about half the English, rates for bladder tumors are almost equal in the two countries, although occupational bladder tumors are not known in Denmark, in contradistinction to England.

For these reasons a case control study for urinary tract tumors has been established in Copenhagen collaborating with nearly all urological surgical departments in the city.

Patients are, as usual, reported to the Cancer Registry which per Oct. 1st, 1979 has provided for interviews with 70 bladder patients and 55 population controls, and with 24 ureter and pelvis cancers with 40 hospital controls.

The study is in progress.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. $39,135

2.0617,

BREAST CANCER IN INITIALLY ASYMPTOMATIC WOMEN

B.S. Pasternack, New York University, School of Medicine, Dept. of Environmental Medicine, *550 1st Ave., New York, New York* 10016

OBJECTIVES: To investigate by means of risk factor analysis whether minimal cancer in initially asymptomatic women is essentially different from clinical breast cancer, whether it is an early manifestation of the same disease, and to compare prevalent to incident breast cancer cases in order to identify risk factors associated with tumor aggressiveness. To achieve these goals, we will analyze data collected by the Guttman Breast Diagnostic Institute which since 1968 has been offering free breast examinations to women living in New York City. Cases will be compared according to three tumor criteria: level of invasiveness, level of aggressiveness, and histological type. If risk factors related to higher malignancy (invasiveness) and rapid growth (aggressiveness) are identified, then future screening efforts can be redirected towards detecting these biologically important breast cancers.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. funds n.a.

2.0618,

SCREENING TECHNIQUE FOR DETECTING EARLY CANCER OF BOWEL

V.A. Gilbertson, University of Minnesota, Minneapolis Campus, School of Medicine, Dept. of Surgery, *1305 Mayo, Minneapolis, Minnesota* 55455

During the coming year, the contractor will complete the first stage screening for all project participants, complete and analyze all dietary/health surveys (of over 45,000), analyze the periodic health status survey collected annually from all participants, with particular attention being given to current screening results, record and retest all interval cancer cases known to the project. There will also be presented the conclusions of the Death Review Committee of all cancer deaths omong the study participants with priority given to cases involving colon cancer. The coming contract year will allow a complete report, evaluation and analysis to be prepared concerning the complex follow-up protocols used for tracing and retention. This process refers to procedures required to trace and obtain responses from all living members of the project population.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. $1,249,183

2.0619,

DIET AND NONCONTRACEPTIVE ESTROGENS IN BREAST CANCER

A.M. Nomura, University of Hawaii System, Manoa Campus, John A. Burns School of Medicine, Dept. of Biochemistry & Biophysics, *2444 Dole St., Pacific Biomedical Res. Ctr., Honolulu, Hawaii* 96822

To conduct a combined study of the possible association of dietary factors and non-contraceptive exogenous estrogens with breast cancer.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. $181,911

2.0620,

MORPHOLOGIC AND EPIDEMIOLOGIC ASPECTS OF BREAST CANCER

B. Stenkvist, Uppsala Universitet, *Box 256, S75105 Uppsala, Sweden*

The Contractor intends to select randomly 100 out of about 1000 imprint specimens from different tumors. The specimens will be interactively analyzed in their cell analysis system, and the result from this processing will be saved and later subjected to careful statistical analysis on a large-scale computer, in order to define a measure characterizing nuclear grade for each one of the selected tumors. He also intends to see if there are any natural categorizations of the tumors from the nuclear-grade point of view. The results from these experiments will be compared with the conventional classification used by pathologists and cytologists. In order to evaluate the importance of the obtained measure of nuclear grading, he intends to relate it to the three- and five-year survival of the patients in a follow-up study.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. $54,670

2.0621,

CLEARINGHOUSE FOR ONGOING WORK IN CANCER EPIDEMIOLOGY

C.S. Muir, Centre International de Recherche sur le Cancer, *150 Cours Albert Thomas, 69372 Lyon Cedex 2, France*

Establishment of a clearinghouse for ongoing work in cancer epidemiology.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. funds n.a.

2.0622,

AN EPIDEMIOLOGICAL INVESTIGATION OF CANCER IN UTAH

J.L. Lyon, Utah Higher Education System, University of Utah, School of Medicine, Dept. of Surgery, *1400 E. 2nd S., Salt Lake City, Utah* 84112

Patient follow-up after diagnosis and treatment has been a major objective of the registry since its beginning in 1966. Information is collected from hosptials, physicians, pathology laboratories, radiotherapy centers and the Utah State Division of Health and is processed quarterly by computer. If a patient has not been seen by a physician within one year, the computer will generate a follow-up letter to be sent to the responsible physician. The registry has accessioned over 33,000 cases, approximately half of which are alive and being followed. About 2,000 cases are registered each year from Utah and another 2,000 from the neighboring states of Nevada, Idaho, Montana, and Wyoming. Other states are processed separately and the registry is paid $1.50 per case for this service. Reporting is not complete in these states so no incidence data are available.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. funds n.a.

2.0623,

EPIDEMIOLOGY AND GEOGRAPHIC PATHOLOGY OF CANCER

P. Correa, Louisiana State University, Medical Center, School of Medicine, Dept. of Pathology, *1542 Tulane Ave., New Orleans, Louisiana* 70112

Continue collaborative research with investigators in Latin America. Continue pathological studies of premalignant lesions in New Orleans autopsy and surgical pathology specimens, and to correlate findings with incidence and pathology data from other communities. These studies will focus on premalignant lesions in the large bowel, esophagus, and pancreas. Continue laboratory studies aimed at finding ways to elaborate and test hypotheses derived from studies of epidemiology and geographic pathology. This will include a comparative study of the mutagenic activity in fecal specimens from polyp-bearers and controls.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. funds n.a.

2.0624,

SMOKING AND HEALTH

N. Lynch, Enviro Control Inc., *11300 Rockville Pike, 1 Central Plaza, Rockville, Maryland* 20852

OBJECTIVES: Inhalation bioassay of cigarette smoke: effect of high and low carbon monoxide content and effect of high and low nitrogen oxide content. Cigarette smoke dosimetry in man; development of equipment and techniques. A computer simulated cigarette model for use in development of less hazardous cigarettes. International epidemiological study.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. funds n.a.

2.0625,

POPULATION-BASED CANCER EPIDEMIOLOGY RESEARCH CENTER

P.E. Isacson, University of Iowa, School of Medicine, Dept. of Preventive Medicine & Environmental Health, *Jessup Hall, Iowa City, Iowa* 52240

The aim of this project is to reactivate state-wide cancer incidence data collection. Existing data will be analyzed and examined to determine the type and extent of information to be obtained on a continuing basis. The long range goal,based on a continuing basis, based on a continuing registry operation, is to develop and implement epidemiological studies of the distribution and determinants of cancer in Iowa.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. $2,094,992

2.0626,

SUPPORT FOR CANCER EPIDEMIOLOGY PROGRAM

J.W. Meigs, Yale University, School of Medicine, Dept. of Epidemiology & Public Health, *333 Cedar St., New Haven, Connecticut* 06510

Identify correlates of cancer in Connecticut by defining patterns in the occurrence of cancer among groups and populations by age, sex, ethnicity, occupation, residence, medical history and prior therapeutic experience, and other variables, particularly socioeconomic. This will require both retrospective and prospective studies involving patients as well as records.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. $122,455

2.0627,

GEOGRAPHICAL PATHOLOGY AND EPIDEMIOLOGY OF CANCER

C. Cuello, Fundacion para la Educacion Superior, *Cali, Colombia*

The objectives of this study are to determine site-specific cancer incidence in Cali and other cities in Colombia, to correlate the local variation in morbidity data with pathology findings, and for selected sites such as thyroid, stomach, colon, and rectum to fit the Colombian findings into the epidemiological patterns observed in the United Statesand elsewhere in an effort to achieve a broader synthesis of epidemiology and etiology. The proposal is for three yearsof work which will include three major efforts, namely, an epidemiologic study of the factors related to stomach cancer in the high risk Department of Narino, a cancer registration and record linkage program in conjunction with the social security system, and collaboration with investigators in Brazil, Venezuela, and Costa Rica, on the epidemiology and pathology of cancers of the gastrointestinal tract. In addition, current investigations in Colombia will continue on cancers of the colon, prostrate, thyroid, cervic, and lymphomas.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. $50,692

2.0628,

SUPPORT FOR LOUISIANA TUMOR REGISTRY

E.T. Krementz, Charity Hospital of Louisiana, *1532 Tulane Ave., New Orleans, Louisiana* 70140

OBJECTIVES: Provide data for incidence and end results reporting on all cancers diagnosed among residents of the Metro New Orleans area. The reporting system will be implemented for Orleans Parish while negotiations to increase participation in Jefferson and St. Bernard Parishes continue. Data from all SEER participants are pooled and analyzed by NCI staff to determine changes over time in the use of different methods of therapy and of diagnostic criteria, and to determine the survival patterns associated with various treatment modalities. The contractor is required to submit supplementary data for studies designed to explain further any specific hypotheses suggested by analysis of the routinely submitted data.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. $489,449

2.0629,

STUDY OF HODGKIN'S DISEASE

N. Goldblum, Hebrew University of Jerusalem, Hadassah Medical School, Dept. of Virology, *P.O. Box 1172, Jerusalem 91000, Israel*

OBJECTIVE: To investigate, evaluate and identify the relative roles played by various environmental and hereditary factors in the etiology and epidemiology of Hodgkin's disease and other types of lymphoma with an emphasis on the types which are indigenous to the Middle East.

APPROACH: An epidemiologic study of incidence of histologic subtypes, the determination of survival of cases of Hodgkin's disease in relation to ethnic groups, and evaluation of clustering of Hodgkin's disease in space and time, and among social contacts. A variety of assays, such as HLA typing, EBV serology, concanavalin A tests of lymphocytes and other assays, are applied for evaluating susceptibility to various types of lymphoma. A detailed study on childhood lymphoma is performed in order to identify immunoepidemiologic and laboratory parameters relating to Burkitt's lymphoma in Israel, Africa and the United States. Specially selected cell lines isolated from these lymphomas are characterized for markers specific to the lymphomas found in the Mediterranean region; these include cell surface characteristics, immunoglobulin, cytologic and karyotypic markers.

PROGRESS: Included in yearly and half-yearly progress reports to the N.C.I. A new type of malignant lymphocyte was established in continuous culture which is the malignant cell of non-African, non-EBV genome carrying Burkitt's tumor. A diagnostic differential test for lymphoma has been developed using fluorescent concanavalin A.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. funds n.a.

2.0630,

SUPPORT FOR TUMOR REGISTRY

C.R. Key, University of New Mexico, School of Medicine, Dept. of Pathology, *University Hill N.E., Albuquerque, New Mexico* 87131

The Principal Investigator is Director of New Mexico Tumor Registry. This involves developmental expansion of an existing cancer registry facility within the New Mexico Regional Medical Program toward the existence of a population-based cancer registry with potential for meaningful epidemiologic studies.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. $557,140

2.0631,

CANCER INCIDENCE STUDY & REGISTRY ASSESSMENT

L.H. Katz, Israel Center for Registration of Cancer & Allied Diseases, *18 20 King David St., Jerusalem, Israel*

The purpose of this project is to collect and analyze cancer incidence data for the complete population of Israel for the time period 1960-1971. It is anticipated the data collection phase will take two years. The third year of this contract will be used for evaluation and analysis of the data.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. $199,411

2.0632,

ESTROGENS AND GENITAL ANOMALIES AND CANCER IN OFFSPRING

R.H. Kaufman, Baylor College of Medicine, School of Medicine, Dept. of Obstetrics & Gynecology, *1200 Moursund Ave., Houston, Texas* 77025

OBJECTIVE: Identify and study offspring of women who received synthetic estrogens during pregnancy between 1943 and 1963. Repeat examinations at regular intervals, perform diagnosis and follow-up and treatment as necessary. Approximately 1,000 offspring are to be examined on this contract.

PROPOSED COURSE: The contractor will establish standard definition of eligibles and develop suitable approaches to elicit eligibles through information campaigns to physicians and the general public via mass media. Evaluation will be performed and reported.

PROGRESS: A total of 548 participants have been entered as of March 1976. Of these, 519 are active participants with 446 having documentation of DES exposure in utero. Chart reviewing by physicians in the Houston area has been the primary source of participants. Also, the health services at local universities have been used as an outreach to women students. Consent forms have been utilized.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. funds n.a.

2.0633,

STUDY OF GENITAL TRACT ANOMALIES

D.E. Townsend, University of Southern California, School of Medicine, Dept. of Obstetrics & Gynecology, *2025 Zonal Ave., Los Angeles, California* 90033

OBJECTIVE: Identify and study offspring of women who received synthetic estrogens during pregnancy between 1943 and 1963. Repeat examinations at regular intervals, perform diagnosis and follow-up and treatment as necessary. Approximately 1,000 offspring are to be examined on this contract.

PROPOSED COURSE: The contractor will establish standard definition of eligibles and develop suitable approaches to elicit eligibles through information campaigns to physicians and general public via mass media. Evaluation will be performed and reported.

PROGRESS: A total of 585 participants have been entered as of March 1976. Of these, 508 are active participants with 374 having documentation of DES exposure in utero. Prenatal record review process has been used to obtain participants. Consent forms have been utilized.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. funds n.a.

2.0634,

JAPAN-HAWAII CANCER STUDY

A.M. Nomura, Kuakini Medical Center, *347 N. Kuakini St., Honolulu, Hawaii* 96817

The objective has been to use the Japanese migrating to Hawaii for epidemiological studies of host characteristics and environmental factors in site-specific cancers with special attention to stomach, large bowel, prostate and breast. To elaborate leads obtained through case-control studies a cohort of about 10,000 Hawaiian Japanese (originally assembled by NHLI for studies of cardiovascular disease) has been examined and remains under active surveillance for morbidity and mortality experience. Surveillance includes autopsies of cohort members (35-40 percent of all deaths).

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. $783,993

2.0635,

CORRELATION OF EPIDEMIOLOGIC AND METABOLIC PARAMETERS

S.L. Romney, Yeshiva University, Bronx Campus, Albert Einstein School of Medicine, Dept. of Obstetrics & Gynecology, *1300 Morris Park Ave., Bronx, New York* 10461

This project will be coordinated with other DNCP projects in epidemiology and also with associated clinical and laboratory investigations. These studies will be oriented to further defining known or suspected dietary links to cancer through correlation of body pools of specific compounds and dietary intake with the incidence of carcinogenesis. The Contractor will collect data on dietary and nutrient intake and associated metabolic information for 'at risk' population groups. The Contractor may be required to provide various biological samples and specimens for possible collaborative analysis by other researchers.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. $231,761

2.0636,

SUPPORT SERVICES FOR FIELD STUDIES

A. Toledo, Westat Inc., Research Division, *11600 Nebel St., Rockville, Maryland* 20852

The Epidemiology Branch of the National Cancer Institue conducts studies to define the distribution and determinants of cancer in man. The objectives of this contract are to provide technical (non-professional), managerial, and clerical support for the field studies directed by the Epidemiology Branch. The contractor will function in purely supportive role, carrying out specific tasks, whenever requested, anywhere within the United States.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. funds n.a.

2.0637,

EPIDEMIOLOGY OF PRE- AND POST-MENOPAUSAL BREAST CANCER

R.S. Paffenbarger, University of California, Berkeley Campus, School of Public Health, Dept. of Biomedical & Environmental Health Sciences, *Berkeley, California* 94720

Study retrospectively (by case-control) at least 500 pre-menopausal and at least 1000 post-menopausal cases, together with appropriate controls, defining epidemiologic characteristics with precision for all groups. Conduct the study across socio-cultural groups with difficult risk levels, using established methods of obtaining standard epidemiologic information. Special emphasis can be placed on exogenous estrogen intake and on behavioral information, at the investigator's discretion. Analyze the data by recognized and defined biostatistical methods, classifying pre-, perip-, and post-menopausal women as separate groups.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. $89,276

2.0638,

EPIDEMIOLOGY OF MEDULLARY AND LOBULAR BREAST CANCER

P.P. Rosen, Memorial Sloan Kettering Cancer Center, *1275 York Ave., New York, New York* 10021

The primary objective is to compare risk factors for the less common histologic types of breast cancer, such as lobular and medullary cancers with the more common infiltrating ductal types which comprise approximately 80% of breast cancers in the United States. Preliminary epidemiologic data is suggesting that the less common types of breast cancer may have some epidemiologic characteristics of their own. Although lobular and medullary breast cancers are relatively rate, it is conceivable they may fit into epidemiologically definable patterns.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. funds n.a.

2.0639,

EPIDEMIOLOGY OF PRE- AND POST-MENOPAUSAL BREAST CANCER

D.C. Deubner, Duke University, School of Medicine, Dept. of Community & Family Medicine, *Box 3711, Durham, North Carolina* 27710

This study consists of 00 breast cancer patients undergoing surgery at hospitals, 800 age-race matched surgical, medical or family practice patients not having breast or gynecological surgery at the same hospitals, and 1800 subjects from the community. Data collection is by interviews and review of hospital charts. Laboratory studies on tissue and serum from patients will include quantitative estrogen and progesterone receptor determinations, evaluation of histology and ultrastructure by a standardized protocol, and estrogen and progesterone serum determinations. Statistical analyses will estimate the relative strength of association between breast cancer in pre- and post-menopausal women and such factors as age of menarche, first delivery, obesity, and family history of breast cancer. Associations between risk factors and tumor cell biology and morphology will be sought by comparing the laboratory results in women with and without single or multiple risk factors.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. $279,700

2.0640,

EPIDEMIOLOGY AND ANTIMICROBIAL PROPHYLAXIS OF INFECTION

L.S. Young, University of California, Los Angeles Campus, School of Medicine, Dept. of Medicine, *2025 Zonal Ave., Los Angeles, California* 90024 (P01 CA 15688-060023)

This project is part of a broader program (CA 15688).

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. funds n.a.

2.0641,

BIOSTATISTICAL CONSULTING AND SUPPORT

J.J. Crowley, University of Wisconsin, Madison Campus, Center for the Health Sciences, *500 Lincoln Dr., Madison, Wisconsin* 53706 (P30 CA 14520-070052)

This project is part of a broader program (CA 14520).

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. funds n.a.

2.0642,

EPIDEMIOLOGIC STUDIES OF FELINE LEUKEMIA VIRUS

W.D. Hardy, Sloan Kettering Inst. for Cancer Research, *410 E. 68th St., New York, New York* 10021 (P30 CA 08748-146807)

This project is part of a broader program (CA 08748).

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. funds n.a.

2.0643,

EPIDEMIOLOGY AND STATISTICS

A.H. Owens, Johns Hopkins University, School of Medicine, Dept. of Medicine, *725 N. Wolfe St., Baltimore, Maryland* 21205 (P30 CA 06973-160031)

This project is part of a broader program (CA 06973).

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. funds n.a.

2.0644,

CANCER EPIDEMIOLOGY

F.P. Li, Sidney Farber Cancer Center Inc., *44 Binney St., Boston, Massachusetts* 02115 (P30 CA 06516-160012)

This project is part of a broader program (CA 06516).

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. funds n.a.

2.0645,

EPIDEMIOLOGY OF TESTICULAR CANCER

A. Morrison, Harvard University, Boston Campus, School of Public Health, Dept. of Epidemiology, *55 Shattuck St., Boston, Massachusetts* 02115 (P01 CA 06373-180014)

This project is part of a broader program (CA 06373).

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. funds n.a.

2.0646,

STUDY OF HODGKIN'S DISEASE

B. MacMahon, Harvard University, Boston Campus, School of Public Health, Dept. of Epidemiology, *55 Shattuck St., Boston, Massachusetts* 02115 (P01 CA 06373-180008)

This project is part of a broader program (CA 06373).

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. funds n.a.

2.0647,

ENVIRONMENTAL AND CANCER EPIDEMIOLOGY (HUMAN)

R.E. Albert, New York University, School of Medicine, Dept. of Environmental Medicine, *550 1st Ave., New York, New York* 10016 (P30 CA 13343-070019)

This project is part of a broader program (CA 13343).

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. funds n.a.

2.0648,

EVALUATING EXPOSURE OF MINERS TO RADON WITH LEAD-210

M.E. Wrenn, New York University, School of Medicine, Dept. of Environmental Medicine, *550 1st Ave., New York, New York* 10016 (P30 CA 13343-070017)

This project is part of a broader program (CA 13343).

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. funds n.a.

2.0649,

T-NEMC CANCER CENTER SUPPORT (CORE) GRANT

D.J. Marchant, Tufts University, Boston Campus, New England Medical Center Hospital, *171 Harrison Ave., Boston, Massachusetts* 02111 (P30 CA 23776-01S1)

Eleven core functions to support the Basic Science Core Facility, Radiation Oncology, several Cancer Training Programs and Cancer related research programs at the Tufts-New England Medical Center. Four Programs are submitted under Developmental Funds. The proposed core functions are: (1) Administration: a) Director's Office; b) Tumor Registry. (2) Basic Science Core Facility. (3) Radiation Oncology: a) Radiobiology Division: 1. Scanning Electron Microscopy; 2. Laser Raman Spectroscopy. b) Physics Division: 1. MUMPS Computer Laboratory; 2. Image Processing Laboratory. (4) Biostatistics. (5) Epidemiology. (6) Department of Pathology - Immunohistochemical Localization Techniques. (7) Medical Oncology: a) Lymphocyte Typing Laboratory; b) Clinical Bed Unit.

Developmental Funds: (1) Department of Medicine - Inflammatory Bowel Disease in Colon Carcinoma; (2) Department of Surgery - Surgical Oncology; (3) Department of Obstetrics and Gynecology - GOG Protocols in Pelvic Cancer; (4) Department of Pathology - Production of Serologic Reagents.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. $11,022

2.0650,

RETROSPECTIVE COHORT MORTALITY STUDY OF PRIESTS

S.D. Kaplan, S R I International, *333 Ravenswood Ave., Menlo Park, California* 94025 (R01 CA 23657-02)

The mortality experience of a cohort of approximately 10,000 active and retired Roman Catholic priests

will be examined. Under the hypothesis of sexual intercourse as a risk factor for cancer of the prostate, this cohort would be a low risk group. The collected data will be analyzed by a modified life table program. Cause-specific standardized mortality ratios will be calculated with particular emphasis on those for prostatic cancer.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. $20,729

2.0651,

A PROSPECTIVE COHORT FOR RISKS IN BREAST CANCER

F.E. Speizer, Harvard University, Boston Campus, Peter Bent Brigham Hospital, *721 Huntington Ave., Boston, Massachusetts* 02115 (R01 CA 23645-03)

This investigation is designed to follow prospectively a cohort of approximately 120,000 women, ages 30-54, in whom exposure to oral contraceptives, estrogens, cigarette smoking, and hair dyes has been documented. Morbidity and mortality for a variety of cancers, including breast, endometrial, ovary, lung, and other cancers, as well as cardiovascular events, benign breast disease, and other benign obstetric and gynecologic events such as infertility and outcome of pregnancies will be followed. The approach is by mail questionnaire with further documentation of events by review of hospital records and pathologic specimens.

The cohort was defined from the register of Registered Nurses collected by the American Nurses Association in 1972 and recorded at that time as being married women. Those women who on January 1, 1976, were between the ages of 30-55 and who responded to an inquiry in 1976 which collected - besides data mentioned above - information on menstrual history, height, weight, current contraceptive status and family history of myocardial infarction and breast cancer in female relatives constitute the cohort. In adddition, an estimate of social class status at age 16, based on parental occupations, was obtained. second questionnaire was mailed in June 1978. Over 100,000 responses have been received, and these data are being assessed for developments.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. $355,729

2.0652,

EXPLORATORY STUDIES IN CANCER PATIENT DATA CONTROL

R.M. Elashoff, University of California, Los Angeles Campus, School of Medicine, Dept. of Biomathematics, *2025 Zonal Ave., Los Angeles, California* 90024 (R10 CA 23636-02)

During the first eight months of the initial grant year, we have transmitted to SAQC complete data on the Minimal Dataset and have almost completed planning on modifications on our current computer system to transmit data in the efficient way of data tapes to SAQC. Also, we have reviewed and suggested protocol changes for CCPDS planned clinical studies and have explored use of CCPDS in health services mode.

Our largest time commitments had to be spent on changes to our present computer system. These changes are based in off-the-shelf software modules in which some UCLA written programs will be developed. The entire system will be reliable, portable and minimally idiosyncratic to UCLA. The next grant period will see a near-operational computer system in place.

An additional major effort during the next grant year is to try to get clinical and/or epidemiological and/or health services research proposals using CCPDS completed.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. $101,191

2.0653,

IMMUNOPATHOLOGY OF X-LINKED LYMPHOPROLIFERATIVE SYNDROME

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Our objective is to study the immunopathology of the X-linked recessive lymphoproliferative syndrome (XLP) which is expressed phenotypically as diverse lymphoproliferative disorders: acquired agammaglobulinemia, fatal infectious mononucleosis, or malignant lymphoma. Three comprehensive approaches are proposed: (1) Develop a registry to ascertain the prevalence, delineate phenotypic expressions, and develop diagnostic criteria. Cases will be ascertained by referrals and review of medical literature and cases in tumor registries and in pediatric and general hospitals. (2) Patients with the XLP will be evaluated for general immunocompetence using clinical, hematopathological and immunological and virological techniques. Blood, bone marrow, biopsy and autopsy specimens will be studied intensively using the above techniques. Males with XLP are probably immunodeficient to Epstein-Barr virus (EBV) and hence, we will test our hypothesis by demonstrating: a) spontaneous outgrowth of EBV-infected B cells in vitro; b) EBV shedding in saliva; c) failure to develop antibody to EBV; and d) abnormal autologous T cell responses to B cells infected by EBV in vitro. Testing is important diagnostically and could identify the immunopathogenetic mechanisms of the XLP. (3) Genetic screening for affected males with XLP and female carriers is being done by studying the Xga blood group and oculocutaneous markers, measuring general and EBV-specific immunocompetence, and detecting abnormal lymphocytes with heteroantisera raised to lymphocytes of patients and HLA-matched female siblings. Karyotyping of lymphoblastoid cell lines of patients will determine whether chromosomal breakage and marker chromosomes occur following infection by EBV in males with XLP. The development of a repository of their frozen sera, saliva and cultured lymphoblastoid cells for future studies is another objective of our study.

BIBLIOGRAPHIC REFERENCES: Purtilo, D.T., Hutt, L.M., Allegra, S., Cassel, C., and Yang, J.P.S.: Immunodeficiency to the Epstein-Barr Virus in the X-Linked Recessive Lymphoproliferative Syndrome. Clin. Immunol. Immunopath., 9: 147-156, 1978. Purtilo, D.T., Paquin, L.A. and Gindhart, T.: Genetics of Neoplasia: Impact of Ecogenetics on Oncogenesis. Amer. J. Path., 91: 609-688, 1978.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. $128,364

2.0654,

CASE-CONTROL STUDY OF MALIGNANT MELANOMA

A.K. Bahn, University of Pennsylvania, School of Medicine, Dept. of Research Medicine, *36th & Hamilton Walk, Philadelphia, Pennsylvania* 19174 (R01 CA 23544-01A1)

This is a two-year case-control study of 225 cases and matched controls resident in Northern New Jersey. All white males between the ages of 30 and 64 years in the selected counties with a diagnosis of malignant melanoma who were first diagnosed between July 1, 1978, and December 30, 1980, will be eligible as cases. Age-sex-race population matched controls will be selected.

Information obtained from records of private dermatopathology laboratories and hospital pathologist records will be used to determine cases aided by the New Jersey, New York and Pennsylvania cancer registers. All cases will be ascertained as malignant melanoma by a board certified dermatopathologist. Home interviewing of cases and controls will obtain information on: residence history, work exposure history (particularly to chemical substances), sun exposure, history of cancer in the family and history of chloracne dermatitis.

Preliminary work has provided suggestive evidence of a large relative risk of malignant melanoma among workers exposed to polychlorinated biphenyls (PCBs) and other chemicals. New Jersey has been selected as the locale for the study because this state has the largest number of workers in chemical and related industries in the nation and because high melanoma mortality rates (for an area outside the South) have been noted among males.

Investigation will be carried out to determine if there are significant differences between cases and controls in exposure to chemical substances, exposure to sunlight, or a previous history of chloracne dermatitis.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. $112,973

2.0655,

CERTIFICATION OF CANCER RELATED DEATHS

G.C. Myers, Duke University, Center for Demographic Studies, Dept. of Sociology, *Durham, North Carolina* 27706 (R01 CA 23399-02)

An evaluation of the accuracy of death certificate diagnosis of cancer for the state of North Carolina during 1975-1977 is conducted by matching such diagnosis with information gathered from hospital records. A major purpose of the study is to determine not simply whether cancer was present or absent at death, but to investigate the nature of the contribution of cancer to death, especially vis a vis other associated chronic illnesses (e.g., diabetes, heart disease, and stroke). Also the significant clinical events in the natural history of cancer caused deaths will be studied. The intent is to determine the completeness of death certificate diagnosis of major complications of the cancer underlying cause of death. In addition an analysis will be made of the appropriateness of the selection of cancer as the single underlying cause of death in the NCHS produced national mortality data. Analyses will examine the variation of the diagnostic accuracy and clinical significance of deaths reported as caused by cancer in national vital statistics data across a number of variables of interest (e.g., sex, race, age, cancer type, assocated chronic conditions, institution types and residence).

BIBLIOGRAPHIC REFERENCES: Manton, K.G., and Stallard, E.; A Two-Disease Model of Female Breast Cancer: 1969 U.S. White Female Breast Cancer Deaths, Journal of the National Cancer Institute (In Press, 1979).

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. $182,972

2.0656,

EPIDEMIOLOGY OF MYELOMA AND LYMPHOCYTIC LEUKEMIA

N.S. Weiss, Fred Hutchinson Cancer Research Center, *1124 Columbia St., Seattle, Washington* 98104 (R01 CA 23350-01S1)

We propose a collaborative case-control study to identify and evaluate risk factors for multiple myeloma and chronic lymphocytic leukemia. Cases of these diseases will be identified through population-based cancer registries in Washington State, Utah, Detroit and Atlanta, over a three-year period. Control subjects will be identified from the general populations from which the cancer cases arose. Probability sampling methods, such as area sampling and random digit dialing, will be used for selection of controls. Cases and controls will be interviewed with particular attention to variables related to chronic antigenic stimulation, e.g., past illnesses, allergies, drugs, etc. We will also obtain detailed residence and occupational information in an attempt to generate new etiologic hypotheses.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. $85,806

2.0657,

CANCER CONTROL OUTREACH PROGRAM AT FOX CHASE

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The objective of this program is to expand the current cancer control activities of The Fox Chase Cancer Center. A primary goal is to develop new outreach projects, interacting with segments of the medical community and the public in ways which are designed to ultimately benefit overall care and rehabilitation of the cancer patient. Demonstrations programs as well as continuing education for health professionals and cancer-related health education for the general public will be transmitted by multidisciplinary teams operating through a network of affiliated community hospitals, primary health care centers and private physicians. The program design permits an individualized approach to each element of the network, based on needs and resources of the faculty and the community.

BIBLIOGRAPHIC REFERENCES: Ortega, J.A., Nesbit, M.E., Jr., Donaldson, M.H., Hittle, R.E., Weiner, J., Karon, M., and Hammond, D.: L-asparaginase, vincristine, and prednisone for induction of first remission in acute lymphocytic leukemia. Cancer Res. 37:535-540, 1977. Hyams, J.S., Donaldson, M.H. Metcalf, J.A. and Richard K. Root: Inhibition of Human granulocyte function by methotrexate. Cancer Research 38(3):650-655, 1978.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. $495,547

2.0658,

LUNG CANCER AND VITAMIN A

A. Lopez, Louisiana State University, Medical Center, School of Medicine, Dept. of Medicine, *1542 Tulane Ave., New Orleans, Louisiana* 70112 (R01 CA 23205-02)

The objective of this research project is to ascertain the relationship between vitamin A and lung cancer. This study is being carried out in Louisiana, a state known to have very high incidence of lung cancer. Preliminary analysis of available data (National Nutrition Survey and HANES) indicates a negative correlation between beta-carotene (precursor of vitamin A) and mortality rates due to respiratory system cancers and also with mortality from all neoplasms, but not with total deaths. We have also initiated case control studies in which dietary intakes and vitamin A concentration in hepatic tissue of patients who died of lung cancer will be compared with those in appropriate controls. Studies have also been started in living patients suffering from lung cancer. Serum level concentrations and dietary intakes of vitamin A are measured and compared with those from matched controls. The information to be obtained from these studies would provide evidence for the suggested relationship between vitamin A (and/or other nutritional factors) and lung cancer.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. $92,598

2.0659,

STUDIES OF CHILDHOOD SOLID TUMORS

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Cancer is the leading cause of death from disease in children past one year of age in this country. Significant improvement has resulted from treatment regimens designed for the most common form of childhood malignancy, acute lymphoblastic leukemia. While progress in cases of some of these solid tumors of children has been notable, such as in Wilms' tumor and Hodgkin's disease, the effectiveness of treatment regimens for most childhood tumors has been disappointing. In large part, the difficulties of disease control result from the fact that for many childhood tumors the disease has already disseminated beyond the site of origin at the time of diagnosis. Therefore, for most children with solid tumors a coordinated approach involving surgery, radiotherapy, and chemotherapy is necessary.

The role of chemotherapy is extremely important. To this end, this project will develop studies for neuroblastoma, osteosarcoma, and large bowel cancer, to investigate methods of improved therapy. Clinical and laboratory research will be brought to bear on these disease areas. In addition to these specific disease categories, there will be three general areas of research involving all patients with these tumors. These studies will include Phase I and II drug testing programs, altered drug pharmacokinetics, and epidemiology.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. $532,109

2.0660,

SECOND CANCERS IN PATIENTS WITH HODGKIN'S DISEASE

G.B. Hutchison, Harvard University, Boston Campus, School of Public Health, Dept. of Epidemiology, *55 Shattuck St., Boston, Massachusetts* 02115 (R01 CA 22849-03)

OBJECTIVES: To determine the long-range hazard, in terms of carcinogenesis, of radiotherapy and of chemotherapy used in treatment of Hodgkin's disease.

SPECIFIC AIMS: (1) To determine the incidence of second primary malignancies in patients treated with modern modalities for primary Hodgkin's disease. (2) To determine the variation in incidence of second primary malignancies by modality of therapy for primary Hodgkin's disease, comparing: (a) non-intensive radiotherapy; (b) intensive radiotherapy; (c) non-intensive chemotherapy; (d) intensive chemotherapy. (3) To determine the variation in incidence of second primary malignancies by time since initiation of therapy for Hodgkin's disease. (4) To determine the distribution by organ site of second primary malignancies.

METHODS: A cohort study is being conducted, using retrospective data on Hodgkin's disease patients diagnosed in 1940 to 1975 and followed to 1976 or death before 1976 and using prospective data on these same patients followed to 1980 and on patients newly diagnosed after 1975 and followed to 1980. It is planned to enroll 1000 patients diagnosed in 1940-69 and 1000 patients diagnosed in 1970-78. Patients with Hodgkin's disease are ascertained through registration records of four large cancer treatment centers.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. $39,681

2.0661,

CANCER AMONG HOUSEHOLD CONTACTS OF ASBESTOS WORKERS

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Cancer risk associated with exposure to asbestos is well established. The greatest risk is that suffered by workers; however, environmental exposure in the households of workers may also result in disease. While mesothelioma has been found among household contacts, quantitation of this risk has not been undertaken, nor is it known whether other asbestos-associated diseases (lung cancer, GI cancer) are also increased.

In another study, we have established the mortality experience of cohort of asbestos factory workers. In this investigation, we will study the mortality experience (1946-1980) of the family contacts of these asbestos factory workers, who resided in their households during the period of factory employment (1941-45). Some data are available concerning the levels of their exposure. In a preliminary study, we determined that the family cohort can be identified and traced, and that cause of death can be determined for those who have died.

In the first year of study, most household contacts of the index workers were identified and a determination of their vital status initiated. Utilizing records maintained as part of study of index workers and various tracing techniques, it has been possible for the field to identify all household contacts of 856 of 933 workers (92%). Of the 856 workers, 122 (14%) lived alone. For the remaining 734, 2,175 household contacts have been identified. 1,617 are reported to be alive and 558 are deceased. Death certificates have been obtained on 518 (93%) to date.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. $86,268

2.0662,

BIOMATHEMATICAL APPROACHES TO CANCER

A.G. Knudson, Inst. for Cancer Research, *7701 Burholme Ave., Philadelphia, Pennsylvania* 19111 (R01 CA 22780-02)

This is a multi-investigator project that applies mathematical and statistical methods to the etiology of cancer and to the elucidation of biological mechanisms relevant to cancer biology. (1) International data on the incidences of various human cancers are being compared with mathematical models that allow for growth of stem cells and the occurrence of two or more critical cancer mutations. (2) Selected international populations are being investigated for the development of hepatic cancer following infection with hepatitis B virus. Immune responses are monitored and the roles of congenital viral infection, nutritional status, and serum iron level evaluated. (3) Linear discriminant analysis is applied to data on the age-specific incidences of cancers of various kinds in rats as a function of early nutritional history. (4) Mathematical models are being developed that describe the population behavior of F' and F negative bacteria under conditions in which the plasmid can be acquired or lost. (5) The interactions of carcinogens with nucleic acids and of enzymes with substrates and metals are being studied by X-ray crystallography and NMR spectroscopy. Theoretical molecular models are built and 3-dimensional representations displayed graphically. (6) A mathematical analysis is being developed to permit the calculation of the number of molecules of a particular RNA species at a given time following viral infection. (7) Other projects include models for the study of antibody diversity, the analysis of family clusters, the mechanism of bacteriophage attachment, and the application of the thermodynamic theory of fluctuations to epigenetic variation in cell biology.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. $322,987

2.0663,

A PROSPECTIVE STUDY OF PERSONALITY AND RISK OF CANCER

R.B. Shekelle, Rush University, School of Medicine, Dept. of Preventive Medicine, *1725 W. Harrison St., Chicago, Illinois* 60612 (R01 CA 22536-03)

The Western Electric Health Study began as a prospective epidemiologic investigation of coronary heart disease in 1958 with examination of 2,107 male employees aged 40-55 years. The Minnesota Multiphasic Personality Inventory (MMPI) was included in the 1958 examination, the Cattell 16 Personality Factor Questionnaire in the 1959 examination, a social factors questionnaire in 1960, and the MMPI again in 1962. Questionnaires from participants of next-of-kin and death certificates will be used in 1978-79 to identify possible incident cases of cancer; medical and hospital and records will be reviewed for information about diagnosis, treatment, and course of the disease. A total of 246 incident cases are expected. Two separate hypotheses will be investigated: (1) that psychological depression, as measured by the scale in the 1958 MMPI, is associated with increased 20-year risk of cancer, and (2) that characteristic use of denial and repression, as assessed by Welsh's Factor R in the 1958 MMPI, is similarly related to increased risk of cancer. In addition, item analysis and discriminant analysis will be used to search for other aspects of personality that may be related to cancer incidence. Factors such as age, smoking habits, consumption of alcohol, and educational attainment will be taken into account. Analyses will be conducted for all cases of cancer together and, where numbers are adequate, for site-secific categories. The results of this study will help to establish whether previous findings concerning the association of psychologicl factors cancer were artifacts of the retrospective method or whether these previous findings, in fact, represent premorbid psychological characteristics of persons who develop cancer.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. $52,321

2.0664,

EPIDEMIOLOGY OF BRAIN TUMORS

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A case-control study of 230 patients and 230 'best friend or closest neighbor' controls is proposed to evaluate risk indicators of primary brain tumors (specifically histologically confirmed astrocytic tumors: astrocytoma, glioma, glioblastoma multiforme, medulloblastoma). Despite the fact that brain tumors are the primary source of cancer mortality in youth, that a variety of brain tumor risk factors have been suggested, and that experimental data exist linking brain tumor development to specific chemical carcinogens and oncogenic viruses, no large population-controlled study has been done to determine the risk factors of brain tumor. Through self-administered questionnaire and telephone interview, we propose to: 1. Determine the relationship between demographic characteristics and risk of glial tumors. 2. Evaluate the role of occupational and environmental exposures and risk. 3. Evaluate the role of trauma. 4. Evaluate the role of familial factors. 5. Evaluate the role of infection as a risk factor. Although this study is analytic in design, it is hypothesis-generating in nature. The unique availability of a patient population which includes 100 new astrocytoma patients per year and the active brain tumor research interests of the investigators have created a situation in which a valid study of the epidemiology of these tumors may be completed in an efficient and inexpensive manner.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. $64,490

2.0665,

BIOCHEMICAL STUDIES IN CHEMICAL CARCINOGENESIS

J.A. Miller, University of Wisconsin, Madison Campus, Medical School, Dept. of Oncology, *307 N. Charles St., Madison, Wisconsin* 53706 (P01 CA 22484-03)

The research supported by this program-project grant provides an integrated approach to the elucidation of the nature of the carcinogenic process. The studies in Drs. J.A. and E.C. Miller's group are primarily concerned with the early steps in the carcinogenic process, i.e., the nature of the ultimate carcinogenic derivatives, the identities of macromolecu-

lar adducts formed from them in vivo, and the consequences of the interactions of the carcinogens with DNA or other macromolecules. The research in Dr. Boutwell's laboratory seeks to elucidate the molecular nature of promotion, especially in mouse skin. Dr. H.C. Pitot and Dr. V.R. Potter are both analyzing aspects of the initiation and promotion of hepatic carcinogenesis. Both of these research groups are also analyzing aspects of the metabolic capacity of liver in cell culture as compared with that in the whole animal in relation to the controls introduced by various hormonal situations and other modifying agents. Dr. Poland's work has centered on the examination of the toxicity of 2, 3, 7, 8-tetracholor-p-dioxin, a compound of considerable interest in view of its high toxicity and the development of tumors in rats given very low doses.

BIBLIOGRAPHIC REFERENCES: Leopold, W. R., Miller, E. C., and Miller, J. A. Carcinogenicity of Anti-tumor cis-Platinum (11) Coordination Complexes in the Mouse and Rat. Cancer Res., 39: 913-918, 1979. Leopold, W. R., Miller, J. A., and Miller, E. C. S-Vinyl Homocysteine, an Analog of Ethionine That Is Highly Mutagenic for S. typhimurium TA100. Biochem. Biophys. Res. Commun., 88: 395-401, 1979.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. $637,477

2.0666,
MOLECULAR ANALYSIS OF MALIGNANT TRANSFORMATION

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We propose to investigate a range of questions regarding the transformation of cells to malignancy, the role of mutagens and anti-mutagens in this process, and the distinguishing molecular events associated with neoplasia. Efforts of the individual investigators will interdigitate with respect to research plans, joint experiments, literature review, and sharing of facilities used for these studies. The specific problems to be investigated are the following: I. Maintenance of chromosome stability: structure and function of the telomere. II. Quantitative assays of mutagenic and carcinogenic susceptibility of human cells. III. Protection of cells against neoplastic transformation using agents that alter DNA repair processes. IV. Studies of transformation-sensitive cell surface proteins. V. The role of platelet wound hormone in transformation, cellular quiescence, and epithelial cell growth. The methodologies to be applied include tissue culture, cell implantation in athymic (nude) mice, recombinant DNA, biochemical methods for studies of DNA and protein, autoradiography and other radioactive tracer methods, and isolation and characterization of mutated and transformed cells.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. $242,114

2.0667,
A PILOT DEMONSTRATION DETECTION PROGRAM

V.F. Greco, Community Cancer Corp. of Luzerne County, *Box 1345, Wilkes Barre, Pennsylvania* 18703 (R18 CA 22190-01)

The pilot detection program is the first effort in implanting a cancer control plan, begun by area physicians several years ago and supported in part by a Cancer Center Planning grant. The program proposes to use specially trained nurse clinicians to perform screening tests and examinations in Luzerne County, Pennsylvania. During the three-year program, nurses will be recruited from the community, trained at Hahnemann Oncologic Institute, and will perform complete screening examinations in two-hospital based clinics. A projected population of 10,944 people over the age of 40 will be screened for cancer of the mouth, throat, cervix, prostate, breast, skin, and rectum.

Demonstration pilot efforts include the training and utilization of nurse clinicians in this unique fashion, studying variables in patient participation, acceptance of nurse clinicians by both patients and physicians, examining the validity and reliability of this form of community based cancer screening, analyzing cost variables and the progressive development of programmatic self-support by the community. The pilot is further designed to encourage the introduction of a single county tumor registry and to encourage additional epidemiologic research in future years, although funds are not requested for these purposes here.

The applicant is the Community Cancer Corporation of Luzerne County (CCC), a new non-profit corporation which has been created to plan and manage this and other cancer related service projects. The corporation and indeed this pilot request are an outgrowth of the extremely high incidence of cancer in the county, the high degree of physician and community support for the project and the potential applicability of the pilot to other similar regions of the country.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. $121,746

2.0668,
THE EPIDEMIOLOGY OF MULTIPLE MYELOMA

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The major objective of this case-control study is to learn more about the epidemiology of multiple myeloma (MM). Surprisingly little is known about the epidemiology of MM, available information is dated, and there are few etiologic hypotheses. To our knowledge, this will be the first case-control study specifically involving MM cases.

The study will have 2 major components, a medical record review of 450 MM cases and an interview study of an additional 150 MM patients, both components involving matched hospital controls. In addition to examining for associations with available demographic variables, associations between MM and socioeconomic class (S-E), occupation, environmental exposures, diet, and diseases causing 'immune stimulation' will be evaluated. Particular attention will be paid to evaluation of the association between S-E class and MM. Paradoxically, MM is reported as being positively associated with high S-E class whereas incidence rates are twice as high in blacks as in whites.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. $50,628

2.0669,
CANCER CENTER PATIENT DATA SYSTEM PROPOSAL

J.W. Steiner, Illinois Cancer Council, *36 S. Wabash Ave., Suite 700, Chicago, Illinois* 60603 (R10 CA 21898-03)

The objective of this proposal is to develop a centralized statistical data base for the Illinois Comprehensive Cancer Center. The data base will contain a standard set of items that are uniformly defined and coded with a standard coding scheme on all patients of the Center, and will enable participation by investigators associated with the Illinois Cancer Council in cooperative research protocols. The proposed work will also provide a base of support for the development of a regional multi-faceted data base, linked by a uniform patient index combining data on all cancer patients in the region participating in ICC projects including the CCPDS, regional and national protocols, and case-control studies of etiology and/or cancer control initiatives.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. $121,789

2.0670,
CASE STUDY OF CANCER IN SOUTHERN LOUISIANA

P. Correa, Louisiana State University, Medical Center, School of Medicine, Dept. of Pathology, *1542 Tulane Ave., New Orleans, Louisiana* 70112

The Contractor will work with NCI and EPA in the conduct of case-control studies to test hypothesis about cancer risk. Assist in the design of these studies and will assume complete responsibility for their administration and day-to-day conduct. Edit and computerize the collected information and jointly conduct statistical analyses of the data with NCI and EPA Staff. Thus, the Contractor will serve as a collaborator, contributing to decisions concerning the design and analysis of the epidemiologic study, and managing and performing its actual conduct.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. $184,440

2.0671,
STUDIES OF RADIATION-INDUCED CANCER

C.E. Land, U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst., Field Studies & Statistics Section, *9000 Rockville Pike, Bethesda, Maryland* 20205 (Z01 CP 04481-03 EEB)

The objective of this project is to examine cancer incidence and mortality among populations exposed to ionizing and non-ionizing radiation, especially at low dose levels. Groups studied include Japanese A-bomb survivors, patients exposed to diagnostic and therapeutic radiation, workers with histories of occupational exposures to radiation, and the populations of SEER reporting areas with different levels of solar UV radiation. The listed project members all have individual research interests in radiation-induced cancer. In addition, project members have served on committees and task forces of DHEW, EPA, DOE, NIH, and NCI formulating government responses to current problems associated with health effects of ionizing radiation.

BIBLIOGRAPHIC REFERENCES: Boice J.D., Land C.E.: Adult leukemia following diagnostic X-rays? (Review of a report by Bross, Ball, and Falen on a tri-state leukemia survey). Am J Public Health 69: 137-145, 1979. Land C.E., McGregor D.H.: Breast cancer incidence among atomic bomb survivors: Implications for radiobiologic risk at low doses. J. Natl. Cancer Inst. 62: 17-21, 1979.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. funds n.a.

2.0672,
STUDIES OF OCCUPATIONAL CANCER

A.E. Blair, U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst., Occupational Studies Section, *9000 Rockville Pike, Bethesda, Maryland* 20205 (Z01 CP 04480-03 EEB)

This project concerns the identification of cancer patterns within occupational groups that may reflect exposures in the work environment and investigation of methodological issues in occupational studies. Study groups are selected for a variety of reasons including 1) known or potential exposure to established or suspect carcinogenic substances, 2) prior case reports and studies suggesting an unusual cancer experience for the group, 3) requests by outside institutions and 4) availability of useful resources. Resources used include employment and death records maintained by companies; membership and death listings maintained by labor unions and professional organizations; and records from state or federal agencies. Studies during the past year include cohort mortality studies of persons employed in dry cleaning, non-agricultural pest control, chemical plants, non-ferrous smelters, taconite mines, and jewelry manufacturing. Proportionate mortality studies being conducted involve pharmaceutical workers, tobacco workers, petrochemical workers, pottery workers, chromate painters, fur dyers, veterinarians, metal platers, and embalmers. Death certificates are used to investigate occupational origins of leukemia and multiple myeloma, and cancers of the prostate and colon.

BIBLIOGRAPHIC REFERENCES: Blair, A., Decoufle, P., Grauman, D. Causes of death among laundry and dry cleaning workers. Am. J. Public Health 69: 508-511, 1979. Decoufle P. Cancer risks associated with employment in the leather and leather products industry. Arch. Environ. Health 34: 33-37, 1979.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. funds n.a.

2.0673,
RELATION OF PREMORBID PSYCHOLOGICAL FACTORS TO CANCER INCIDENCE

B.H. Fox, U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst., Field Studies & Statistics Section, *9000 Rockville Pike, Bethesda, Maryland* 20205 (Z01-CP-04414-04-B)

The association of premorbid psychological factors (PPF) -- stress, personality, social environment -- and cancer incidence and mortality has often been reported as present, and occasionally as absent. A theoretical examinaton of the issues in this field was carried out, pointing to possible flaws in the design of most studies, with resulting questions about their conclusions. It further emphasized the need for prospective work. In the present two prospective studies, each member of a cohort, presumed initially without

cancer, will have produced PPF data on entry (1930's to 1960's, and 1958, respectively). Follow-up of cancer death and incidence is in progress and PPF will be related to them. 17-year follow-up of the St. Luke's cohort has yielded the following relationship: Those whose highest score on the MMPI was the depression scale score had a relative risk greater than 2 compared with others in the cohort. The hypothesis that anxiety and depression are related to cancer was not upheld. The theory of the relationship of PPF and cancer is being further pursued in the areas of immune function, life stress, and competing risk.

BIBLIOGRAPHIC REFERENCES: Fox, B.H. Premorbid psychological factors as related to cancer incidence. J. Behavioral Med. 1: 45-133, 1978. Fox, B.H. Sress and cancer. Behavioral Med. 6(6): 19, 1979.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. funds n.a.

2.0674,

SUICIDE AMONG CANCER PATIENTS

B.H. Fox, U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst., Field Studies & Statistics Section, *9000 Rockville Pike, Bethesda, Maryland* 20205 (Z01 CP 04413-04 FSS)

Suicide rates among cancer patients were determined from the Connectict SEER Cancer Registry and compared with age-matched Connecticut State suicide rates to estimate relative risks. Among male cancer patients a two-fold risk was found, but no excess risk for females. For men, a larger risk appeared the first few years after diagnosis than later. Preliminary data, only partially controlled for other variables, suggest slightly higher risk for ever married than never married, and clearly higher risk among patients with metastasized than in those with localized tumors. Slightly greater risk appears in surgical patients than in those treated otherwise.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. funds n.a.

2.0675,

CANCER SURVEILLANCE, EPIDEMIOLOGY, AND END RESULTS REPORTING (SEER) PROGRAM

E.S. Pollack, U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst., Biometry Branch, *9000 Rockville Pike, Bethesda, Maryland* 20205 (Z01 CP 04254-05 B)

Data on cancer patients diagnosed from year of entry in the SEER Program through 1976 (1973-76 for most participants) were submitted to the NCI by all eleven participants in December 1977. Analysis of cancer incidence revealed considerable variability across all eleven areas. Cancer mortality rates for the total SEER Program are virtually identical with those for the entire U.S. Short-term survival rates for some of the major sites of cancer are amazingly uniform across SEER locations. The SEER Program has been reorganized within the Biometry Branch with a view toward making its operation more effective.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. funds n.a.

2.0676,

STUDIES OF THERAPEUTIC END RESULTS AND PROGNOSTIC FACTORS

M.H. Myers, U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst., Biometric Research & Analytic Studies Section, *9000 Rockville Pike, Bethesda, Maryland* 20205 (Z01 CP 04257-22 B)

Ten year follow-up results from the HIP study of screening for breast cancer have shown that the screened group experienced 1/3 less mortality from breast cancer than the control group. This reduction appeared to be concentrated in women over 50. The associations of cancer incidence with income and education were studied. Among whites, strong negative associations were observed for esophageal, stomach, lung and cervical cancer with positive associations for colon, bladder and breast cancer. An analysis of TNCS and SEER data showed that for white males the incidence rate of mesothelioma has increased in recent years. The development of methodology for the evaluation of screening programs has demonstrated new age dependent characteristics of lead time and length bias. Appropriate variables to use in the analysis of randomized screening trials were defined. A study of suicides among cancer patients indicated that male patients were at twice their expected risk of suicide while females were not at excess risk. The relationship of the levels of selected urinary steroid metabolites to breast cancer recurrence subsequent to radical mastectomy was studied: relationships were observed only for postmenopausal patients.

BIBLIOGRAPHIC REFERENCES: Cutler, S.J., Myers, M.H., Steinhorn, S.C. and Flannery, J.T.: Gains in cancer treatment in the 1970's. Tufts Medical Alumni Bulletin, Tufts University School of Medicine, Medical Alumni Weekend & Reunion Days, Boston, Massachusetts, April 26-29, 1979. (In Press). Li, F.P., Myers, M.H., Heise, H.W. and Jaffee, N.: The course of 5-year survivors of childhood cancer. The J Pediatr. 93: 185-187, 1978.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. funds n.a.

2.0677,

CASE-CONTROL STUDIES OF SELECTED CANCER SITES

R.N. Hoover, U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst., Environmental Studies Section, *9000 Rockville Pike, Bethesda, Maryland* 20205 (Z01 CP 04501-02 EEB)

The purpose of this project is to utilize the case-control, interview methodology to do in-depth evaluations of specific cancer sites. By the nature of this method, the exposures evaluated include many of the exposure categories under which other Branch studies are listed; however, either because there are numerous etiologic hypotheses to be tested, or because a tumor deserves an in-depth evaluation in an attempt to generate hypotheses, these types of studies cover a number of different exposure categories, and are therefore considered a separate program area.

BIBLIOGRAPHIC REFERENCES: Brinton, L.A., Williams, R.R., Hoover, R.N., Stegens, N.L., Feinleib, M., Fraumeni, J.F., Jr.: Breast cancer risk factors among screening program participants. J. Natl. Cancer Inst, 62: 37-43, 1979.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. funds n.a.

2.0678,

ANALYSIS OF FACTORS THAT MAY CONTRIBUTE TO ESTROGEN TARGET ORGAN CARCINOGENESIS

M.R. Green, U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst., Protein Section, *9000 Rockville Pike, Bethesda, Maryland* 20205 (Z01 CP 05074-01 LMC)

The purpose of this project is to analyze factors which contribute to the susceptibility of estrogen-producing tissue and estrogen target tissue to cancer. Metabolic and environmental factors that are suspect on the basis of epidemiological findings in man and investigations in animals are studied.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. funds n.a.

2.0679,

STUDIES OF CANCER INCIDENCE AND MORTALITY AND RELATED ETIOLOGIC FACTORS

E. Pollack, U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst., Biometry Branch, *9000 Rockville Pike, Bethesda, Maryland* 20205 (Z01 CP 04258-11 B)

During the past year, research on stomach cancer and precursor lesions continued in Japan, Hawaii and Colombia. Research also continued on colorectal cancer in these same areas. International trends in cancer mortalty were analyzed for 42 countries using data from WHO for the time period 1950-1974. Cancer mortality among the Chinese in the United States was examined for the period 1968-1972 and compared with data from 1959-62. The mortality experience of clergymen in five Protestant denominations has been studied and a comparison made between U.S. Episcopalian and British Anglican clergymen. Cancer mortality among Japanese in the United States is being studied at the present time. The Norwegian migrant studies are continuing and a concerted effort is being made to analyze a large set of data in Norway which is expected to produce more useful information on important dietary factors related to gastrointestinal cancers.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. funds n.a.

2.0680,

CONSULTATION ON CLINICAL TRIALS

D.P. Byar, U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst., Clinical & Diagnostic Trials Section, *9000 Rockville Pike, Bethesda, Maryland* 20205 (Z01 CP 04260-19 B)

The purpose of this project is to provide consultative services in statistical and epidemiological methodology in the design, interpretation, and evaluation of clinical trials and other studies requiring this kind of expertise. For some trials the section provides full statistical support including development of detailed study plans, randomization of patients, collection, processing, editing, and analysis of data, and preparation of scientific papers. At present, members of the section are involved in studies concerned with prostate cancer, bladder cancer, lung cancer, thyroid cancer, breast cancer, testicular cancer, and Mycosis fungoides. Other major consultative activities include membership on advisory committees, grant and contract funding review committees, and review of scientific articles concerned with clinical trials.

BIBLIOGRAPHIC REFERENCES: Byar, D.P., Sears, M.E., and McGuire, W.L.: Relationship between estrogen receptor values and clinical data in predicting the response to endocrine therapy for patients with advanced breast cancer. Eur. J. Cancer 15: 299-310, 1979. Ellison, N.M., Byar, D.P., and Newell, G.R.: Special report on Laetrile: The NCI Laetrile review. NEJM 299: 549-552, 1978.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. funds n.a.

2.0681,

CANCER PATIENT DATA CONTRIOL EXPLORATORY STUDIES

S.H. Walker, Colorado Regional Cancer Center Inc., *1655 Lafayette St., Suite 301, Denver, Colorado* 80218 (R10 CA 21878-03)

The objective of this project is to develop an operational plan and mechanisms for the Colorado Regional Cancer Center Data Control System to include standardized input of statistical data, computerized processing, quality control procedures, statistical analysis, and reporting. The Data Control System will facilitate evaluation of Cancer Center activities, provide the capability of sharing data with other Cancer Centers, and support epidemiological and clinical research activities in institutions affiliated with the Colorado Regional Cancer Center, Inc. Activities will support the establishment of the 'Statistical Data Base of a Comprehensive Cancer Center,' as specified in objectives established by the National Cancer Advisory Board for the Cancer Centers Program. Assessing patient load, referral patterns, incidence and etiology of various neoplasms, and effectiveness of treatment programs in numerous institutions will be facilitated by implementation of the Data Control System.

BIBLIOGRAPHIC REFERENCES: Franz, L.W., Ferguson, S.W., Sutherland, J.V., Berg, J.W. and Walker, S.H. (1978) Cancer in Colorado. American Cancer Society, Colorado Affiliate, March 1978. In press.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. $96,340

2.0682,

CLASSIFICATION AND ETIOLOGY OF CHILDHOOD BRAIN TUMORS

A. Leviton, Childrens Hospital Medical Center, *300 Longwood Ave., Boston, Massachusetts* 02115 (R01 CA 21819-03)

This is a case-control epidemiologic study of brain tumors occurring in children. Cases are those children (ages 1 day to 16 years) with a brain tumor who reside in the catchment area of eight "cancer' registries included in the S.E.E.R. program. Three controls will be selected for each case by random digit dialing, matching for age, (plus or minus 3 years), sex and race. A one and one-half hour long questionnaire will be administered to both parents by an interviewer in the parents' home. The questionnaire includes requests for information about demographic features, parents' exposure to possible teratogens

and mutagens, familial history of tumor and birth defects, and exposure to infectious agents. During this project, questionnaires will be completed for approximately 400 cases and 1,200 controls. This sample size is expected to be sufficient for the study of two of the most common (groups of) tumors (cerebellar gliomas and medulloblastomas).

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. $140,227

2.0683,

A CANCER CENTER EPIDEMIOLOGY BIOSTATISTIC UNIT

M.D. Keller, Ohio State University, Columbus Campus, School of Medicine, Dept. of Prev Med, *370 W. 9th Ave., Columbus, Ohio* 43212 (R10 CA 21751-03)

The OSUCCC is developing an Epidemiologic/Biostatics Laboratory whose internal and external data systems will be compatible with the National and Local cancer patient data systems. This Minimum Cancer Patient Dataset (MCPD) will afford interchange and exchange of data and information with other National Cancer Centers based on the Computerized Cancer Patient Data System (CCPDS).

The local data and information storage will be designed to facilitate patient data retrieval, patient care and therapy, protocol evaluation, and epidemiologic and biostatical evaluation as well as functioning as a tumor registry for the OSU Hospitals and community hospitals incorporated into the data bank.

BIBLIOGRAPHIC REFERENCES: Reiches, N. An Epidemiologic Investigation of the Relationship Between Chemical Contaminants in Drinking Water and Cancer Mortality, Ph.D. Dissertation, OSU, 1977. Reiches, N., Powers, J.D., Powers, T.E. Statistical Treatment of Pharmacokinetic Parameters Presented to the American College of Veterinary Pharmacology and Therapeutics, 1978.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. $75,420

2.0684,

CANCER CENTER SUPPORT GRANT

J.W. Steiner, Illinois Cancer Council, *36 S. Wabash Ave., Suite 700, Chicago, Illinois* 60603 (P30 CA 21742-02)

The Center received Core support on December 1, 1978. A full-time director assumed his responsibilities on January 1, 1979.

Staffing has progressed in accordance with the plan. An Associate Director for Clinical Programs, and Assistant Program Directors for Rehabilitation, Biostatistics, and Epidemiology were hired. A search for an Associate Director for Cancer Control is in process.

The highest priority for development is in the Clinical Research area. Applications have been prepared for an R01 and a P01 project, and development of a number of inhouse protocols has been initiated. The Gynecologic Oncology Group program began accessing adequate numbers of patients so as to merit the submission of an application for funding this regional project.

The Division of Research Resources has been actively developing computer programs to assist the activities of the Protocols Office. The development of the database has progressed actively and specialized modules are being planned to subserve subsequent research projects. Epidemiological studies have been planned or are in progress to include the mapping of potential risk areas in the state, a study of a cohort of Latinos in Chicago who are in transition from a low to a high colon cancer area, etc. The Cancer Information Service has continued functioning and is beginning to benefit from the Cancer Information Needs Study which is in progress. A community oncology program is in an advanced stage of planning, involving hospitals in the community which are not connected with a university. The educational endeavor has centered largely on gap areas in oncology nursing education and in pediatric nursing education.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. $237,160

2.0685,

ENVIRONMENTAL EPIDEMIOLOGIC STUDY OF PANCREATIC CANCER

L. Gordis, Johns Hopkins University, School of Hygiene & Public Health, Dept. of Epidemiology, *615 N. Wolfe St., Baltimore, Maryland* 21205 (R26 CA 21642-03)

Since pancreatic cancer is now the fourth leading cause of cancer death in the United States, intensive efforts are needed to reduce the impact of this disease. In view of the rapid clinical course of pancreatic cancer and the grim prognosis, it is likely that the greatest hope for progress in treatment of this disease will be through prevention and early detection. A three-part environmental epidemiologic study of pancreatic cancer is therefore proposed to identify specific risk factors and possible etiologic agents and mechanisms. The first phase will describe the changing incidence and mortality of pancreatic cancer over a 15 year period in a defined community, metropolitan Baltimore. The second phase of this study will be a case-control investigation of pancreatic cancer patients and various control groups to explore possible etiologic factors, in particular, environmental and occupational characteristics including exposure to chemical agents and to health care environments and occupations. In addition, younger and older cases will be compared with respect to these characteristics, to determine whether pancreatic cancer in the young is the same as in the old. Finally, a non-concurrent prospective study will be carried out to determine whether the risk of developing or dying from pancreatic cancer is higher in patients with chronic pancreatitis than in a non-pancreatitis control group. The approaches outlined above are designed to provide the basis for modifying environmental exposures and thus developing measures for preventing the disease. Secondly, the results may permit the identification of populations which are at high risk for the disease who might benefit from close medical surveillance and intensive efforts at early detection using the newer diagnostic techniques currently being developed.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. $24,897

2.0686,

STUDIES OF UTAH COLORECTAL CANCER FAMILIES

E.J. Gardner, Utah Higher Education System, Utah State University, School of Science, Dept. of Biology, *Main Bldg., Office 104, Logan, Utah* 84321 (R26 CA 21623-02)

These studies are designed to follow the development of adenomas and carcinoma in people with inherited predisposition to familial polyposis and the Gardner syndrome, to define indexes that represent phenotypic expressions of preneoplasia, and to predict carriers of the gene defect before clinical signs appear.

During the initial phase of this project, members of three kindreds having varying degrees of expression of familial polyposis and the Gardner syndrome were studied. The subjects were examined and classified into categories, including those having known Gardner syndrome with expression of polyposis and extracolonic manifestations (osteomas, fibromas, epidermoid cysts, desmoid neoplasms, odontomas, and supernumerary teeth); polyposis without extracolonic manifestations of disease; indeterminate Gardner syndrome with extracolonic manifestations but without polyposis; potential carriers of the gene defect known to be asymptomatic progeny of an affected parent; members of kindred branches that were polyposis and cancer free for three or more generations; additional control subjects.

These characteristics were identified in members of familial aggregates. In addition, initial examination of biopsy specimens of colonic mucosa revealed the presence of chronic inflammatory disease consistent with ulcerative colitis in four siblings of a familial group. Multiple gastric polyps were present in two siblings, and duodenal adenomas were found in other subjects. Distal esophagitis was present in three subjects whose ages were 16-21 years, with distal esophageal polyps present.

Further measurements are now underway in the continued examination of these subjects, and intestinal, cutaneous, and blood specimens are being analyzed for measurement of growth charcteristics of cells, enzyme activities, and recognitive immunity. Patterns of inheritance of abnormal phenotypic attributes are being studied in symptomatic subjects, and in those who are potential carriers of the genetic defect leading to familial polyposis and Gardner syndrome.

BIBLIOGRAPHIC REFERENCES: Gardner, E.J. Thirty-year follow-up of breast cancer kindred. Am. J. Human Genetics 29:45A, 1977. Hill, J., D. Carmelli, E.J. Gardner, and M. Skolnick. Likelihood analysis of breast cancer predisposition in a Mormon pedigree. Proceedings, Conference on Genetic Epidemiology, University of Hawaii, October 15-17, 1977, In Genetic Epidemiology, N.E. Morton and C.S. Chung, eds, pp. 304-310, 1978, Academic Press, New York.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. $138,440

2.0687,

RADIATION-INDUCED THYROID CANCER

A.B. Schneider, University of Chicago, Michael Reese Hospital & Medical Center, Dept. of Medicine, *2929 S. Ellis Ave., Chicago, Illinois* 60616 (R01 CA 21518-04)

The major objective of this research proposal is to study radiation-induced thyroid cancer by a coordinated program of clinical and basic endocrinological investigations. The clinical studies are designed to determine the current risk and continuing incidence of radiation-induced thyroid cancer and to evaluate methods of diagnosis and medical and surgical approaches to treatment. This will be accomplished by a longitudinal study of patients who have been evaluated at Michael Reese Hospital because of a history of childhood head or neck irradiation. Of 5,200 patients who were so treated, 1,700 have been examined and another 1,400 have been contacted. In this population there is a 32% prevalence of nodules and among those who have had surgery 36% have had thyroid cancer. Follow-up examination of patients who were initially normal will provide an estimate of the continuing incidence of radiation-induced thyroid cancer. Follow-up examination of patients who were initially abnormal will provide an evaluation of the various methods of treatment which have been used. Together these will provide the information necessary to develop clinical guidelines for the care of persons with a history of head or neck irradiation.

Laboratory studies will focus on the role of plasma thyroglobulin in the diagnosis of thyroid tumors. Plasma thyroglobulin is elevated in a majority of patients with thyroid nodules and in 12% of patients who have a history of irradiation but who otherwise appear completely normal. This project will determine whether an elevated thyroglobulin level indicates an especially high risk for the formation of thyroid nodules.

We will continue our detailed studies of the molecular properties of plasma thyroglobulin using physical-chemical methods in order to improve its diagnostic usefulness and to understand how it enters the circulation. The Wollman transplantable thyroid tumor line 1-1C2 will be used as a model system for the study of plasma thyroglobulin and thyroid cancer.

BIBLIOGRAPHIC REFERENCES: Schneider, A.B., Stachura, M.E., Arnold, J., Arnold, M., and Frohman, L.A.: Incidence, Prevalence and Characteristics of Radiation Induced Thyroid Tumors. American Journal of Medicine. 64:243-252, 1978. Schneider, A.B., and Pervos, R.: Radioimmunoassay of Human Thyroglobulin: Effect of Antithyroglobulin Autoantibodies. Journal of Clinical Endocrinology and Metabolism 47:126-137, 1978.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. $59,944

2.0688,

SCREENING FOR NEOPLASMS IN IRRADIATED POPULATIONS

L.H. Hempelmann, University of Rochester, School of Medicine & Dentistry, Dept. of Radiology, *601 Elmwood Ave., Rochester, New York* 14627 (R01 CA 21452-03)

This population of 606 women treated with x-rays for acute post-partum mastitis and their controls (554 sisters; 539 women with post-partum mastitis not treated with x-rays, and their 206 sisters) have been followed by mail questionnaire since 1955. The irradiated women have an increased risk of developing breast cancer. This application proposes continuation of the mail health survey, the review of histopathology of the breast cancers experienced by the treated women and the controls, and periodic mammograhic-thermographic screening of the treated women and eligible controls (NCI guidelines).

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. $41,111

2.0689,

COMPREHENSIVE MODELS FOR CANCER SURVIVAL AND MORTALITY

V.K. Murthy, Cedars Sinai Medical Center, *4833 Fountain Ave., Los Angeles, California* 90029 (R01 CA 21380-02)

The primary objective of this project is the investigation and evaluation of the state-of-the-art statistical techniques for the analysis of survival data. Particular emphasis is placed in the direction of estimation and hypothesis testing in the context of competing risk models as related to cancer survival. Computer programs are being produced for Monte-Carlo type investigations of the statistical procedures, and for the implementation of these procedures in the analysis of actual data.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. $72,133

2.0690,

THE EPIDEMIOLOGY OF CHILDHOOD RHABDOMYOSARCOMA

S. Grufferman, Duke University, School of Medicine, Dept. of Pediatrics, *Box 3711, Durham, North Carolina* 27710 (R01 CA 21244-02S1)

An incidence survey of childhood rhabdomyosarcoma (RMS) has been conducted covering the State of North Carolina during the period 1967-1976. This was initiated by the clinical observation of a possible 'epidemic' of RMS in the state. Preliminary data suggest that rather than an epidemic, there has been a 'straight-line,' almost 4-fold increase in RMS incidence over the 10-year study period. The incidence rate reached is greater than previously reported estimates based on mortality statistics but the same as estimated incidence data from the Third National Cancer Survey. It also appears that males are affected more than females (M/F equals 1.7) and blacks more than whites (B/W equals 1.3). In previous studies the excess of males was less marked (M/F equals 1.0-1.4) and whites experienced higher risks than blacks. case-control approach is currently being used to study the 'descriptive epidemiology' of RMS as well as associations between RMS and potential antenatal, childhood, familial, dietary and environmental etiologic exposures.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. $7,074

2.0691,

EXPLORATORY STUDIES ON CANCER PATIENT DATA CONTROL

D.B. Fischer, Yale University, School of Medicine, Dept. of Epidemiology & Public Health, *333 Cedar St., New Haven, Connecticut* 06510 (R10 CA 21194-03)

The objective of this grant is to establish a statistical base for the Yale Comprehensive Cancer Center which is compatible with nationwide cancer data gathering programs such as the Centralized Cancer Patient Data System (CCPDS) and the Surveillance, Epidemiology and End Results Program (SEER) which may be increasingly utilized for clinical and epidemiologic research.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. $71,717

2.0692,

EXPLORATORY STUDIES ON CANCER PATIENT DATA CONTROL

R.L. Prentice, Fred Hutchinson Cancer Research Center, *1124 Columbia St., Seattle, Washington* 98104 (R10 CA 21193-03)

This proposal is to continue the development of a clinical data base for the Fred Hutchinson Cancer Research Center. Uniform data are obtained on approximately 1300 new patients per year who receive treatment in the Adult Leukemia Center, The Children's Orthopedic Hospital or at any of six affiliated oncology units. The data collected include both the SEER (Surveillance Epidemiology and End Results) data and the CCPDS (Centralized Cancer Patient Data System) minimal data. The proposed work includes local uses of the data, participation in collaborative uses of CCPDS patient data and the provision of statistical support to local therapy studies.

BIBLIOGRAPHIC REFERENCES: Prentice, R.L. (1978). Regression Analysis of Censored Survival Data with Extensions to Include Competing Risks and Case-Control Studies. The Evaluation of Environmental Biological Hazards and Competing Risks. (Ed. Peter Groer). In press.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. $90,931

2.0693,

EXPLORATORY STUDIES OF CANCER PATIENT DATA CONTROL

A.H. Owens, Johns Hopkins University, School of Medicine, Dept. of Medicine, *725 N. Wolfe St., Baltimore, Maryland* 21205 (R10 CA 21198-03)

The goals of these exploratory studies are to establish a cancer patient data control system at Johns Hopkins and plan for the development of an epidemiologic and biostatistical unit in the Cancer Center. A standard diagnostic nomenclature and uniform data management techniques will be employed to facilitate the exchange of information among the comprehensive cancer centers involved in the National Cancer Program. The Epidemiology and Biostatistical Laboratory will be designed as a major functional unit of the Cancer Center with responsibilities for research, education and the provision of specialized services in the area of its expertise.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. $124,853

2.0694,

STUDIES ON CANCER PATIENT DATA CONTROL

J.E. White, Howard University, School of Medicine, Dept. of Oncology, *2400 6th St. N.W., Washington, District of Columbia* 20001 (R10 CA 21185-04)

Grant support is requested for continuation of the Centralized Cancer Patient Data System program at the Howard University Cancer Center (HUCC). All patients with malignant neoplasms seen at Howard University Hospital have entered in the Centralized Cancer Patients Data System (CCPDS) since July 1, 1977. The present grant has proved to be of immense value in establishment of a computerized data base on all cancer patients. As of September, 1979 HUCC has submitted to the CCPDS data on 664 new cancer cases and follow-up data on 399 cases. The proposed grant will ensure the continuity and further refinement of the data collection activities at the Howard University Cancer Center and its participation in CCPDS.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. $44,230

2.0695,

DEVELOPMENT OF CENTRALIZED CANCER PATIENT DATA SYSTEM

J.R. Durant, University of Alabama in Birmingham, School of Medicine, Dept. of Medicine, *1919 7th Ave. S., Birmingham, Alabama* 35233 (R10 CA 21182-03)

The major objectives of this proposal are to continue the collection and quality control of cancer patient data for submission to the SAQC center of CCPDS and to carry out special epidemiologic studies or modules utilizing the basic data set and special site specific information. The submission of accurate and reliable cancer patient data to CCPDS has and will be accomplished by utilizing competent tumor registry personnel with appropriate quality control and statistical backup. Special epidemiologic studies are being developed for evaluation by U.A.B. cancer center clinicians and researchers for consideration of the Technical Advisory and Policy Advisory Committees of CCPDS.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. $94,159

2.0696,

CANCER IN ARSENIC EXPOSED POPULATIONS

P.E. Enterline, University of Pittsburgh, Graduate School of Public Health, Dept. of Biostatistics, *4200 5th Ave., Pittsburgh, Pennsylvania* 15260 (R01 CA 20540-03)

The mortality experience of workers at a copper smelter at Tacoma, Washington, producing nearly all the arsenic trioxide produced in the United States will be studied. Men employed for a year or more since January 1, 1940, will be followed for deaths through December 31, 1975. The cancer mortality experience of this cohort will be related to duration and intensity of arsenic exposure and latent period. Both historic atmospheric measures of arsenic and urine arsenic testing of workers will be used to estimate exposures. In addition, the mortality experience of persons living near the smelter will be studied to see if any effect of atmospheric contamination on cancer mortality can be detected. This will include follow-up on children from an elementary school in the area using school records dating to 1910. Also included is a study of mortality in the area adjacent to the smelter where elevations in urine arsenic have been found, apparently related to the smelter.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. $76,277

2.0697,

EPIDEMIOLOGIC STUDY OF OVARIAN CANCER

P. Greenwald, State Bureau of Cancer Control, Division of Epidemiology, *Empire State Plaza, Tower Bldg. Rm. 565, Albany, New York* 12237 (R01 CA 20502-03)

Our general objective is to determine, by means of a concurrent case-control study, whether risks of various histologic types of ovarian cancer are influenced by: a) prior reproductive experience of the patient, b) cancer among first degree female relatives, c) a combination of these factors. The hypothesis that low fertility or infertility contribute to risk will be refined and assessed. Also, we will have a systematically derived and validated statement of familial risk among first degree female relatives. Additional study variables will include prior hormonal therapy, pre-existing medical conditions and menstrual history.

In the proposed study, two population controls will be selected for each ovarian cancer patient interviewed. The controls will be matched by age and county of residence. Demographic and clinical data will be collected from hospital records of each ovarian cancer patient, and pathology slides reviewed. Various types of epidemiologic data will be collected through face-to-face interviews with each patient and control. Standardized follow-up procedures have been developed for verifying whether or not the relatives have ever been diagnosed with or died from a malignancy.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. $173,654

2.0698,

CANCER IN PERSONS EXPOSED TO EXOGENOUS ESTROGENS

J.W. Meigs, Yale University, School of Medicine, Dept. of Epidemiology & Public Health, *333 Cedar St., New Haven, Connecticut* 06510 (R01 CA 20347-04)

This retrospective-prospective study will identify mother-offspring pairs where prenatal estrogen exposure occurred and will determine the cancer incidence among these mothers and offspring. Two control groups of mother-offspring pairs will be identified and the cancer incidence among these women and their offspring will be compared to that in the at-risk group. One group will be based on physician-matched controls, the second control group will be selected using Connecticut birth registration data.

Cancer experience will be determined through linking the names of members of the cohorts to patients reported to the Connecticut Tumor Registry. All cancer sites will be considered with particular attention to reproductive system cancers.

To date, more than 900 exposed mother-offspring pairs and 700 physician-matched control pairs have been identified and detailed information has been abstracted from their prenatal records and related birth certificates. These activities have been accomplished for an additional 100 unmatched physician controls. A second control group of 1150 mother-offspring pairs had been selected. All study mothers have been followed through the use of City Directories to determine person-years-at-risk.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. $55,750

2.0699,

EVALUATION OF THE TYPES AND CAUSES OF INFECTIOUS DISEASES IN CANCER PATIENTS

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Infection is the leading cause of morbidity and mortality in patients with acute leukemia and a major cause in other types of advanced malignancies such as Hodgkin's disease and oat cell carcinoma of the lung. The aims of this project are to catalogue and identify the infections, identify the predisposing factors and evaluate new techniques for more rapid and/or accurate diagnosis of infection. This program has been in progress for over eight years and has allowed meaningful evaluation of the types of infection occurring in different types of tumor patients. Specific problems have been identified such as the nature of hospital acquisition of potential pathogens including bacteria and fungi. This epidemiologic data has allowed appropriate and logical development of infection prevention techniques and application of newer methods of infection diagnosis such that there has been a reduction of infection morbidity and mortality.

BIBLIOGRAPHIC REFERENCES: Schimpff, S.C.: Infections in patients with acute leukemia with emphasis on infections associated with granulocytopenia. In Bennet, J.E. (Ed.): Principles and Practices of Infectious Diseases. New York, John Wiley and Sons, Inc., Publ., 1979 (in press). Schimpff, S.C. Infection in the compromised host. IN Bennett, J.E. (Ed.): Principles and Practices of Infectious Diseases. New York, John Wiley and Sons, Inc., Publ., 1979 (in press).

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. funds n.a.

2.0700,

STUDIES ON ONCOGENIC HERPESVIRUSES OF MAN AND SUBHUMAN PRIMATES

J.M. Easton, U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst., Clinical Studies Section, *9000 Rockville Pike, Bethesda, Maryland* 20205 (Z01-CP-04849-06-LVC)

Work was continued on the American Nasopharyngeal Carcinoma Registry. New cases submitted to the Armed Forces Institute of Pathology and the Clinical Studies Section were accessioned. On the basis of the literature, U.S. NPC cases and those from other countries were compared histologically. Data from the Third National Cancer Survey and the Surveillance, Epidemiology, and End Results Program demonstrated a high incidence of NPC in young blacks. This young black peak may be comparable to similar NPC peaks in the Tunisian and East Indian populations. A comparison of data on young and old patients with NPC, described in 'Cancer In Five Continents,' suggests that there may possibly be different etiologies in different age groups.

BIBLIOGRAPHIC REFERENCES: Ablashi, D.V., Glaser, R., Easton, J.M., Nonoyama, M., and Armstrong, G.R.: Athymic nude mice; induction of tumors containing Epstein-Barr virus using Burkitt's-related cell lines. Exp. Hemat. 6: 365, 1978. Ebbesen, P., Ablashi, D., Vestergaard, B.F., Easton, J., Hesse, J., and Armstrong, G.: Inhibition of herpes simplex virus and herpesvirus saimiri with polyions. Microbiologica, Vol. 2, April 1979, in press.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. funds n.a.

2.0701,

IMMUNOLOGIC FACTORS IN CANCER ETIOLOGY

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The purpose of this project is to identify and study populations with altered immunologic states experiencing unusual rates of malignancy. Risks of cancer of different sites are quantified for various groups of such patients, compared with each other, and characteristics and possible determinants of unusual risks are sought. The populations studies include renal transplant recipients, patients with inherited and acquired immune deficiency syndromes, groups of immune-stimulated persons (e.g., hyperimmunized, autoimmune syndromes) and patients experiencing conditions for which sequelae related to immunity are suspect but unknown (e.g., splenectomy patients). Both cohort studies of these groups of patients and case-control studies of such patients who also developed cancer are conducted.

BIBLIOGRAPHIC REFERENCES: Greene, M.H., Hoover, R.N., Fraumeni, J.F., Jr.: Subsequent cancer in patients with chronic lymphocytic leukemia - A possible immunologic mechanism. J. Natl. Cancer Inst. 61:337-340, 1978. Kassan, S.S., Thomas, T.L., Mousopoulos, H.M., Hoover, R., Kimberly, R.P., Budman, D.R., Costa, J., Decker, J.L., Chused, T.M.: Increased risk of lymphoma in Sicca Syndrome. Ann. Int. Med. 89:888-892, 1979.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. funds n.a.

2.0702,

U.S. CANCER MORTALITY SURVEY

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The objective of this study is to examine the cancer mortality experience in the United States relative to cancer etiology. Special emphasis is placed upon the selection of areas in the U.S. for intensive study. Publications from this area of interest have facilitated the design of ongoing analytical investigation to test specific etiologic hypotheses. An analysis of prostatic cancer mortality rates suggested that environmental exposure related to urban living may account for the predisposition of American blacks to this tumor. Respiratory cancer mortality, 1950-69, was consistently high in U.S. counties where shipyards were engaged in the construction and repair of large naval and cargo vessels during World War II. When cell types of leukemia for 1968-71 were analyzed, some clustering of acute myeloid leukemia was seen in the central United States. Ethnic susceptibility appears to account, at least in part, for the regional clustering of kidney cancer and may provide leads to environmental determinants. We are continuing to expand our data sets, both of reported deaths and measures of exposure.

BIBLIOGRAPHIC REFERENCES: Blot, W.J., Fraumeni, J.F., Jr., Morris, L.E.: Patterns of laryngeal cancer in the United States. Lancet 2:674-675, 1978. Blair, A., Fraumeni, J.F., Jr.: Geographic patterns of prostate cancer in the United States. J.N.C.I. 61:1379-1384, 1978.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. funds n.a.

2.0703,

STUDIES ON PSEUDOMONAS AERUGINOSA IN A CANCER RESEARCH PROGRAM

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Pseudomonas aeruginosa is one of the chief causes of infection in patients with acute leukemia and other severe malignancies whose white blood cell counts are less than or equal to 1000/ml. The prime objective of this study has been to monitor the epidemiology of P. aeruginosa in cancer patients and to study its host-parasite interaction and susceptibility to antibiotics. Recovery rates are lower than in previous years. Serotyping of the 66 P. aeruginosa strains recovered from 21 patients revealed that only two patients had multiple serotypes (2) present. No transmission of P. aeruginosa between patients could be detected. The identification schema developed in our laboratory to speciate pseudomonas strains other than P. aeruginosa continues to be successfully used. A schema for identification of less common non-sacchardytic Pseudomonas and Alcaligenes spp. has now been successfully evaluated with 200 strains of these species. Studies of non-agglutinating pseudomonas antibodies have been temporarily postponed.

BIBLIOGRAPHIC REFERENCES: Moody, M.R., Kessel, R.W., Young, V.M., Fiset, P. The role of nonagglutinating antibody in the protracted immunity of vaccinated mice to Pseudomonas aeruginosa infection. Infection and Immunity 21: 905-913, 1978. Moody, Marcia R. and Young, Viola M. A Comparison of antibiograms of non-aeruginosa pseudomonads recovered in two locales. J. Antimicrob. Chemother. 5: 143-149, 1979.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. funds n.a.

2.0704,

FAMILIAL, CONGENITAL AND GENETIC FACTORS IN MALIGNANCY

J.J. Mulvihill, U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst., Field Studies & Statistics Section, *9000 Rockville Pike, Bethesda, Maryland* 20205 (Z01 CP 04377-08 CEB)

Study of genetic diseases with neoplastic manifestations and detailed investigation of families with high risk of cancer may help detect environmental and genetic influences in carcinogenesis, especially when appropriate laboratory assays are used.

Besides results from the Clinical Studies Section, clinical reports were made on three cancer families and a series of patients with rhabdomyosarcoma complicating neurofibromatosis. Special emphasis was placed on laboratory approaches to cancer families. The heritability of SV40 T-antigen in 26 families and the frequencies of chromosomal abnormalities and sister chromatid exchanges in five families were reported. In one family with acute myelogenous leukemia, patients with malignancies had abnormal sensitivity of fibroblast to gamma-radiation, whereas tumor-free relatives had normal sensitivities. Abnormal in vitro response to pooled alloantigens was a consistent abnormality in family members with the B-K mole syndrome (and some spouses). We continue to seek animal models for human, congenital and genetic disease, and will follow the same approach, using new laboratory methods and epidemiologic clues from other sources as available.

BIBLIOGRAPHIC REFERENCES: Roseman, B., and Mulvihill, J.J.: Melkersson-Rosenthal syndrome in a 7-year-old girl. Pediatrics 61: 490-491, 1978. Parry, D.M., Safyer, A.W., and Mulvihill, J.J.: Waardenburg-like features with cataracts, small head size, joint abnormalities, hypogonadism, and osteosarcoma. J. Med. Genet. 15: 66-69, 1978.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. funds n.a.

2.0705,

ROLE OF DIETARY LIPIDS IN INCREASED INCIDENCE OF MAMMARY CANCER

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Epidemiological and experimental studies have implicated high dietary fat in the increased incidence of mammary cancer. Experimental systems have been established for assessing fatty acid effects on the growth of cells from normal tissue and carcinogen induced mammary tumors of rats. The studies show that all unsaturated fatty acids present in the gland in appreciable amounts promote cell growth. Both normal and tumor cells are inhibited by saturated fatty acids. Maximum growth rate of tumor cells is obtained with oleic acid while normal cells grow best in the presence of linoleic or linolenic acid. Both normal and tumor cells may be able to recruit fatty acids needed for growth from neighboring tissue. Perphenazine treatment of animals produces an increase in the relative amount of unsaturated fatty acids in the mammary gland but not in omental fat. This appears to be effected by the action of prolactin. Maps of fatty acid types at various distances from growing mammary tumors have been made. These suggest a concentration of unsaturated relative to saturated fatty acids closest to the tumors.

BIBLIOGRAPHIC REFERENCES: Kidwell, W.R., Wicha, M. and Smith, G.: Fatty acid requirements for a cell line established from a 7,12-DMBA induced rat mammary tumor. In Lippman, M. (Ed.) Conference on Hormones and Cancer. Cancer Research 38: 4091-4100, 1978. Wicha, M.S., Liotta, L.A., Kidwell, W. R.: Effects of free fatty acids on the growth of normal and neoplastic rat mammary epithelial cells. Cancer Research 39: 426-435, 1979.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. funds n.a.

2.0706,

FIELD STUDIES IN HIGH-RISK AREAS

W.J. Blot, U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst., Analytical Studies Section, *9000 Rockville Pike, Bethesda, Maryland* 20205 (Z01 CP 04779-03 EEB)

The objectives of this project are to identify and describe the environmental determinants of cancer in areas of the U.S. at high risk of cancer through the use of analytic epidemiologic techniques. Toward this end a series of case-control studies has been initiated to test a number of hypotheses regarding the origins of cancer. Presently ongoing are interview studies of lung cancer in northeast Florida; mesothelioma in tidewater Virginia; esophageal cancer in Washington, D.C.; nasal and oral cancer in parts of the South; renal cancer in Minnesota; lung, pancreas, and stomach cancers in southern Louisiana; and lung cancer in eastern Pennsylvania. All areas are at high risk for these tumors. Interviewing was completed during the year for studies of colon cancer in rural Nebraska and lung cancer in coastal Virginia, and data analysis is in progress. A random telephone survey of smoking habits in Georgia showed no coastal excess, highlighting the importance of industrial factors (particularly shipbuilding) in the clustering of lung cancer along the coast, identified by a case-control study of this tumor completed during the year.

BIBLIOGRAPHIC REFERENCES: Blot., W.J. and Fraumeni, J.F., Jr.: Studies of respiratory cancer in high risk communities. J. Occup. Med. 21: 276-278, 1979. Blot, W.J., Stone, B.J., Fraumeni, J.F., Jr., Morris, L.E.: Cancer mortality in U.S. counties with shipyard industries during World War II. Environ. Res. 18: 281-290, 1979.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. funds n.a.

2.0707,

RESEARCH IN MATHEMATICAL STATISTICS AND APPLIED MATHEMATICS

J.J. Gart, U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst., Mathematical Statistics & Applied Mathematics Section, *9000 Rockville Pike, Bethesda, Maryland* 20205 (Z01 CP 04267-14 B)

It is the purpose of this project to conduct research in mathematical statistics, probability and applied mathematics and especially to develop new statistical methodology which is particularly applicable to the biomedical sciences. Particular subjects of interest are the methodology of analyzing survival curves and proportions. Also of interest are statistical methods in cancer screening models and in cancer epidemiology, such as the analysis of the relative risk.

BIBLIOGRAPHIC REFERENCES: Gart, J.J.: Statistical analyses of the relative risk. Env. Heath Persp., 31: in press, 1979. Li, S.H., Simon, R.M., and Gart, J.J.: Small sample properties of the Mantel-Haenszel test. Biometrika, 66: 181-183, 1979.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Nationa Inst. of Health, National Cancer Inst. funds n.a.

2.0708,

PLANNING AND DEVELOPMENT IN CANCER EPIDEMIOLOGY

R.W. Miller, U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst., Field Studies & Statistics Section, *9000 Rockville Pike, Bethesda, Maryland* 20205 (Z01 CP 04325-16 CEB)

The objectives of this undertaking are to originate new epidemiologic approaches to the study of cancer causation in man and animals, to develop sources of data related to specific epidemiologic problems, to stimulate epidemiologic research in other health agencies and to develop an on-the-job training program for medical and statistical officers. Opportunities for research in cancer epidemiology are based on questions arising from clinical or laboratory observations, on unusual groupings of cancer cases in the population, and on study of the characteristics of groups of persons prior to the onset of a specific type of cancer as compared with similar persons who have not developed the disease. In parallel with this, plans are made for on-the-job training in cancer epidemiology for research physicians, veterinarians, and statisticians.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. funds n.a.

2.0709,

SPECIAL NON-MELANOMA SKIN CANCER INCIDENCE SURVEY AND EPIDEMIOLOGY STUDY

J. Scotto, U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst., Biometry Branch, *9000 Rockville Pike, Bethesda, Maryland* 20205 (Z01-CP04475-03-B)

This project, a collaborative effort by the NCI, EPA and other federal agencies, was initiated to provide more data relative to skin cancer and harmful solar ultraviolet. An urgent need for these data has existed since recent scientific reports have warned about the decomposition of stratospheric ozone by nitrogen oxides and chlorofluoromethanes (CFMs). Federal regulatory agencies have already recommended bans on the use of aerosol spray cans which use CFMs as propellants. In the near future, there will be critical reviews of all pertinent information by government as well as individual interests concerned with the threat of increased human skin cancer due to excess amounts of UV-B reaching the earth's surface, as its protective ozone shield is depleted. As mandated by Public Law 95-95 (amendment to the Clean Air Act of 1977), the NCI will continue its investigations by adding 2 new locations to its data bases during this fiscal year. This will provide more reliable national estimates of the degree of morbidity from nonmelanoma skin cancer as well as epidemiologic data on host and environmental factors, other than solar ultraviolet, associated with increased risk. New leads from 8 surveys just being completed will be pursued in two new surveys being implemented.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. funds n.a.

2.0710,

CLINICAL STUDIES SECTION, BOSTON, MASSACHUSETTS

F.P. Li, U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst., Field Studies & Statistics Section, *9000 Rockville Pike, Bethesda, Maryland* 20205 (Z01 CP 04400-18 CEB)

The staff of the Clinical Studies Section in Boston, Massachusetts has sifted a large volume of clinical data to identify patients for etiologic studies. These unusual patients are usually found through attendance at clinical conferences and rounds, and through special referrals. With informed consent, epidemiologic studies are made of the environmental and genetic background and laboratory studies are conducted to clarify biologic mechanisms of carcinogenesis. At present, several family aggregates of cancer are under study, e.g., Turcot's syndrome in two families; Gardner's syndrome variant; breast cancer-Hodgkin's disease aggregation; autosomal dominant renal cell carcinoma associated with a 3:8 chromosome translocation. In addition, a family suffering from mesothelioma following asbestos exposure at a shipyard has prompted two studies of mesothelioma and lung cancers in two New England shipbuilding communities. Also, a computerized Registry of Survivors of Childhood Cancer has been established through collaboration of the Clinical Studies Section with the Sidney Farber Cancer Institute. The 600 registrants represent approximately 2% of all survivors of U.S. childhood cancer in the last two decades. Patients in the series are being studied for second malignancies, cancer in close relatives, and genetic effects in progeny.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. funds n.a.

2.0711,

METHODOLOGIC STUDIES IN EPIDEMIOLOGY

W.J. Blot, U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst., Analytical Studies Section, *9000 Rockville Pike, Bethesda, Maryland* 20205 (Z01 CP 04500-02 EEB)

The objectives of this project are to develop, adapt, expand, and evaluate methodological procedures useful in epidemiologic studies of cancer. Methods of design and analysis of epidemiologic studies were given particular emphasis with attention focusing on the adaptation of multivariate logistic models for analysis of case-control data. Texts on statistical methods to analyze epidemiologic data were authored, and the Branch coordinated publication of a journal issue on biostatistical methods in cancer research in the U.S and Japan. Investigation of general epidemiologic techniques for studying environmental cancer continued, including reviews of methods to evaluate the magnitude of low-dose radiation risks.

BIBLIOGRAPHIC REFERENCES: Blot, W.J.: Clues to the environmental determinants of cancer from its geographic patterns. In Breslow, N.E. and Whittemore, A.S. (eds.): Energy and Health. Philadelphia, SIAM, 1979, pp. 151-167. Land, C.E., McGregor, D.H.: Breast cancer incidence among atomic bomb survivors: Implications for radiobiologic risk at low doses. J. Natl. Cancer Inst. 62: 17-21, 1979.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. funds n.a.

2.0712,

PATHOLOGY OF FAMILY CANCER STUDIES

D.E. Henson, U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst., Ultrastructural Pathology Section, *9000 Rockville Pike, Bethesda, Maryland* 20205 (Z01 CB 00594-03 LP)

Review histopathology material from families with high incidence of cancer. These families are being followed by the Epidemiology Branch. Material is reviewed to confirm diagnosis and determine unusual aspects of the cancer in view of the family history.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. funds n.a.

2.0713,

STUDY OF CANCER INCIDENCE IN THE SOUTH PACIFIC

B.E. Henderson, University of Southern California, School of Medicine, Dept. of Pathology, *2025 Zonal Ave., Los Angeles, California* 90033

Code and keypunch from abstracts on cancer cases diagnosed in Papua, New Guinea, from 1958 onward, and in New Caledonia,New Hebrides, American Samoa, Western Samoa, and French Polynesia, beginning in 1978. Expand reporting of cancer cases to include Guam and the Trust Territories and improve the reporting and begin processing the data from Fiji. Submit a tape containing these data to NCI for analysis.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. funds n.a.

2.0714,

COMPUTER SERVICES FOR THE NONMELANOMA SKIN CANCER STUDY

A. Sytles, Triton Corp., *1325 1/2 Wisconsin Ave. N.W., Chevy Chase, Maryland* 20015

OBJECTIVES: Maintain existing production systems and modify or develop additional production capabilities. Key and verify skin cancer incidence and interview data at regular intervals, at least twice per month. Develop computer programs and generate reports in support of statistical analyses of multiple data bases.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. $79,997

2.0715,

EPIDEMIOLOGY OF LIVER CANCER IN TEXAS

R.A. Buffler, University of Texas, Health Science Center at Houston, School of Public Health, Dept. of Epidemiology, *6515 Freeman, Houston, Texas* 77025

Study mortality from primary liver cancer in selected counties in Texas which were selected because they have the highest rates of primary liver cancer in this country. Use a case-control approach selecting two controls for each caseof primary liver cancer from the next deaths which occur that match on age (within the same five-year age category), sex, and race. The occupation and industry of employment will be coded from death certificates, and, in addition, information regarding employment and exposure in specific industries. Concentrate on Orange and Jefferson counties due to the large percent of the workforce employed in chemicals and related manufacturing industries. The study will include analysis of data for Orange and Jefferson counties, including a detailed review of occupational histories and available pathology, plus additional studies from the results from Brazoria County.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. $171,662

2.0716,

ETIOLOGIC STUDY OF RESPIRATORY CANCER IN COASTAL TEXAS

P.A. Buffler, University of Texas, Health Science Center at Houston, School of Public Health, Dept. of Epidemiology, *6515 Freeman, Houston, Texas* 77025

Make recommendations regarding the design of this study, including evaluations and alternative case and control identification. Identify the respiratory cancer cases and controls. Abstract information on date of diagnosis, method of confirmation, and histologic type from medical records of the cancer cases. Produce an adaptation (to the local situation) of an existing questionnaire previously used by the EEB. Locate the cases and controls, or appropriate representatives, and conduct personal interviews with them using the adapted questionnaire. Assist in decisions on the advisability of follow-up on those difficult to locate or refusing interview. Field edit the finished questionnaires for completeness and accuracy. This should include a telephone follow-up of a random sample of respondents. Identify the location of each oil refinery, chemical manufacturing plant, and shipyard in the six-county area. Code the location of these plants and of each residence recorded in the interviews. Make recommendations for analyses of the data.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. funds n.a.

2.0717,

INVESTIGATION OF POSSIBLE CORRELATIONS BETWEEN MORPHOLOGICAL AND EPIDEMIOLOGICAL CHARACTERISTICS OF BREAST CANCER

B. Stenkvist, University Hospital, Dept. of Clinical Cytology, *75014 Uppsala, Sweden* (CB-53854-S)

SCOPE: To ascertain possible correlations between the morphologic variables and the established epidemiological risk factors of breast cancers. The results may be applied not only to identify individuals at high risk of breast cancer but may be used prognostically to predict course of disease. This prospective study will consist of two phases: Phase I will consist of a pilot study of histopathologic material from 110 breast cancers from four counties in Sweden utilizing the computerized Central Swedish Cancer Registry. The tumors will be classified histologically according to WHO (Scarff and Torloni 1968) and Acherman's classification (1970). Another aim of this project is to make a quantitative evaluation of a number of morphological characteristics by computer analysis of tumor cell populations utilizing a Leitz MPVII scanning photometer connected to a PDP-8 computer with 24k of core, and relate these to the standard classification. Planning for the epidemiologic data will be collected on each patient and computerized. Under Phase II, statistical analysis of the data will be made with application of the newly acquired morphologic classification to the epidemiologic variables.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. funds n.a.

2.0718,

EPIDEMIOLOGY OF BENIGN BREAST DISEASE

G.H. Spivey, University of California, Los Angeles Campus, School of Public Health, Dept. of Epidemiology, *405 Hilgard Ave., Los Angeles, California* 90024

OBJECTIVES: Examine the epidemiology of major types of benign breast disease and compare identifiable risk factors for benign diseases with those for breast cancer. Examine a recently developed histologic classification scheme based on grading of cellular atypia comparison to the commonly used histopathologic scheme.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. funds n.a.

2.0719,

BIOSTATISTICS/EPIDEMIOLOGY

D. Thompson, Fred Hutchinson Cancer Research Center, *1124 Columbia St., Seattle, Washington* 98104 (P30 CA 15704-060058)

This project is part of a broader program (CA 15704).

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. funds n.a.

2.0720,

CASE-CONTROL STUDY OF CARCINOMA OF ENDOMETRIUM

S. Shapiro, Boston University, School of Medicine, Dept. of Medicine, *80 E. Concord St., Boston, Massachusetts* 02215

No summary has been provided to the Smithsonian Science Information Exchange.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. funds n.a.

2.0721,

EPIDEMIOLOGY, STATISTICS, AND EVALUATION

A.K. Bahn, Inst. for Cancer Research, Fox Chase Cancer Center, *7701 Burholme Ave., Philadelphia, Pennsylvania* 19111 (R18 CA 23321-020005)

This project is part of a broader program (CA 23321).

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. funds n.a.

2.0722,

DEVELOPMENT OF STATE WIDE INCIDENCE REPORTING

H.P. Rusch, University of Wisconsin, Madison Campus, Center for the Health Sciences, *500 Lincoln Dr., Madison, Wisconsin* 53706 (R18 CA 16405-030008)

This project is part of a broader program (CA 16405).

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. funds n.a.

2.0723,

CANCER MORTALITY RELATED TO OCCUPATION AND SOCIAL CLASS

W.P. Logan, Centre International de Recherche sur le Cancer, *150 Cours Albert Thomas, 69372 Lyon Cedex 2, France*

Work on the obtainment, examination, review, and interpretation of data relating to cancer mortality that have been produced historically in successive studies from the General Registrar Office of England and Wales. This shall include analysis of relation of mortality from cancer to occupation and social class, analysis of trends over time, as well as comparison with relevant material from other countries. This analysis shall be performed in collaboration with the Project Officer.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. $15,750

2.0724,

RISK IN DIAGNOSIS OF NON-INVASIVE MAMMARY CARCINOMA

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Determine the specific risk of an individual patient, or group of patients, given specific information about anatomic changes in the breast as well as nonanatomic risk factors. Identification of anatomic risk factors at a given point in time with extended follow-up of the patients showing different changes is the most definitive available method for specific assignment of risk. This study design, allowing comparison of the incidence of subsequent breast cancer in women with confirmed benign lesions and appropriate control group(s) is essentially a prospective study as women enter the study with a finding 10-25 years prior to the time of follow-up. This is a prospective study conducted in retrospect. Neither the case-control comparison of the frequency of types of breast disease in women who developed cancer nor the study of concurrent changes found in breasts containing carcinomas may achieve the aim proposed by this study.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. funds n.a.

2.0725,

EPA/NCI SPECIAL SKIN CANCER EPIDEMIOLOGY STUDY

M. Berlin, Westat Inc., *11600 Nebel St., Rockville, Maryland* 20852

OBJECTIVES: Assist NCI in the development of materials and procedures for the Minneapolis pilot test. Conduct general population surveys in each of four selected areas of the TNCS. Design and draw a probability sample of telephone numbers which will be called to identify private residences. Conduct interviews with at least one adult member of the household at each residence. An estimated 500 households will be surveyed. Conduct additional general population surveys in the seven SEER areas. The sample size of 500 cases and survey procedures are planned to be the same as those used for the TNCS area surveys. However, in certain age/sex classes, an estimated 500 area sample cases will be analyzed for case control comparisons between the general population interviews and interviews with selected cancer patients. Conduct telephone interview surveys with patients in the seven SEER areas. The sample size will be 500 patients per survey area. These surveys will be dependent upon agreements between the SEER contractors and the NCI.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. $179,869

2.0726,

EPIDEMIOLOGY OF BENIGN BREAST DISEASE

B. Modan, Chaim Sheba Medical Center, *Bitan 27, Tel Hashomer, Ramat Gan, Israel*

OBJECTIVE: To attempt to determine the characteristics of patients with different types of noninvasive breast lesions, with particular reference to those factors reputed to be preferentially associated with breast cancer, and to compare the findings with our similarly conducted breast cancer study. The proposal consists of two phases: case-control interview study of 600 cases of noninvasive breast disease, and an incidence study of noninvasive breast lesions in a total community. In both phases, particular attention will be paid to the relative frequency of distinct histo-pathological forms in high and low risk sub-populations for breast cancer, i.e., European vs. Asian and African born. The characterization of the breast lesions will take into account the histological pattern, degree of atypia, and lymphoreticulo-endothelial response (LRE).

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. funds n.a.

2.0727,

STUDY OF ETIOLOGIC FACTORS FOR LUNG CANCER

J.E. Davies, University of Miami, School of Medicine, Dept. of Epidemiology & Public Health, *1400 N.W. 10th Ave., Box 520875, Coral Gables, Florida* 33152

OBJECTIVES: 1. Identify certain patients who will be hospitalized in Jacksonville during a one-year period beginning when the contract is let. The patients will include all males newly diagnosed as having lung cancer, and 2 age-, sex-, and race-matched controls admitted to the same hospitals for conditions other than lung cancer or lung disease. The hospitals from which the lung cancer cases and controls will be identified are Baptist Memorial, Jacksonville General, Jacksonville Beach, Memorial Hospital of Jacksonville, Methodist, Riverside, St. Luke's, St. Vincent's, University Hospital of Jacksonville,and the U.S. Naval Medical Center. 2. Identify all cases of asbestosis and mesothelioma diagnosed in these hospitals during 1970-77. 3. Obtain approval from each of these hosptials, and from any other body from which approval is necessary, to conduct a case-control interview study of cancer among these patients. 4. Obtain slides of lung tissue and other relevant material for all lung cancer and mesothelioma cases so that each can be reclassified as to cell type.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. $107,064

2.0728,

SAN FRANCISCO RESOURCE FOR CANCER EPIDEMIOLOGY

D.F. Austin, State Dept. of Health, *714 P St., Sacramento, California* 95814

Maintain a cancer reporting system in the five counties of the San Francisco-Oakland metropolitan area.

The system will utilize standardized abstracts of records on all cancer patients seen in the 75 hospitals in the area as well as for all five-county area resident patients who are diagnosed or treated in hospitals in other areas for active cancer. All death certificates of residents dying in the area or outside the area where cancer is mentioned on the death certificate as well as the death certificate of any case listed in the registry will be abstracted. Records of private laboratories and radiotherapy units will be utilized in order to insure complete coverage of cases. Records of nursing homes which provide the services of diagnostic physicians and/or laboratories to patients will also be utilized. Reporting and data processing procedures are to be maintained so as to produce valid incidence rates within eleven months after the end of each calendar year.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. $2,240,743

2.0729,

EPIDEMIOLOGIC STUDY OF POPULATIONS PREVIOUSLY EXPOSED TO HEXACHLOROBENZENE

R. Hoover, University of Wisconsin, Madison Campus, Graduate School, *500 Lincoln Dr., Madison, Wisconsin* 53706 (PROJECT #18)

In several eastern villages near Dyarbarkir, Turkey during a 3-year period from 1956-1959, about 4,000 people were inadvertently exposed to hexachlorobenzene (HCB) employed as a herbicide for seed grains used as food sources. Several adults and children died from acute toxicity. Those surviving developed neurologic and cutaneous problems. A description of this episode was provided by Peters, et al., and they concluded that HCB exposure was causative of this episode. Formerly exposed populations continue to be symptomatic. It appears that sufficient subjects from initial exposure cohorts are yet alive for follow-up study. Additionally, records of those initially exposed who have died in the past 20 years are available for mortality ascertainment. The exposed population is largely closed, having little in- or out-migration patterns. What, if any, long-term human effects may be associated with HCB exposure will be investigated.

The purpose of this study are to: 1) determine mortality characteristics of previously registered HCB victims; 2) determine HCB maternal milk, fat, and plasma concentrations of HCB in present survivors and children born since 1955; 3) ascertain current health status of present HCB-exposed survivors and their children; 4) study absorption, distribution, biotransformation, and excretion characteristics of HCB and derivative metabolites in experimental animals.

Mortality data of previously known HCB victims will be obtained, collected, and tabulated by age, sex, place of residence, and primary and secondary causes of death. These will be compared in a retrospective manner with similar data of individuals from the same general locale not exposed to HCB. Gas chromatography will be employed to quantitate HCB levels in maternal milk, fat, and plasma of present survivors and children born since 1955. Ascertainment of their current health status will be made by physical and chemical examination procedures. Special effort to investigate teratogenicity, oncogenicity, mutagenicity, behavioral changes, adverse reproductive phenomenon, etc., will be made. A study of the absorption, distribution, biotransformation, and excretion of HCB and derivative metabolites in experimental animals will be conducted.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. $1,000,000

2.0730,

RELIABILITY OF DATA ON ALCOHOL-COFFEE-TOBACCO USE AND CANCER INCIDENCE

E.L. Wynder, American Health Foundation Inc., *320 E. 43rd St., New York, New York* 10017 (P01 CA 12376-080026)

This project is part of a broader program (CA 12376).

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. funds n.a.

2.0731,

QUALITY OF LIFE, MORBIDITY IN SURVIVORS AFTER DEFINITIVE RADIATION THERAPY

S. Kramer, Thomas Jefferson University, Jefferson Medical College, Dept. of Radiation Therapy & Nuclear Medicine, *1025 Walnut St., Philadelphia, Pennsylvania* 19107 (P01 CA 11602-100026)

This project is part of a broader program (CA 11602).

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. funds n.a.

2.0732,

NCI/EPA EPIDEMIOLOGICAL STUDIES OF LUNG CANCER IN COMMUNITIES WITH NONFERROUS SMELTERS

W.J. Blot, Lehigh University, Center for Social Research, *10 W. 4th St., Bethlehem, Pennsylvania* 18015 (PROJECT #10)

Exposures to inorganic arsenic in nonferrous smelters are thought to induce lung cancer. A recent correlational study has raised the suspicion that a communitywide risk from arsenical air pollution may exist within counties where the smelters are located.

A case-control epidemiologic study of lung cancer is planned to sort out the roles of occupational exposures, general environmental exposures, and cigarette smoking in relation to the excess risk of lung cancer in nonferrous smelter counties. The study is being conducted in eastern Pennsylvania where a large work force is employed in the smelting of zinc ores. Recent (within 5 years) lung cancer cases and controls will be identified, and they, or their next-of-kin in the event they have died, will be interviewed for lifetime occupation, residence, and smoking histories.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. $123,000

2.0733,

EPIDEMIOLOGIC STUDIES OF CANCER IN LOUISIANA

W.J. Blot, Tulane University of Louisiana, School of Medicine, *1430 Tulane Ave., New Orleans, Louisiana* 70112

Mortality from lung, bladder, and pancreatic cancers has been shown to be excessive in Louisiana's southern parishes. This study was designed to generate clues to the causes of these cancers through a comparison of cancer and matched non-cancer death certificates with respect to residence location, occupation/industry classification, and ethnic classification of family surname. Death certificates of residents of 19 parishes were abstracted for the years 1960 to 1975. Parishes to be included were selected for their high lung, bladder, or pancreas mortality rates, or their heavy concentrations of petroleum, chemical, or paper manufacturing industries.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. funds n.a.

2.0734,

BLADDER CANCER IN NEW HAMPSHIRE, VERMONT, AND MAINE

R. Hoover, Westat Inc., *11600 Nebel St., Rockville, Maryland* 20852 (PROJECT #11)

New Hampshire, Vermont, and Maine have high rates of bladder cancer for both males and females. Since bladder cancer is usually more common in males than females, conducting a study in these three states provides an unusual opportunity to study bladder cancer in both sexes.

The study will be restricted to those areas within the three states which have high rates of bladder cancer for either males or females. The study will include a next-of-kin survey for all deaths due to bladder cancer in the past five years in those counties and a newly diagnosed case survey covering a period of twenty-four months. One control will also be selected for each case in both the next-of-kin survey and the new incidence survey. In addition to the surveys, a library study to characterize industrial and other relevant features of the study areas will be performed, as will be a collection of air and water quality samples. The study will be patterned on the Special Study of the Role of Saccharin in Bladder Cancer.

The primary objective of the study is to assess whether there is an association between certain environmental exposures and the high rates of bladder cancer in New Hampshire, Vermont, and Maine. In addition, the study will help to refine the understanding of associations that are already known to exist. The exposures being investigated are: 1) Consumption of artificial sweeteners 2) use of tobacco products, 3) occupational exposures, 4) residential history (for source of drinking water and air quality), 5) consumption of coffee and other beverages, 6) certain illnesses and medical therapies, 7) use of hair dyes. Of particular interest among these exposures are occupational exposures and air and water quality. In order to provide additional data to help analyze any associations, a historical study of industry in the data will be done and air and water quality samples will be taken in certain areas.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. funds n.a.

2.0735,

MORBIDITY AND INDUSTRIAL HYGIENE STUDY OF FIBROUS MINERAL WORKERS (ATTAPULGITE CLAY)

T. Cameron, U.S. Dept. of Health & Human Services, Public Health Service, Center for Disease Control, National Inst. for Occupational Safety & Health, *4676 Columbia Pkwy., Cincinnati, Ohio* 45226

The two companies which mine and process most of the attapulgite clay in the United States will provide medical data on their 600 workers. One of the companies has medical data covering three years. NIOSH in Cincinnati has already completed an IH survey in one of the mining and milling facilities. The National Cancer Institute will conduct a survey in the other mining and milling facility.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. funds n.a.

2.0736,

EPIDEMIOLOGICAL BIOMETRIC PROGRAM ON CANCER

J. Stamler, Northwestern University, Chicago Campus, School of Medicine, Dept. of Preventive Medicine & Community Health, *303 E. Chicago Ave., Chicago, Illinois* 60611 (P30 CA 15145-050060)

This project is part of a broader program (CA 15145).

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. funds n.a.

2.0737,

INVESTIGATION OF POSSIBLE CORRELATIONS BETWEEN MORPHOLOGICAL AND EPIDEMIOLOGICAL CHARACTERISTICS OF BREAST CANCER

B. Stenkvist, University Hospital, Dept. of Clinical Cytology, *75014 Uppsala, Sweden* (CB-53854-S)

To ascertain possible correlations between the morphologic variables and the established epidemiological risk factors of breast cancer. The results may be applied not only to identify individuals at high risk of breast cancer but may be used prognostically to predict course of disease. This prospective study will consist of two phases: Phase I will consist of a pilot study of histopathologic material from 110 breast cancers from four counties in Sweden utilizing the computerized Central Swedish Cancer Registry. The tumors will be classified histologically according to WHO (Scarff and Torloni 1968) and Acherman's Classification (1970). Another aim of this project is to make a quantitative evaluation of a number of morphological characteristics by computer analysis of tumor cell populations utilizing a Leitz MPVII scanning photometer connected to a PDP-8 computer with 24K of core, and relate these to the standard classification. Planning for the epidemiologic data will be collected on each patient and computerized. Under Phase II statistical analysis of the data will be made with application of the newly acquired morphologic classification to the epidemiologic variables.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. $30,000

2.0738,

STUDY OF ENVIRONMENTAL CANCER - PREPAID HEALTH PLAN

G.D. Friedman, Kaiser Foundation Research Inst., *1956 Webster St., Room 310 B, Oakland, California* 94612

OBJECTIVES: Evaluate hypotheses concerning environmental causes of cancer by analysis of informa-

tion in a Pre-Paid Health Plan, recorded over many years, on large groups of patients having particular cancers, and compare the data to those on individuals without the disease. Follow up on these analyses by extensive studies of those individuals who have had known exposures to the particular environmental factors suspected of playing a role in the etiology of the cancers concerned.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. $266,370

2.0739,

STUDY ENVIRONMENTAL CANCER - PRE-PAID HEALTH PLAN

A.G. Glass, Kaiser Foundation Research Inst., *5055 N. Greeley Ave., Portland, Oregon* 97217

OBJECTIVES: Evaluate hypotheses concerning environmental causes of cancer by analysis of information in a Pre-Paid Health Plan, recorded over many years, on large groups of patients having particular cancers, and compare the data to those on individuals without the disease. Follow-up on these analyses by extensive studies on those individuals who have had known exposures to the particular environmental factors suspected of playing a role in the etiology of the cancers concerned.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. $349,347

2.0740,

EPIDEMIOLOGIC STUDIES OF LUNG CANCER

R.C. Herrenkohl, Lehigh University, Center for Social Research, *10 W. 4th St., Bethlehem, Pennsylvania* 18015

The overall objective of this study is to identify the risk factors for lung cancer in three counties of eastern Pennsylvania which are in the vicinity of a nonferrous zinc smelter. This is being accomplished through personal interviews of the next-of-kin of 447 persons who died of lung cancer (cases) during the years 1974-1977, and of 447 persons who died of other causes (controls) during the same period. Controls include other cancers and non-cancers, but exclude lung-related diseases. This epidemiologic investigation is designed to assess the roles of occupation, residence, environment, tobacco consumption, and diet in relation to lung cancer mortality in these counties.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. $77,233

2.0741,

STUDY ROLE OF SACCHARIN IN BLADDER CANCER

D.A. Culp, University of Iowa, School of Medicine, Dept. of Urology, *Jessup Hall, Iowa City, Iowa* 52240

The objectives of this project are to provide information on the possible harmful effects in the area of bladder cancer, resulting from the widespread use of Saccharin.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. $200,919

2.0742,

BENIGN BREAST LESIONS IN RISK FOR BREAST CANCER

N.L. Petrakis, University of California, San Francisco Campus, School of Medicine, Dept. of International Health, *551 Parnassus Ave., San Francisco, California* 94122

Proposed here are several epidemiologic and laboratory studies designed to: ascertain the prevalence and spectrum of clinically palpable benign breast disease across racial groups whose breast cancer rates are known to vary; examine the association of known or suspected breast cancer risk factors and clinical benign breast disease, by race; determine the pathologic spectrum of breast tissue from biopsy series, by race, and the epidemiologic characteristics associated with different pathologic diagnoses; and investigate cytologic measures which might serve to differentiate women with healthy breasts and those with benign and malignant breast disease, by race.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. funds n.a.

2.0743,

DIET AND CHOLESTEROL METABOLISM IN BREAST CANCER

A.E. Papatestas, City University of New York, Mount Sinai School of Medicine, School of Medicine, Dept. of Surgery, *5th Ave. at E. 100th St., New York, New York* 10029

OBJECTIVES: To evaluate whether dietary and/or metabolic factors affect patterns of breast cancer development in general, and to identify which components of the diet are those which may affect breast cancer risk directly, or through metabolic changes. An attempt will be made to evaluate whether environmental dietary factors are more important than genetic metabolic factors in affecting cancer risk.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. funds n.a.

2.0744,

OCCUPATIONAL CANCER RISK IN HAWAII

M. Pi Mi, University of Hawaii System, Manoa Campus, John A. Burns School of Medicine, Dept. of Genetics, *2444 Dole St., Pacific Biomedical Res. Ctr., Honolulu, Hawaii* 96822

Provide data which will permit the linkage of official records: Civil Defense file, birth records, and death certificates for the population of Hawaii from 1942 to the latest year available with specific emphasis on occupation and/or place of employment.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. funds n.a.

2.0745,

EPIDEMIOLOGY OF HEPATOMA

P.R. Beasley, University of Washington, School of Medicine, Dept. of Epidemiology, *A-300 Health Sciences Ctr., SC-64, Seattle, Washington* 98195

Determine by means of a perspective study the relative risks of death from hepatoma among hepatitis B surface antigens carriers versus non-carriers. Follow-up subjects and controls with regard to hepatitis B surface antigen and antibody, and antibody to the core antigen, plus additional related tests as appropriate. Follow-up clinically, with appropriate laboratory testing, subjects with chronic hepatitis, cirrhosis, and hepatoma, and any others who are recommended for clinical follow-up on the basis of past and current medical history, to obtain information which contributes toward the above objectives.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. $63,170

2.0746,

NASOPHARYNGEAL CARCINOMA & BURKITT'S LYMPHOMA

J. Higgenson, Centre International de Recherche sur le Cancer, *150 Cours Albert Thomas, 69372 Lyon Cedex 2, France*

Continuation of Burkitt's lymphoma (BL) prospective studies, including epidemiological and virological studies in the West Nile. Malaria-related BL studies where EBV serological tests will be performed on selected portions of the population in Tanzania also will be continued. Genetic markers associated with NPC will be continued. Two HLA's previously identified in Chinese from Singapore and Hong Kong NPC will be followed from the Singapore group and search of HLA associated with NPC in Tunisia will also be continued. 'la-like' antigens screened previously from serum from multiparous women in the Chinese community in Singapore will be followed. The work on mixed lymphocyte reaction (MLR) and primes lymphocyte transformation for investigation of D locus antigen will also be continued. IARC will maintain the serum bank by aliquoting the the serum samples, storing the samples, and maintaining the complete records (clinical and virological testing data).

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. $298,750

2.0747,

SPECIAL PROJECTS IN HEREDITARY CUTANEOUS MELANOMA

W. Clark, University of Pennsylvania, School of Medicine, *36th & Hamilton Walk, Philadelphia, Pennsylvania* 19174

Clinical evaluation of families at high risk of cancer is part of the Environmental Epidemiology Branch's responsibilities. Dr. Clark has discovered a genetically determined precursor nevus syndrome in these groups of kindred. The specific studies to be accomplished under this contract are: electron-microscopic analysis of precursor moles, and development of educational materials to support the hereditary cutaneous melanoma project.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. $98,000

2.0748,

EVALUATION OF THE VIRAL ETIOLOGY OF BURKITTS TUMOR

F.K. Nkrumah, University of Ghana, School of Medicine, *P.O. Box 4236 Legon, Accra, Ghana*

Collect serum samples and appropriate clinical and epidemiologic data on patients treated by Burkitt Tumor Project, University of Ghana Medical School, as well as appropriate controls designated by the NCI Project Officer. Collect tissues and other biologic samples from patients treated by the Burkitt Tumor Project that are necessarily obtained as a part of the patients' routine diagnostic and therapeutic workup. Provide these biologic samples and appropriate data to the NCI Project Officer.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. $58,365

2.0749,

ANALYSIS OF NORWEGIAN DIETARY SURVEY DATE

E. Bjelke, Universitet i Bergen, *5014 Bergen Universitetet, Arstadvelen 19, 5000 Bergen, Norway*

Analyze the large set of Norwegian data on diet and cancer which has been collected over the past several years on the Norwegian Cancer Registry. It is hoped to find a relationship between diet and cancer.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. funds n.a.

2.0750,

ENVIRONMENTAL HEALTH DATA BASE FOR NEW JERSEY

T. Burke, State Dept. of Environmental Protection, *P.O. Box 1390, Trenton, New Jersey* 08625

Develop a resource which will provide researchers with environmental quality data at a level of refinement and completeness not prevously available. At the completion of the first year, the Department of Environmental Protection, State of New Jersey, will present the NCI with completed questionnaires for all major water purveyers, along with magnetic tapes containing supplementary water quality information. These data will facilitate the following analyses: the first statewide examination of historical chlorination practices; an examination of the relationship between chlorination and trihalomethane concentration in finished water; and an investigation of the relationship between sourcepollution and finished water quality.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. $152,081

2.0751,

STUDIES OF CANCER AMONG ATOMIC BOMB SURVIVORS

S. Jablon, National Academy of Sciences, *2101 Constitution Ave. N.W., Washington, District of Columbia* 20037

No summary has been provided to the Smithsonian Science Information Exchange.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. $195,700

2.0752,

LONG TERM MORTALITY STUDY OF MINNESOTA IRON-ORE MINERS

L.M. Schuman, University of Minnesota, Minneapolis Campus, School of Public Health, Dept. of Epidemiology, *1325 Mayo Memorial, Minneapolis, Minnesota* 55455

This is intended to be a collaborative study conducted by the University of Minnesota and the Environmental Epidemiology Branch of the National Cancer Institute. The contract calls for basic data collection activities whereby information from company employment records is abstracted and put into computer readable form. The work would include data editing and updating files with vital status information.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. $46,793

2.0753,

BIOSTATISTICS AND EPIDEMIOLOGY

D.J. Marchant, Tufts University, Boston Campus, New England Medical Center Hospital, *171 Harrison Ave., Boston, Massachusetts* 02111 (P30 CA 23776-019005)

This project is part of a broader program (CA 23776).

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. funds n.a.

2.0754,

ANALYZE RESEARCH ON EFFECTS OF IONIZING RADIATION

D.L. Weiss, National Academy of Sciences, *2101 Constitution Ave. N.W., Washington, District of Columbia* 20037

Conduct an analysis of the Federal Government's activities in ionizing radiation research, with emphasis on the human health and related biological aspects of that research, with respect to effects of ionizing radiation.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. funds n.a.

2.0755,

EPIDEMIOLOGY-REGISTRY SECTION

J. McCusker, University of Rochester, School of Medicine & Dentistry, Dept. of Pathology, *601 Elmwood Ave., Rochester, New York* 14627 (P30 CA 11198-119009)

This project is part of a broader program (CA 11198).

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. funds n.a.

2.0756,

PROGRAM OF EPIDEMIOLOGY-STATISTICS

J.W. Cole, Yale University, School of Medicine, Dept. of Surgery, *333 Cedar St., New Haven, Connecticut* 06510 (P30 CA 16359-050080)

This project is part of a broader program (CA 16359).

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. funds n.a.

2.0757,

EPIDEMIOLOGY

S.L. George, St. Jude Childrens Research Hospital, *332 N. Lauderdale St., P.O. Box 318, Memphis, Tennessee* 38101 (P01 CA 23099-020004)

This project is part of a broader program (CA 23099).

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. funds n.a.

2.0758,

CLUSTERING AND RISKS OF CANCER TYPES

A.G. Knudson, Inst. for Cancer Research, *7701 Burholme Ave., Philadelphia, Pennsylvania* 19111 (R01 CA 22780-020003)

This project is part of a broader program (CA 22780).

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. funds n.a.

2.0759,

INCIDENCE OF CANCER AS RELATED TO INDUSTRIAL EMISSION IN CONTRA COSTA COUNTY, CALIFORNIA

W. Blot, State Dept. of Health, *2151 Berkeley Way, Berkeley, California* 94704 (PROJECT #8)

Cancer incidence data (both mortality and morbidity) are available for Contra Costa County by census tract, age, sex, race, and other demographic characteristics related to cancer type and site from the California Tumor Registry (CTR) for years 1969-74, from the third National Cancer Survey, and from hospital records and death certificates for years 1974-76. The county contains over 500,000 people. There is clustering of manufacturing activity along the waterfront, including petroleum and chemical plants among the more than 7,000 industrial units which account for approximately 70% of the 30,000 tons shipped through the Golden Gate each year. The California Health Department is interested in, and concerned about, the emission of these toxic substances, and in cooperation with EPA, has planned an epidemiologic program to further evaluate and control this source of pollution.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. $263,000

2.0760,

A CASE-CONTROL STUDY OF ENVIRONMENTAL DETERMINANTS OF LUNG, PANCREAS, AND STOMACH CANCER IN SOUTHERN LOUISIANA

L.W. Pickle, Louisiana State University, Medical Center, School of Medicine, *1542 Tulane Ave., New Orleans, Louisiana* 70112

Mortality rates for lung, pancreas, and stomach cancer have been shown to be exceptionally high in a number of southern Louisiana parishes. The current study is an investigation into the reasons for these excesses. Cancer cases and matched controls (or their next-of-kin) diagnosed at selected area hospitals will be interviewed and their lifetime histories of smoking, occupation, residence, and diet compared. Relative risk estimates will be obtained to quantify the influence of occupational, residential, and ethnic factors on the occurrence of these cancers. It may also be possible to correlate these high cancer rates to environmental measurements data to be collected by the EPA in this area.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. funds n.a.

2.0761,

CORE - BIOSTATISTICS-EPIDEMIOLOGY

R. Prentice, Fred Hutchinson Cancer Research Center, *1124 Columbia St., Seattle, Washington* 98104 (P30 CA 15704-069002)

This project is part of a broader program (CA 15704).

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. funds n.a.

2.0762,

BIOSTATISTICAL SERVICES

L. Kolonel, University of Hawaii System, Manoa Campus, Pacific Biomedical Research Center, *2538 The Mall, Honolulu, Hawaii* 96822 (P30 CA 15655-059005)

This project is part of a broader program (CA 15655).

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. funds n.a.

2.0763,

MORTALITY AND INDUSTRIAL HYGIENE STUDY OF NEW AGENTS - III

T. Cameron, Stewart Todd Associates Inc., *Valley Forge Executive Mall, Wayne, Pennsylvania* 19087

Newly suspected hazardous agents are continually emerging. This project is designed to gather preliminary information, conduct preliminary and complete industrial hygiene surveys, and initiate epidemiological studies. The study will have essentially three objectives: 1) development of protocols and review of literature; 2) scheduling and conducting of initial field surveys; and 3) scheduling and conducting of detailed industrial hygiene studies.

Three broad agent categories will be assigned for literature evaluation and recommendations in regard to specific agents within these categories for study. These agent categories will be 1) wood preservatives, 2) flame retardants and 3) acrylates.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. funds n.a.

2.0764,

MORBIDITY AND INDUSTRIAL HYGIENE STUDY OF FIBROUS MINERAL WORKERS (TALC)

T. Cameron, U.S. Dept. of Health & Human Services, Public Health Service, Center for Disease Control, National Inst. for Occupational Safety & Health, *4676 Columbia Pkwy., Cincinnati, Ohio* 45226

A cross-sectional study of 125 mine and mill workers in New York State, who were exposed to talc containing tremolite and anthophyllite, has shown an excess of pleural thickening related to exposure. The workers were given blood tests, chest x-rays, spirometry studies, and respiratory questionnaires.

A cross-sectional medical and industrial hygiene study of talc workers in other states is in progress. This includes 183 workers exposed to Montana talc, 71 workers exposed to Texas talc, and 52 workers exposed to North Carolina talc. The studies are of two types: cross-sectional prevalence study, and a short-term study of acute pulmonary function changes in some of the workers from the prevalence study.

The prevalence study will examine the association of medical findings with cumulative exposure and respirable particles.

The acute changes in pulmonary function were measured by: 1) chest x-rays; 2) spirometry studies (before and after shift in some workers); 3) diffusion studies in workers older than 35 years of age; 4) sputum tests on workers older than 35 years of age; 5) respiratory questionnaires with respiratory symptoms, smoking, and occupational history information; and 6) personal and area environmental sampling.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. funds n.a.

2.0765,

SPOUSE STUDY

E.L. Wynder, American Health Foundation Inc., *320 E. 43rd St., New York, New York* 10017 (P01 CA 12376-080031)

This project is part of a broader program (CA 12376).

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. funds n.a.

2.0766,

CANCER MORTALITY STUDIES

L.M. Schuman, University of Minnesota, Minneapolis Campus, School of Public Health, Dept. of Epidemiology, *1325 Mayo Memorial, Minneapolis, Minnesota* 55455

Maintain basic mortality follow-up of the Lutheran Brotherhood cohort. Augment data base to include all information on 'lapses', i.e., include date policyholder lapsed, date of death (cause of death), or follow-up on survival (date last known to be alive). This is to be done for all previous lapses as well as for future lapses. Provide final reports (manuscripts) for NCI use on three studies already begun in 1978. Provide NCI with computer tapes of data base files, including follow-up and 'lapses' information. Descriptions of the files and identification of all data elements should also be included. Analytical or extract tapes should be submitted separately, with appropriate narratives to describe contents. These tapes

should be provided quarterly or semiannually, depending on the amount of update required.
SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. $124,122

2.0767,
EPIDEMIOLOGICAL DATA PROCESSING AND COMPUTER FACILITIES
S. Sieliman, American Health Foundation Inc., *320 E. 43rd St., New York, New York* 10017 (P01 CA 12376-080034)
This project is part of a broader program (CA 12376).
SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. funds n.a.

2.0768,
ORAL CONTRACEPTIVE USAGE AMONG PATIENTS WITH MALIGNANT AND BENIGN LIVER TUMORS
E.L. Wynder, American Health Foundation Inc., *320 E. 43rd St., New York, New York* 10017 (P01 CA 12376-080030)
This project is part of a broader program (CA 12376).
SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. funds n.a.

2.0769,
INDUSTRIAL EMISSION IN NEW JERSEY AND ITS RELATIONSHIP TO CANCER
T.J. Mason, State Dept. of Health, *135 W. Hanover St., Trenton, New Jersey* 08618 (PROJECT #9)
The NCI has a contract with the New Jersey Department of Health to investigate bladder cancer. This ongoing investigation has identified specific places in New Jersey where bladder cancer rates are elevated, and are continuing to increase. The EPA has developed expertise in taking environmental samples (e.g., air, water, soil, etc.) and analyzing them for known or suspected carcinogens. The NCI will inform the EPA concerning the specific places in New Jersey where environmental sampling needs to be done. The EPA will collect samples, and provide these data to the NCI.
SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. funds n.a.

2.0770,
VIRAL KERATOCONJUNCTIVITIS AND RELATED DISORDERS
E. Jawetz, University of California, San Francisco Campus, School of Medicine, Dept. of Microbiology & Immunology, *551 Parnassus Ave., San Francisco, California* 94122 (R01 EY 00186-26)
We propose to continue our productive studies on external eye diseases caused by chlamydial and viral agents, and etiologically and epidemiologically related infections. We plan broad, multidisciplinary investigations pertaining to diagnosis, immunology, treatment and control of infectious eye diseases which are important causes of human blindness. We shall concentrate particularly on chlamydial eye infections caused by different immunotypes of chlamydiae of genital or ocular origin on herpetic keratoconjunctivitis and on systemic aspects of herpesvirus infections, originating in the genital tract or in the eye, on adenovirus ocular infections, and on infections of as yet undefined etiology. We shall continue to study biologic and immunologic features of etiologic agents, the clinical and immunologic aspects of host responses in man, the dynamics of drug treatment (including controlled treatment trials), and epidemiologic features which determine behavior of the infections in various geographic and social environments. We bring to these studies specialized skills in ophthalmology, microbiology, virology, immunology, epidemiology, and chemotherapy as represented by various members of our group. We hope to contribute materially in the future, as we have in the past, to improved understanding of host-parasite relationships and mechanisms of control of a number of serious external eye diseases.
SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Eye Inst. $148,709

2.0771,
OCULAR ZOONOSES - THE CHLAMYDIAL INFECTIONS
H.B. Ostler, University of California, San Francisco Campus, School of Medicine, Dept. of Ophthalmology, *551 Parnassus Ave., San Francisco, California* 94122 (R01 EY 01205-03)
By the use of various culture techniques and serologic methods we propose to determine the frequency of latent chlamydial infections in commonly used laboratory and domestic animals. Suitable animal models will be developed to study the pathophysiology of chlamydial infections and to investigate potentially useful drugs for the treatment of chlamydial infections in man.
Sporadic human endemics, thought to arise from man's contact with various mammalian or avian species, will be investigated for chlamydial etiology. Various culture techniques and serologic methods will be applied, and the epidemiology of the ocular disease will be studied in detail.
SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Eye Inst. $0

2.0772,
ACUTE HEMORRHAGIC CONJUNCTIVITIS AND INTERFERON
G.J. Stanton, University of Texas, Medical Branch at Galveston, School of Medicine, Dept. of Microbiology, *300 University Blvd., Galveston, Texas* 77550 (R01 EY 01715-04)
Based on studies that show (1) enterovirus 70 (E70) and Coxsackievirus A24 (CA24) can be grown in primary conjunctival cells of mice, rabbits, and/or monkeys and that E70 virus is replicating in rabbits, the following research program is proposed: (a) to attempt to infect the eyes and central nervous system of immature species of mice, rabbits, hamsters, and monkeys with virus isolates that grow well in cell or organ cultures of each particular species and to concentrate on determining the site and extensiveness of E70 replication in rabbits. (b) As suitable animal model systems are established, the effect of IF, IF inducers specific hyperimmune antibody, and temperature elevation on pathogenesis of this eye disease will be studied and explored in detail to determine optimal conditions for possible application of these defense factors for control of epidemics or individual cases of the disease. (c) To continue to determine from human specimens, including tears, eye scrapings, and acute and convalescent serum (a larger number of these specimens are present in the laboratory and more are expected) the relationships between antibody formaton virus replication and the pathogenesis of this infection in man. We expect to obtain more samples from patients, especially for those infected with E70. (d) To physically and biologically characterize and attempt to further clarify the role of the early appearing antiviral activity in tears on the pathogenesis of acute hemorrhagic conjunctivitis. (e) To continue the serum survey and to characterize the nature of the anti-E70 substance present in 90 percent of the serum samples. The presence of this substance complicates any serologic survey and could be a diagnostic problem during outbreaks when definitive diagnosis has to be accomplished serologically. It would be desirable to be able to easily eliminate this substance, if it is not antibody, prior to testing for specific antibody. (f) To explore in detail the synergistic antiviral effect of antibodies and interferon both in cell cultures and animal model systems.
SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Eye Inst. $107,071

2.0773,
HLA AND GENETIC STUDIES IN DIABETIC RETINOPATHY
R.C. Ramsay, University of Minnesota, Minneapolis Campus, School of Medicine, Dept. of Ophthalmology, *1305 Mayo, Minneapolis, Minnesota* 55455 (R01 EY 02455-02)
The natural history of diabetic retinopathy is extremely variable among individual diabetic patients. At the present time no method is available that is able to predict which diabetics will develop the more advanced forms of retinopathy with their attendant poor visual prognosis. There is evidence that genetic factors, in addition to the metabolic abnormalities of diabetes, are important in the pathogenesis of diabetic retinopathy. The hypothesis for the proposed study is that there are one or more 'microangiopathy genes' in linkage disequalibrium with the HLA genes which determine susceptibility to serve diabetic microangiopathy. We plan to test this hypothesis by studying HLA A,B,C and D antigens and B-cell alloantigens in JIDD patients with and without severe retinopathy to see if differences exist. Similar studies will be carried out in AOD patients with and without advanced retinopathy. Prospective studies will be completed in patients followed in the DRS and ETDRS at the University of Minnesota. In addition to these association studies, linkage studies will be carried out in large diabetic multiplex families selected for either a high or low prevalence of proliferative retinopathy.
The determination of genetic markers for microangiopathy, which could serve as predictors for vascular complications, would have great practical significance for all patients with diabetes mellitus.
BIBLIOGRAPHIC REFERENCES: Barbosa, J., Ramsay, R.C. and Goetz, F.: Plasma glucose, insulin, glucagon and growth hormone in kindreds with maturity onset type of hyperglycemia in young people. Ann. Int. Med. 88:595, 1978.
SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Eye Inst. $91,885

2.0774,
CASE CONTROL STUDY OF DIABETIC RETINOPATHY
L.I. Rand, Joslin Diabetes Foundation Inc., *170 Pilgrim Rd., Boston, Massachusetts* 02215 (R01 EY 02636-02)
A Case-Control Study of diabetic retinopathy is underway comparing age and duration matched long term insulin dependent diabetics with and without retinopathy in regard to certain demographic, ocular, systemic, and metabolic factors to see if a profile for the high risk of retinopathy patient can be developed. Patients with little or no retinopathy will be followed prospectively to assess the predictive value of the factors identified.
A detailed manual of procedures (MOP) has been developed, forms and procedures tested, and patient recruitment has begun. We hope to follow-up on several cohorts of patients previously seen at the Joslin as part of the screening for case control patients.
Among the factors being studied will be diabetic onset symptoms, blood sugar levels, cigarette smoking, Hemoglobin A1C, growth hormone and glucagon after arginine stimulation, sedimentation rate, lipid profile including HDL cholesterol, 2'3 DPG, platelet aggregation, platelet growth factor, intraocular pressure, refractive error, lens autofluorescence. Vitreous fluorophotometry and mean retinal circulation time measurements using computer densitometric reading of fluorescein angiograms will be done on selected patients.
SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Eye Inst. $193,916

2.0775,
EPIDEMIOLOGICAL STUDY OF DIABETIC RETINOPATHY
R. Klein, University of Wisconsin, Madison Campus, Medical School, Dept. of Ophthalmology, *307 N. Charles St., Madison, Wisconsin* 53706 (R01 EY 03083-01)
A study of the prevalence and severity of diabetic retinopathy will be conducted in a group of 2,400 diabetic patients in their home communities. Objective recording of retinopathy by use of stereoscopic fundus photography combined with a standardized protocol for grading the retinopathy will be used. Grading of the stereo photographs will provide a sensitive and reproducible method for detection of retinopathy. The frequency and causes of visual impairment will be determined. The prevalence of retinopathy and of its various component lesions will be evaluated with respect to duration and age at diagnosis of diabetes, blood pressure level and smoking history.
SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Eye Inst. $143,991

2.0776,

STUDY HYPERTENSION IN THE GENERAL POPULATION

J. Stamler, Northwestern University, Chicago Campus, School of Medicine, Dept. of Preventive Medicine & Community Health, *303 E. Chicago Ave., Chicago, Illinois* 60611

Continue to carry out mortality surveillance on Stepped Care and Referred Care participants. Carry out surveillance of the normotensive sample. Each year for two years, perform on a 50% sample of Stepped Care and Referred Care a home visit. Participate in review and analysis of data from the continued surveillance as well as prior HDFP data.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Heart Lung & Blood Inst. $246,767

2.0777,

REEXAMINATION OF FRAMINGHAM HEART STUDY COHORT

T.R. Dawber, Boston University, School of Medicine, Dept. of Medicine, *80 E. Concord St., Boston, Massachusetts* 02215

Prepare and print examination forms, perform physical examinations including laboratory tests, assessment reviews, and take medical histories of all surviving members of the Framingham Cohort. For Cohort members who are unable to come to the examination center, arrange or perform a home physical examination. For Cohort members who no longer reside in the Framingham area, determine their health status by the use of mail questionnaires or telephone interviews.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Heart Lung & Blood Inst. $462,379

2.0778,

MINERAL PNEUMOCONIOSES - PATHOGENESIS AND PATHOLOGY (HUMAN)

J.E. Craighead, University of Vermont & State Agricultural College, School of Medicine, Dept. of Medicine, *85 S. Prospect St., Burlington, Vermont* 05401 (P60 HL 17292-050005)

This project is part of a broader program (HL 17292).

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Heart Lung & Blood Inst. funds n.a.

2.0779,

PROSPECTIVE STUDY OF POST TRANSFUSION HEPATITIS

J.W. Mosley, University of Southern California, School of Medicine, Dept. of Medicine, *2025 Zonal Ave., Los Angeles, California* 90033

Coordinate a well controlled prospective study of post-transfusion hepatitis involving study centers in Los Angeles, St. Louis, and Houston, as a pilot study or a possible five-year study of post-transfusion hepatitis.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Heart Lung & Blood Inst. funds n.a.

2.0780,

HYPERTENSION THERAPY IN THE GENERAL POPULATION

A. Oberman, University of Alabama in Birmingham, School of Medicine, Dept. of Medicine, *1919 7th Ave. S., Birmingham, Alabama* 35233

Continue to carry out mortality surveillance on Stepped Care and Referred Care participants. Carry out surveillance of the normotensive sample. Each year for two years, perform on a 50% sample of Stepped Care and Referred Care a home visit. Participate in review and analysis of data from the continued surveillance as well as prior HDFP data.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Heart Lung & Blood Inst. $226,561

2.0781,

STUDY OF HYPERTENSION THERAPY

M.D. Blaufox, Yeshiva University, Bronx Campus, Albert Einstein School of Medicine, Dept. of Medicine, *1300 Morris Park Ave., Bronx, New York* 10461

Continue to carry out mortality surveillance on Stepped Care and Referred Care participants. Carry out surveillance of the normotensive sample. Each year for two years, perform on a 50% sample of Stepped Care and Referred Care a home visit. Participate in review and analysis of data from the continued surveillance as well as prior HDFP data.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Heart Lung & Blood Inst. $271,416

2.0782,

DATA EPIDEMIOLOGY CENTER

K.M. Detre, University of Pittsburgh, Graduate School of Public Health, Dept. of Epidemiology, *4200 5th Ave., Pittsburgh, Pennsylvania* 15260 (R01 HL 19864-030002)

This project is part of a broader program (HL 19864).

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Heart Lung & Blood Inst. funds n.a.

2.0783,

FOLLOW UP OF STUDENTS FROM DORMONT, PENNSYLVANIA

K.D. Rogers, University of Pittsburgh, Graduate School of Public Health, Dept. of Epidemiology, *4200 5th Ave., Pittsburgh, Pennsylvania* 15260 (R01 HL 19864-030001)

This project is part of a broader program (HL 19864).

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Heart Lung & Blood Inst. funds n.a.

2.0784,

ESTABLISHMENT OF A LIPID RESEARCH CLINIC

Y. Stein, Hadassah Medical Org., *P.O. Box 499, Jerusalem, Israel*

Determine prevalence of hyperlipoproteinemia in a total population of 17-17 1/2 year olds and sample their parents. prevalence of primary and secondary hyperlipoproteinemia in populations. Compare prevalence of major ethnic subpopulations. Evaluate the populations' coronary heart disease status and relationship to hyperlipoproteinemia. Measure the intake of major nutrients by a one day dietary recall in hyperlipoproteinemic and control groups to evaluate whether the hyperlipoproteinemia is related to the intake of nutrients.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Heart Lung & Blood Inst. $400,000

2.0785,

THERAPY FOR HYPERTENSION IN THE GENERAL POPULATION

G. Entwisle, University of Maryland, Baltimore Professional Schools, School of Medicine, Dept. of Social & Preventive Medicine, *655 W. Baltimore St., Baltimore, Maryland* 21201

Continue to carry out mortality surveillance on Stepped Care and Referred Care participants. Carry out surveillance of the normotensive sample. Each year for two years, perform on a 50% sample of Stepped Care and Referred Care a home visit. Participate in review and analysis of data from the continued surveillance as well as prior HDFP data.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Heart Lung & Blood Inst. $229,579

2.0786,

STATEWIDE COORDINATION OF HIGH BLOOD PRESSURE CONTROL

D.B. McCallum, State Dept. of Health & Environmental Control, *2600 Bull St., Columbia, South Carolina* 29201

Develop a statewide high blood pressure (HBP) control coordinating council. Assess baseline information of high blood pressure and patient awareness and control levels. Prepare a plan to interpret, implement, monitor, and evaluate the HBP program. Collect baseline information describing morbidity/mortality patterns in stroke and hypertension related heart disease. Conduct an inventory of resources within the state which can be brought to bear on hypertension control. Conduct a follow-up evaluation.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Heart Lung & Blood Inst. funds n.a.

2.0787,

ASBESTOSIS - CELLULAR IMMUNITY, STRUCTURE AND MINERAL LOCALIZATION (HUMAN)

H. Weill, Tulane University of Louisiana, School of Medicine, Dept. of Medicine, *1430 Tulane Ave., New Orleans, Louisiana* 70112 (P50 HL 15092-080007)

This project is part of a broader program (HL 15092).

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Heart Lung & Blood Inst. funds n.a.

2.0788,

IMMUNOLOGIC STUDIES IN SILICOSIS (HUMAN, RABBITS, HAMSTERS, GUINEA PIGS)

M.R. Wilson, Tulane University of Louisiana, School of Medicine, Dept. of Medicine, *1430 Tulane Ave., New Orleans, Louisiana* 70112 (P50 HL 15092-080006)

This project is part of a broader program (HL 15092).

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Heart Lung & Blood Inst. funds n.a.

2.0789,

HIGH BLOOD PRESSURE CONTROL PROGRAM

A.R. Leonard, State Dept. of Health, *3330 Geary Blvd., Room 331, San Francisco, California* 94118

Develop a statewide high blood pressure central coordinating council. Assess baseline information of high blood pressure control and patient awareness and control levels. Prepare a written tentative plan to interpret, implement, monitor, and evaluate the program. Collect baseline information describing morbidity/mortality pattern. Conduct an inventory of resources within the state. Conduct a follow-up study.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Heart Lung & Blood Inst. funds n.a.

2.0790,

STATEWIDE COORDINATION OF HIGH BLOOD PRESSURE CONTROL

J.W. Southard, State Dept. of Health & Mental Hygiene, *201 W. Preston St., Baltimore, Maryland* 21201

Develop a statewide high blood pressure (HBP) control coordinating council. Assess baseline information of high blood pressure and patient awareness and control levels. Prepare a plan to interpret, implement, monitor, and evaluate the HBP program. Collect baseline information describing morbidity/mortality patterns in stroke and hypertension related heart disease. Conduct an inventory of resources within the state which can be brought to bear on hypertension control. Conduct a follow-up evaluation.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Heart Lung & Blood Inst. funds n.a.

2.0791,

RESPIRATORY AND IMMUNOLOGIC RESPONSES IN COFFEE PLANT WORKERS

R.M. Karr, Tulane University of Louisiana, School of Medicine, Dept. of Medicine, *1430 Tulane Ave., New Orleans, Louisiana* 70112 (P50 HL 15092-080011)

This project is part of a broader program (HL 15092).

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Heart Lung & Blood Inst. funds n.a.

2.0792,

LONGITUDINAL EVALUATION OF WORKERS EXPOSED TO COTTON DUST

R.N. Jones, Tulane University of Louisiana, School of Medicine, Dept. of Medicine, *1430 Tulane Ave., New Orleans, Louisiana* 70112 (P50 HL 15092-080012)

This project is part of a broader program (HL 15092).

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Heart Lung & Blood Inst. funds n.a.

2.0793,

HEPATITIS B IN NORMAL POPULATIONS--EPIDEMIOLOGY, RISK FACTORS AND TRANSMISSION

W. Szmuness, New York Blood Center of Greater N.Y. Community Blood Coun., *310 E. 67th St., New York, New York* 10021 (P01 HL 09011-160018)

This project is part of a broader program (HL 09011).

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Heart Lung & Blood Inst. funds n.a.

2.0794,

GENETIC AND ENVIRONMENTAL FACTORS IN CHRONIC PULMONARY DISEASE (HUMAN)

B.H. Cohen, Johns Hopkins University, School of Medicine, Dept. of Medicine, *725 N. Wolfe St., Baltimore, Maryland* 21205 (P50 HL 14153-080001)

This project is part of a broader program (HL 14153).

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Heart Lung & Blood Inst. funds n.a.

2.0795,

LONGITUDINAL STUDY OF SANDBLASTERS SILICOSIS (HUMAN)

M.M. Ziskind, Tulane University of Louisiana, School of Medicine, Dept. of Medicine, *1430 Tulane Ave., New Orleans, Louisiana* 70112 (P50 HL 15092-080002)

This project is part of a broader program (HL 15092).

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Heart Lung & Blood Inst. funds n.a.

2.0796,

RESPIRATORY AND IMMUNOLOGIC EVALUATION OF TOLUENE DIISOCYANATE EXPOSURE (HUMAN)

B.T. Butcher, Tulane University of Louisiana, School of Medicine, Dept. of Medicine, *1430 Tulane Ave., New Orleans, Louisiana* 70112 (P50 HL 15092-080005)

This project is part of a broader program (HL 15092).

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Heart Lung & Blood Inst. funds n.a.

2.0797,

EARLY NATURAL HISTORY OF ATHEROSCLEROSIS AND HYPERTENSION (CHILDREN)

G.S. Berenson, Louisiana State University, Medical Center, School of Medicine, Dept. of Medicine, *1542 Tulane Ave., New Orleans, Louisiana* 70112 (P50 HL 15103-080001)

This project is part of a broader program (HL 15103).

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Heart Lung & Blood Inst. funds n.a.

2.0798,

TUSCON EPIDEMIOLOGICAL STUDY OF AIRWAYS OBSTRUCTIVE DISEASE (HUMAN)

B. Burrows, University of Arizona, School of Medicine, Dept. of Internal Medicine, *1501 N. Campbell Ave., Tucson, Arizona* 85721 (P50 HL 14136-080009)

This project is part of a broader program (HL 14136).

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Heart Lung & Blood Inst. funds n.a.

2.0799,

EPIDEMIOLOGY OF SUDDEN DEATH (HUMAN)

G.S. Wagner, Duke University, School of Medicine, Dept. of Medicine, *Box 3711, Durham, North Carolina* 27710 (P50 HL 17670-050012)

This project is part of a broader program (HL 17670).

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Heart Lung & Blood Inst. funds n.a.

2.0800,

INTERSTITIAL LUNG DISEASE - CLINICAL, PATHOLOGIC AND EPIDEMIOLOGIC

E.A. Gaensler, Boston University, School of Medicine, Dept. of Biochemistry, *80 E. Concord St., Boston, Massachusetts* 02215 (P01 HL 19717-030038)

This project is part of a broader program (HL 19717).

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Heart Lung & Blood Inst. funds n.a.

2.0801,

SUBCLINICAL PULMONARY DISEASE IN A RURAL ENVIRONMENT (HUMAN)

J.E. Craighead, University of Vermont & State Agricultural College, School of Medicine, Dept. of Medicine, *85 S. Prospect St., Burlington, Vermont* 05401 (P60 HL 17292-050003)

This project is part of a broader program (HL 17292).

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Heart Lung & Blood Inst. funds n.a.

2.0802,

PSYCHOSOMATIC PREDICTORS OF HEART DISEASE IN ADOLESCENCE

C.J. Leitch, University of Washington, School of Nursing, Dept. of Community Health Care Systems, *Seattle, Washington* 98105 (R01 HL 22378-02)

The overall objective of the proposed research is to explore the variance and interrelatedness of selected psychosocial and somatic variables between a group of hypertensive and normotensive adolescents with the specific aim of developing a typology for identifying coronary proneness in youth. One hundred hypertensive student subjects and one hundred matched controls, ages 12-20, have been given physical examinations and psychologic tests by physicians and nurse practitioners at the Adolescent Clinic, Tacoma-Pierce County, Washington Health Dept. Data generated by the study will be blood pressure level, cholesterol, triglycerides and HDL levels, physical findings on examinations, salt abuse, physical activity, obesity and relative weight, family health and social history, needs achievement score, school anxiety scores, environmental change scores and scores on an interview designed to identify Type A behavior in adolescents. Data will be analyzed in terms of differences, variance, relatedness and clustering of factors. Since indications are that chronic CHD may have its genesis in childhood, this study has epidemiological significance especially to school nurses who could design programs to reverse the prognostic indications of possible findings during youth when unhealthful practices are easier to modify. It is planned that this study will lead to demonstration projects and long-term follow-up studies employing a variety of methodologies to test the reversal of significant findings.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Heart Lung & Blood Inst. $62,227

2.0803,

THE ETIOLOGY/PREVALENCE OF PERIPHERAL ARTERIAL DISEASE

M.H. Criqui, University of California, San Diego Campus, School of Medicine, Dept. of Community Medicine, *P.O. Box 109, La Jolla, California* 92093 (R01 HL 22255-02)

The objective of this study is to determine the prevalence of peripheral arterial disease (PAD) in a defined population by non-invasive techniques, to investigate the etiology of peripheral arterial disease by evaluating the association of certain cardiovascular disease risk factors with PAD, and to evaluate the degree of correlation between PAD and coronary heart disease (CHD) on a polulation basis in order to determine whether non-invasive tests of PAD can be used as a marker for CHD.

PAD is measured using four tests: (1) Flow velocity by Doppler ultrasound, (2) Segmental blood pressure, (3) Post-occlusive reactive hyperemia, and (4) Pulse reappearance time. Factors being investigated with regard to PAD include blood pressure, lipids, lipoproteins including the cholesterol/triglyceride ratio in VLDL, fasting plasma glucose, glycosylated hemoglobin, apoprotein E, a medical history, diet, medications, alcohol use, and cigarette smoking. Information on subsequent cause-specific mortality in this population will be obtained.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Heart Lung & Blood Inst. $94,412

2.0804,

ATHEROSCLEROTIC DISEASE AND RISK FACTORS IN TWINS

G.D. Friedman, Kaiser Foundation Research Inst., *1956 Webster St., Room 310 B, Oakland, California* 94612 (R01 HL 21971-03)

Using the large Kaiser-Permanente Twin Registry, we are carrying out a three-phase study of atherosclerotic disease and risk factors in adult like-sex monozygotic and dizygotic twins. The main objectives are to assess the degree of genetic determination of atherosclerotic disease, particularly coronary heart disease (CHD) and its risk factors, and to assess the role of environmental factors in CHD, with emphasis on cigarette smoking and alcohol consumption. The first phase is an analysis of responses to a questionnaire on health status, habits, and environmental exposures. The second is a review and analysis of medical records of those twins who are Kaiser Foundation Health Plan subscribers. The third phase will be a medical examination of 432 pairs of female twins including extensive laboratory tests. Long-term follow-up of participants is also planned.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Heart Lung & Blood Inst. $60,253

2.0805,

HEMODYNAMIC EFFECTS OF DIETARY SODIUM IN MAN

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Compelling evidence links dietary sodium intake with the prevalence of hypertension in several human population groups around the world. Epidemiologic studies of man and selective inbreeding studies in rats suggest that most population groups contain individuals who are either salt-sensitive, salt-resistant, or who lie somewhere in between. Limited, short-term human studies suggest that the hemodynamic basis of these differences lies in sodium's property of decreasing vascular resistance in normal subjects while increasing resistance in hypertensive subjects. Additional studies are needed to verify this important point and to determine its long-term significance. Non-invasive methods of estimating changes in total peripheral vascular resistance in response to dietary sodium manipulation using echocardiography and venous occlusion plethysmography will be tested as a means of identifying salt-sensitive individuals in the population who might benefit from preventive dietary measures. These methods have the advantage of avoiding the anxiety-provoked sympathetic nervous system stimulation associated with the placement of right heart catheter or intra-aeterial cannulae. The relative effect of dietary potassium on peripheral vascular resistance will also be studied. The groups to be studied will include normal subjects, normotensive subjects with a family history of hypertension, subjects with labile essential hypertension and subjects with mild, fixed essential hypertension. The relationships of dietary sodium and potassium with urinary prostaglandin excretion in the various groups of patients will also be explored.

BIBLIOGRAPHIC REFERENCES: Sullivan, J.M., Schoeneberger, A.A. and Ratts, T.E.: Effect of dietary sodium on left ventricular dimensions in normal human subjects. Clin. Res. 26:787, 1978.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Heart Lung & Blood Inst. $66,628

2.0806,

NATURAL HISTORY OF ASTHMA-METHACHOLINE TOLERANCE TEST

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We are interested in the factors responsible for the exquisite bronchial sensitivity of patients with bronchial asthma to certain mediators. This is a continuation of a population, genetic family study of certain host factors in bronchial asthma. This study deals with factors that are involved in determining the natural history of bronchial asthma in the general population. One of the major questions in this study is

whether the bronchial sensitivity of asthmatic individuals to methacholine occurs at an early age even before clinical manifestation of the disease occurs. We intend to use the methacholine inhalation challenge test as a means of defining asthma and possibly using this as a marker for elucidation of its genetic characteristics. Another major part of this study is to determine whether asthma is acquired, genetically transmitted, and/or the result of interaction of environmental and host factors.

We intend to study the natural history of asthma and methacholine sensitivity in patients who currently have asthma, former asthmatics, their atopic and non-atopic siblings, concordant and discordant twin pairs and in persons in asthmatic families with alpha-1-antitrypsin phenotypes MS, MZ and MM. We will study the genetic characteristics of predisposition to asthma, in the above high risk groups as well as low risk groups such as non-atopic families. Parameters to be assessed include methacholine tolerance, allergy history and skin tests, serum IgE, protease inhibitor (Pi) types, and Histocompatability antigens.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Heart Lung & Blood Inst. $69,379

2.0807,

COMMUNITY STUDIES OF OBSTRUCTIVE LUNG DISEASE

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We have performed cross-sectional surveys on the prevalence of symptoms of obstructive lung disease and on lung function in about 7000 residents aged 7 years and older of one urban and two rural communities, in Connecticut and in South Carolina. The results provide data on normal lung function in relation to age, sex, race and smoking habits, as well as comparison of symptom prevalence and of lung function in urban vs. rural residents and in black vs. white children and adults. We plan to use this extensive data base in longitudinal studies of lung function increase and incidence of asthma and of respiratory symptoms in children and adolescents, and of lung function decrements with age in adults, as a function of smoking habits, residence and occupation. There is emphasis on the study of women, adolescents and blacks, about whom few such data are available. The results will be related to data on outdoor and indoor air pollution, to evaluate the significance of these as risk factors in obstructive lung disease.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Heart Lung & Blood Inst. $51,366

2.0808,

GENETIC PATTERNS IN DEATHS FROM MI AND STROKE IN UTAH

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A file of over 1 million persons in Utah pedigrees is being linked to a file of 140,000 Utah deaths to identify clusters of early NR deaths in pedigrees. Analyses hope to show how often genetic predispositions contribute to early NR death and possibly help indicate the patterns of inheritance involved.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Heart Lung & Blood Inst. $89,456

2.0809,

VASCULAR LESIONS OF DIABETES IN OKLAHOMA INDIANS

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As part of a multinational cooperative research program sponsored by the World Health Organization, vascular manifestations of diabetes will be studied in a large population of Oklahoma Indians. Despite their great importance and their resistance to present therapeutic and preventive measures, both the microvascular and macrovascular lesions are still poorly understood. Recent evidence indicates, however, that there are major differences among populations in susceptibility to these lesions. Determination of the magnitude and character if these differences, and study of the genetic, racial, and environmental factors to which they relate, may be expected to yield useful information and clues applicable to their cause and mitigation. Previous comparative data have been difficult to interpret because methods have not been adequately standardized or detailed, and groups studied have very seldom been representative or large. Circumstances in Oklahoma are uniquely propitious because: 1. A large and virtually complete universe of Indian diabetics in a single circumscribed geographic area can be studied to determine and evaluate factors responsible for both intergroup variations in susceptibility to these lesions (coronary, retinae, kidney, brain, and legs). 2. Because data will be collected using standadized methods, they can then be compared directly with data from several other populations (WHO study) in which racial, genetic, cultural, social, nutritional and environmental circumstances vary widely. 3. Some of our results and the characteristics of our sub-populations can also be related to previously published data in other groups including other Indian diabetic populations in wich rates of certain vascular manifestations have been either high or low. 4. The design will also permit comparison and study of these lesions in several Oklahoma tribes and groups of tribes from widely divergent origins including two of the largest tribal groups in America (Plains Indians and Five Tribes Indians).

BIBLIOGRAPHIC REFERENCES: West, K.M. and Stober, J.A. Smoking and diabetic retinopathy. Lancet 2: 49, 1978. West, K.M. A detailed study of an epidemic of obesity and diabetes. Diabetes 28: 385, 1979.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Heart Lung & Blood Inst. $78,912

2.0810,

GLYCEMIA, OTHER TRAITS AND CV DEATH IN 40,000 PERSONS

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A 'second generation' prospective epidemiologic study on atherosclerotic cardiovascular diseases, particularly coronary heart disease, is under way to elucidate the role of glucose intolerance as an independent risk factor for macrovascular disease. It also has the goal of clarifying the role of other traits (e.g., hyperuricemia, obesity, rapid resting heart rate, pure systolic hypertension, ECG abnormalities) as risk factors, independent of the major risk factors (hypercholesterolemia, hypertension, cigarette smoking) demonstrated by the 'first generation' U.S. longitudinal epidemiologic studies. Almost 40,000 white and black men and women, chiefly 25-64 and identified in the Chicago Heart Association Project in Industry from 1967 to 1973 are to be followed for 10 years to determine the relationship of glucose tolerance (as well as clinically diagnosed diabetes, untreated and treated) and each of the other traits to rates of mortality from All Causes, Cardiovascular Diseases, Coronary Heart Disease, etc. For example, the contribution of glucose intolerance and clinical diabetes to risk of death, both cause-specific and all causes, is to be assessed with the following other baseline factors controlled in bivariate and multivariate analyses; age, serum cholesterol, blood pressure, cigarette smoking, relative weight, serum uric acid, heart rate, ECG abnormalities, and such demographic variables as education and marital status. For about 4,500 persons screened twice, the significance of two values and of changes in these variables for predicting risk is to be assessed. For 4,108 persons, the interplay between glucose tolerance and scores from the Jenkins Activity Survey (as well as other cited factors) in influencing risk of macrovascular disease death is to be evaluated.

BIBLIOGRAPHIC REFERENCES: Dyer, A.R., Stamler, J., Shekelle, R.B., Schoenberger, J.A. and Farinaro, E. Hypertension in the Elderly. Med. Clin. N. Am. 61, 513, 1977. Stamler, J. Lifestyles, Major Risk Factors, Proof and Public Policy. George Lyman Duff Memorial Lecture. Circulation, 58, 3, 1978.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Heart Lung & Blood Inst. $144,780

2.0811,

CHRONIC OBSTRUCTIVE PULMONARY DISEASE--FAMILIAL/GENETIC

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The increasingly common problem of COPD has been related to numerous extrinsic factors. Relatively little is known about host factors. Low alpha 1 antitrypsin levels explain only a small portion of cases. Recent demonstration of variation in leukocyte elastase activity among individuals suggests that protease/antiprotease relationship may be an important host mechanism. We recently studied 111 index subjects with COPD and 111 controls with demonstrated normal pulmonary function matched for age cohort, sex, smoking history, and occupation. With these predisposing factors matched, other host factors were analyzed: genetic, immunologic, and endocrine characteristics. Among the serum immunoglobulins, IgD was significantly higher in index cases as were IgD and IgM immunoglobulins in nasal secretions. Serum components of complement C3 and C4 were significantly lower in index cases than controls. Recent studies have shown that leukocyte elastase consumes complement, reducing serum levels. Predisposition to COPD has been shown in homozygote deficient alpha 1 antitrypsin cases. Since alpha antitrypsin specifically neutralizes leukocyte elastase and homozygote deficient cases are uncommon (3 ZZ's in our index group) in proportion to the total number of cases of COPD, high levels of leukocyte elastase could be a predisposing factor in subjects with more normal levels of alpha 1 antitrypsin. Since our subjects showed lower complement than controls, this finding reflects high leukocyte elastase activity. We propose to study leukocyte elastase and protease/antiprotease complexes in our index subjects, matched controls, and closest sibling of the same sex of index and control subjects whom we have already studied. We would plan to measure the pulmonary function to determine the three year decrement in values and compare these to the leukocyte elastase values and to other risk factors we have reported. The decrement in function may be a more sensitive measure of the pathogenesis of disease than a cross sectional study of these groups.

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2.0812,

PHYSICAL ACTIVITY AND INCIDENCE OF CHRONIC HEART DISEASE

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The evidence about physical activity and/or physical fitness as risk characteristics for coronary heart disease (CHD) is fraught with inadequacies in the design of studies and the information collected. These inadequacies may explain contradictory findings reported. In one study of physical activity and/or physical fitness, the United States Railroad Study (USSR), a unique combination is available of complete CHD risk factor ascertainment, estimates of leisure time and occupational physical activity, and an objective measure of physical fitness (a standardized exercise test). The USSR is a prospective study of 2571 men initially aged 40-59 employed by 20 railroad companies operating in the northwestern United States. Nearly 70% of a sample of all executives, dispatchers, switchmen, and clerks employed by these companies in 1957 was examined, first between 1957-1960, and again between 1962-1965. The USSR is a component of the International Cooperative Study of Cardiovascular Epidemiology (Seven Countries Study). Complete mortality followup has been accomplished through 10 years post-enrollment with data from the Railroad Retirement Board. It is proposed to study, in year 2 of this project, the relationships among CHD risk factors, physical activity, physical fitness, and mortality due to CHD. Such analysis will be made possible during year 1 of the project. Not only is this information needed to elucidate the nature and degree of any role of physical activity and fitness in CHD, but the study is timely in this period when professional public awarness is increasing of CHD risk factors and the potential for prevention of CHD.

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2.0813,

BLOOD GLUCOSE HGB A1C, AND DIABETIC VASCULAR DISEASE

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We are currently conducting a perspective evaluation of the role of diabetic blood glucose control in the development of microvascular disease and accelerated macrovascular disease in juvenile onset diabetic patients. Diabetic control is being evaluated by

serial measurements of glycosylated hemoglobins (Hgb A1 abc) at two month intervals, which provide an accurate integrated index of blood glucose levels over an extended period of time. Microvascular disease is assessed by the rate of progrssion of quadriceps capillary basement membrane thickness (CBMT) obtained on muscle biopsies at the beginning of the study, two and four years later. The traditional risk factors for the development of macrovascular disease in this population are being measured and correlated with the various parameters of diabetic control.

This proposal will analyze platelet function in this well characterized group of juvenile onset diabetics. The study will determine the nature and presence of platelet function abnormalities to the other parameters being measured in this population (i.e. glycosylated hemoglobin, capillary basement membrane thickness, plasma lipids, etc.). We will seek to determine the relationship of various parameters of diabetic blood glucose control to these platelet abnormalities, and more specifically analyze the role of the prostaglandin endoperoxide production pathway in the abnormal platelet function noted in these patients.

In addition, this proposal seeks to strengthen the existing data management system developed for this study by providing additional personnel to facilitate data entry and analysis.

BIBLIOGRAPHIC REFERENCES: Bunn, H.F., Gabbay, K.H., and Gallop, P.M.: The glycosylation of hemoglobin: Relevance to Diabetes Mellitus. Science 200:21-27, April 1978. Sosenko, J., Spack, N., Breslow, J., Miettinen, O., and Gabbay, K.H.: Relationship of glycosylated hemoglobin with cholesterol and LDL-cholesterol in insulin-dependent diabetics. Diabetes 27, Suppl. 2, p. 505 A, 1978.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Heart Lung & Blood Inst. $52,761

2.0814,
MYOCARDIAL FUNCTION RISK FACTORS, AND FUTURE CHD

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Ultra low frequency ballistocardiograms (Bcg) and transcutaneous carotid artery pulse recordings (CP) are being made on patients of the Multiple Risk Factor Intervention Trial (MRFIT). Three clinical centers of MRFIT with 2000 patients and the Coordinating Center are involved in this ancillary study. Bcg a and CP are recorded on magnetic tape cassettes in standarized format controlled by a data encoder developed by the applicant. Cassettes are then mailed to the applicant's laboratory for analysis by digital computer. Analog recordings on the cassettes are converted to digital time series on industry compatable nine tract digital magnetic tape. This step is carried out on a specialized digital tape recorder. Data from these first pass digital tapes are then edited to produce second pass archive tapes with ideal properties for further processing. The editing procedure is accomplished on large scale computers of the main institutional computer center. Digital time series of Bcg and CP are then analyzed by a feature recognition and measurement (FRAM) program in the same machine. Standardized objective measurements of Bcg and CP obtained in this way are then employed in crossectional analyses and multivariate prognostic calculations. Bcg and CP are expected to demonstrate response to interventions and add important independent contributions to known predictive power of established risk factors for coronary heart disease.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Heart Lung & Blood Inst. $79,617

2.0815,
PROSPECTIVE BUNDLE BRANCH BLOCK STUDY

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The objective of the proposed research is to correlate measurements of atrioventricular node (A-H) and infranodal (H-Q) conduction times and refractory periods with the total mortality, incidence of sudden death and progression to higher grades of AV block in patients with bundle branch block (BBB). His bundle recordings will be obtained in patients with bundle branch agreeing to enter this study in order to estimate AV nodal and infranodal conduction time. These patients will be followed either in the cardiac clinic at San Francisco General Hospital or by private referring physicians. Either the patient or referring physician is contacted at 3 month intervals and pertinent physical findings, symptoms and 12-lead EKG are recorded. A 24-hour continuous EKG monitor is obtained at least 3x/year and more often when clinically indicated. In the event of death, a Public Health nurse interviews the patient's family or friends, reviews the death certificate or results of the post-mortem examination (where available) in order to determine the cause and suddenness of the demise. Documented episodes of 2 degrees and 3 degrees AV block will be compiled. The projected study represents a continuation of an ongoing study funded by the Bay Area Research Committee and institutional grants. Analyses of the data will hopefully allow us to define a subset of patients with BBB who are at increased risk for development of either sudden death and/or high grade AV block and may have important implications with regard to prophylactic cardiac pacemaker implantation in patients with BBB.

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2.0816,
GENETIC EPIDEMIOLOGY OF PRECURSORS OF HYPERTENSION

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This project aims to specify the role played by those genetic, environmental, and psychosocial factors causing blood pressure to rise in a migrant population.

The Tokelauans are a Polynesian people migrating from their traditional atolls to New Zealand where by analog with other migrating Polynesians, a rise in blood pressure is expected to follow migration. Approximately one half of the population has remained in its traditional setting while the other half has migrated to New Zealand. The extensive data already collected on this population includes detailed genealogical records; a wide range of medical, sociological and physiological variables for the pre-migrant period and which is updated every 2-3 years in both the migrant and non-migrant populations; anthropometric and genetic marker data for a sub-sample of the population.

By use of regression models based on the distribution of genetic relationships between individuals in similar and different environments we will attempt to estimate the influence of the genetic component and the genotype-environment interaction component on the distribution of blood pressures and related physiological variables. Particular attention will be directed to the factors influencing blood pressure in the migrant children and towards the construction of a pre-clinical 'at-risk' profile for this population.

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2.0817,
CORONARY RISK FACTORS IN CHILDREN

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This epidemiologic study is a multidisciplinary approach to ellucidate the relationship of early childhood levels of blood lipoproteins, blood pressure and anthropometric measures to the development of hyperlipidemia and hypertension in late childhood and early adult life. An entire school district of approximately 6,000 school age children in Muscatine, Iowa have had their plasma lipids, blood pressure, heights, weights, and triceps skinfold thickness measured on three occasions over a five year period. Thus, the entire distribution of these variables are known at each school age level, and the relationship of the measurements made on the same individual on repeated occasions can be estimated.

It is planned to examine the familial and psychologic factors relating to the distribution of blood pressure, and to study cardiac output and vascular resistance not only as they exist across the distribution of blood pressure but also as they are affected by orthostatic stress and sodium intake.

BIBLIOGRAPHIC REFERENCES: Clarke, W.R., Schrott, H.G., Leaverton, P.E., Connor, W.T., Lauer, R.M. Tracking of Blood Lipids and Blood Pressures in School Age Children: The Muscatine Study. Circulation: 58:626-634, 1978.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Heart Lung & Blood Inst. $56,971

2.0818,
FACTORS IN BLOOD PRESSURE LEVELS OF CHILDREN

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This study aims to determine the relationship of dietary habits, psychosocial factors and physical fitness to the BP levels of children. It is difficult to study diet in relation to blood pressure levels in the USA because of the uniformity of US dietary practices. Seventh-Day Adventists (SDAs) are a conservative religious group, many of whom adhere to unique dietary practices such as the avoidance of meat and caffeine and their exposure to, and mechanisms of coping with, stress may be considerably different from the general population.

The study population consists of 1st-10th grade students attending SDA parochial schools as well as public schools. Approximately 9,000 students will initially be screened with 3 BP determinations. Detailed information on dietary habits, psychosocial factors and fitness levels as well as 9 BP measurements will then be obtained at school from all students in the extremes (1,200) of their respective age-sex distribution and a sample (600) of those with intermediate levels. Similar information, as well as BP measurements (x 3) will also be obtained from parents of this sample of students. Parent-child pairs which are markedly discordant or concordant on BP level will be studied in greater depth. We will also be able to observe whether changes in BP occur in a sample of SDA students who experience marked change in dietary habits and social environment by transferring to SDA boarding schools. The population will include adequate numbers of comparable persons of 3 ethnic groups (Blacks, Mexican-Americans, Whites) who range in dietary habits from spartan pure vegetarians to the extremes of the typical American diet. Psychosocial traits may also be widely discrepant in segments of this population. Thus this study holds great promise of identifying modifiable dietary or psychosocial factors related to elevated BP in both children and adults.

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2.0819,
HIGH BLOOD PRESSURE IN THE YOUNG

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The proposed research involves a 7-10 year follow-up of identified populations of young adults to determine factors in adolescence associated with subsequent hypertension. We propose to follow young mothers who, as adolescents, experienced hypertension during their first pregnancy and similar young mothers, normotensive during pregnancy. Recent follow-up studies at 3-6 years post partum indicate that women hypertensive during pregnancy and their children have higher blood pressures than controls; 14% of women hypertensive during pregnancy, but no control women, were found to have blood pressure greater than or equal to 140/90 on repeated measurements, and EKG studies showed evidence of increased left ventricular wall thickness. Group differences in renin-aldosterone responses to exercise were also found. We propose to follow these women and their children to determine whether hypertension of pregnancy is associated with subsequent hypertension and the emergence of hypertensive cardiovascular disease in young mothers, and higher blood pressures in their children compared to controls.

We also propose a follow-up of young adults who participated in a blood pressure screening project during high school in 1973. A five year follow-up in progress indicates that individuals in this population maintain their relative rank-order for blood pressure over time, and blood pressure measurements during adolescence are predictive of subsequent blood pressure. Relatively high blood pressures are associated with an increased prevalence of abnormal echocardiograms and exercise EKG studies. We propose to re-evaluate these individuals after 7-10 years to determine if relative blood pressure rank is maintained; to determine whether relatively high blood

pressure in adolescence predisposes to hypersion and hypertension of pregnancy; to study aggregation of cardiovascular disease risk factors in young adults; to identify early evidence of cardiovascular disease. Sympathetic nervous system activity, the renin-aldosterone axis, and steroid responses to graded ACTH infusions will be studied in 'pre-hypertensive' young adults to identify mechanisms that may be involved in the pathogenesis of hypertension. We will also study the effects of an exercise intervention program on high blood pressure in young adults.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Heart Lung & Blood Inst. $103,420

2.0820,

A PROSPECTIVE STUDY - BLOOD PRESSURE IN NEWBORN TWINS

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The primary research objective is to estimate the relative contributions of genetics and environment to blood pressure levels among a group of newborn twins. Blood pressure is measured on days 0, 1, 2, 3, 14 and 1, 3, 6, 9 and 12 months. Zygosity is determined through blood group analysis, dermatoglyphics, physical appearance, and placental assessment. Placentation is also analyzed for each twin pair with respect to intravascular communications. Additionally, parents and siblings of the twins are evaluated as to blood pressure, height and weight. The ultimate purpose of this research is to shed light on the etiology of blood pressure levels in order to aid in the identification of individuals most likely to experience elevated blood pressure.

BIBLIOGRAPHIC REFERENCES: Levine, R.S., Hennekens, C.H., Lay, R., Gourley, J., and Gelband, H.: A twin method for estimating inter-observer variability of gestational age assessment. Southern Society for Pediatric Research, New Orleans, Jan. 18-20, 1979. Clin. Res. 26:826A, 1978. Levine, R.S., Gourley, J., Hennekens, C.H., Cassady, J., Golding, M., Lewis, L., Nirenberg, J., and Gelband, H.: Pre-natal influence on newborn blood pressure. Society for Pediatric Research, Atlanta, April 30-May 4, 1979.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Heart Lung & Blood Inst. $191,374

2.0821,

HIGH BLOOD PRESSURE IN THE YOUNG, PREVALENCE & PRECURSOR

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This project is intended to explore blood pressure levels and responsivity of children, as well as their personality attributes, in relation to the presence of parental primary hypertension and parental personality attributes of a type that have been identified as related to primary hypertension. The intention is to examine separately and in combination the possible effect on children of parents' hypertension and personality. A principal question is whether one can identify child rearing attitudes and behaviors that suggest a mechanism for transmission between parents and children that produces elevated blood pressure in children. In addition, it is also important to determine whether parents train their children to become the kinds of persons that have psychological attributes that might later in life be associated with hypertension.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Heart Lung & Blood Inst. $131,896

2.0822,

CHILDHOOD DETERMINANTS OF BLOOD PRESSURE

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Data collected from the Boston cohort of the Collaborative Perinatal Study (over 8000 subjects studied between 1959 and 1973) are currently being evaluated in regards to blood pressure in the children. Determinants of blood pressure measured at seven years of age are being sought from the mother's blood pressure during pregnancy, a history of toxemia of pregnancy, a number of perinatal and early developmental factors in the child, and behavioral and socioeconomic factors during early life. Preliminary analyses have identified high blood pressure in the mother, prematurity, toxemia of pregnancy, low socioeconomic status and, especially, obesity in the child as factors related to higher blood pressure at seven years of age.

A subset of 400 of the original cohort (now 15 to 18 years of age) are being reevaluated at the present time. The resting blood pressure, as well as the blood pressure response to a number of stressful stimuli (cold pressor test, handgrip exercise, psychological stress), are being measured. The young subjects are also undergoing echocardiography to estimate left ventricular mass, contractility, and cardiac output, and are completing questionnaires designed to assess personality type, repressed hostility, and other such parameters.

BIBLIOGRAPHIC REFERENCES: Ellison, R.C., Freedom, R.M. Keane, J.F., Nugent, E.W., Rowe, R.D., Miettinen, O.S., Weidman, W.H: Indirect Assessment of Severity in Pulmonary Stenosis. Circulation 56:14, 1977 (supplement I). Wagner, H.R., Weidman, W.H. Ellison, R.C., Miettinen, O.S.: Indirect Assessment of Severity in Aortic Stenosis. Circulation 56:20, 1977 (supplement I).

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Heart Lung & Blood Inst. $25,577

2.0823,

HYPERTENSIVE PROGENY - PHYSICAL/HUMORAL PRECURSOR SEARCH

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PLAN: The proposed research will study children at high risk of hypertension because of hypertensive parents. Since blood pressure rises with age have been shown to begin during the childhood, this period may be ideal to study the genesis of hypertension. Changes of Physical (blood pressure) and Humoral (urinary kallikrein, prostaglandins, catecholamines and plasma renin) factors in response to exercise will be measured. A prospective four year study is planned in the form of a re-examination of both physical and humoral factors two years following the initial measurements.

PREVIOUS WORK: Results from preliminary studies at the Medical University have suggested the hypothesis that exercise stress testing of children may provide clues to identify risk factors, if not precursors, of adult hypertension because (1) such stress testing has shown a group of hyper-reactors in that their blood pressure responses were above the upper extreme of the distribution of 'normal' children. (2) Certain humoral factors, measured in Medical University of South Carolina research laboratories, seem to correlate with this finding.

POPULATION: Prospective study participants are available from those registered in the computer of the Family Practice Department at the Medical University of South Carolina. The population of this registry is shown to be similar to the population of Charleston County, South Carolina (an area with a high incidence of hypertension) as regards age, race, sex and income characteristics.

ANALYSIS: Case-control approaches are proposed to test the study hypothesis by estimating the odds of an effect, given selected characteristics such as vasoconstrictors (renin; catecholamines), vasodilators (prostaglandins; killikreins), obesity, cardiac output and family history. Control of confounding and interactive effects are planned in both categorical and continuous analyses. Further long-term prospective studies might be planned if 'tracking' seems apparent at the two year repeat evaluation.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Heart Lung & Blood Inst. $158,259

2.0824,

ANTECEDENTS OF ADOLESCENT HYPERTENSION

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The objectve of this project is to study the epidemiology of elevated blood pressure and hypertension during adolescence. The study subjects are drawn from a population for which extensive longitudinal data, collected prospectively, are available. Three samples of adolescents are being studied: (1) a representative sample stratified by age, sex, and race; (2) a sample of adolescents who had elevated blood pressure at seven years of age; and (3) a sample of adolescents whose mothers had toxemia of pregnancy.

Antecedent variables include maternal and prenatal factors, complete postnatal medical histories, physical growth data, psychological test data, and detailed information about socioeconomic status.

Current assessments are taking place at three annual intervals and include the collection of demographic information, recent medical history, blood pressure measurements, growth and maturation measures (height, weight, skinfold thicknesses, and hand-wrist radiographs, and measures of steroid hormones), and psychological profiles.

Our analyses will aim to clarify the relationship among elevations in blood pressure, antecedent variables, and current parameters of physical growth, body composition, mental health status, socioeconomic status, and sexual maturation.

BIBLIOGRAPHIC REFERENCES: Prebis J.W.; Gruskin A.B.; Katz S.H.; Baluarte H.J: Uric Acid in Childhood Hypertension. National Conference on High Blood Pressure Control. Washington, D.C., April, 1979. (J. Preven Med, in press), Katz S.H.; Hediger M.L.; Barker W.F.; Cocroft J.R.; Bowers E.J.; Schall J.I.; Eveleth P.B.; Gruskin A.B.: Associations Between Skeletal Age and Systolic Blood Pressure. National Conference on High Blood Pressure Control. Washington, D.C., April 1979, (J Preven Med., in press).

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Heart Lung & Blood Inst. $190,162

2.0825,

BLOOD PRESSURE OF CHILDREN AND YOUNG ADULTS

L.H. Kuller, University of Pittsburgh, Graduate School of Public Health, Dept. of Epidemiology, *4200 5th Ave., Pittsburgh, Pennsylvania* 15260 (R01 HL 19864-03)

The project consists of two studies. The first study is a prospective investigation of blood pressure and heart rate in newborn infants with follow-up determinations conducted at 6, 15, and 24 months of age. The primary aims of the study are to establish the normal values of these variables in infancy, and to identify any possible racial difference in blood pressure and heart rate at this early age. The second portion of the project is an ongoing historical prospective study of the relationship between obesity, body type, social characteristics and casual blood pressure during adolescence and subsequent blood pressure levels in a predominantly white, middle-class population originally studied from 1957-1963.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Heart Lung & Blood Inst. $107,178

2.0826,

ETIOLOGY OF SUDDEN DEATH IN ATHLETES

B.J. Maron, U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Heart Lung & Blood Inst., Clinical Physiology Section, *9000 Rockville Pike, Bethesda, Maryland* 20205 (Z01 HL 01765-01 CB)

Sudden death occurring in competitive athletes is usually due to structural congenital cardiovascular disease. The most common cause of such deaths in this series was hypertrophic cardiomyopathy. While the suspicion of cardiovascular disease is often raised during life in such athletes, the coreect diagnosis is not often made clinically.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Heart Lung & Blood Inst. funds n.a.

2.0827,

IMPACT OF STATEWIDE COORDINATION OF HYPERTENSION CONTROL

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Develop a statewide high blood pressure control coordinating council. Assess the level and type of statewide coordination existing prior to the onset of the project. Assess baseline information on the prevalence of high blood pressure and patient awareness and control levels. Prepare a written high blood pressure control plan to interpret, implement, monitor, and evaluate the program. Collect baseline information describing morbidity/mortality patterns in stroke and hypertension related heart disease. Collect an inventory of resources within the state of Maine

which can be brought to bear on hypertension control. Implement high blood pressure control plan developed. Conduct a follow study to measure changes in levels of coordination, prevalence of awareness about high blood pressure, and morbidity and mortality rates relating to objectives in this Program, which have occurred during the time of the coordination effort.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Heart Lung & Blood Inst. $323,561

2.0828,

FRAMINGHAM COHORT SURVEILLANCE AND OFFSPRING STUDY

T.R. Dawber, Boston University, School of Medicine, Dept. of Medicine, *80 E. Concord St., Boston, Massachusetts* 02215

Perform a morbidity and mortality surveillance of the Framingham Heart Study Cohort. Re-examine the offspring and theirspouses. Assist NHLBI staff with special testing of the offspring and their spouses. Participate in the process of data editing and data reduction.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Heart Lung & Blood Inst. $463,615

2.0829,

OCCUPATIONAL HEALTH FIELD STUDIES (WOODWORKERS)

J.E. Craighead, University of Vermont & State Agricultural College, School of Medicine, Dept. of Medicine, *85 S. Prospect St., Burlington, Vermont* 05401 (P60 HL 17292-050033)

This project is part of a broader program (HL 17292).
SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Heart Lung & Blood Inst. funds n.a.

2.0830,

LONG TERM RESPIRATORY EFFECTS OF HIGH LEVEL ACUTE CHLORINE GAS EXPOSURE (HUMAN)

R.N. Jones, Tulane University of Louisiana, School of Medicine, Dept. of Medicine, *1430 Tulane Ave., New Orleans, Louisiana* 70112 (P50 HL 15092-080015)

This project is part of a broader program (HL 15092).
SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Heart Lung & Blood Inst. funds n.a.

2.0831,

GEOGRAPHIC PATHOLOGY OF ATHEROSCLEROSIS AND CORONARY HEART DISEASE (HUMAN)

R.E. Tracy, Louisiana State University, Medical Center, School of Medicine, Dept. of Pathology, *1542 Tulane Ave., New Orleans, Louisiana* 70112 (P01 HL 08974-150028)

This project is part of a broader program (HL 08974).
SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Heart Lung & Blood Inst. funds n.a.

2.0832,

ENVIRONMENTAL FACTORS IN AIRWAYS OBSTRUCTIVE DISEASES (HUMAN)

M.D. Lebowitz, University of Arizona, School of Medicine, Dept. of Internal Medicine, *1501 N. Campbell Ave., Tucson, Arizona* 85721 (P50 HL 14136-080016)

This project is part of a broader program (HL 14136).
SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Heart Lung & Blood Inst. funds n.a.

2.0833,

RISK FACTORS FOR AIRWAYS OBSTRUCTION IN A RURAL COMMUNITY (HUMAN)

M.S. Tockman, Johns Hopkins University, School of Medicine, Dept. of Medicine, *725 N. Wolfe St., Baltimore, Maryland* 21205 (P50 HL 14153-080010)

This project is part of a broader program (HL 14153).
SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Heart Lung & Blood Inst. funds n.a.

2.0834,

NATURAL AND EXPERIMENTAL ATHEROSCLEROSIS

J.P. Strong, Louisiana State University, Medical Center, School of Medicine, Dept. of Pathology, *1542 Tulane Ave., New Orleans, Louisiana* 70112 (P01 HL 08974-15)

The ultimate objective of this research is to determine the etiology and pathogenesis of atherosclerosis and its sequelae. This objective is approached by combining morphologic, experimental, epidemiologic, chemical, cytologic and biometric methods. The possible etiologic relationships of certain environmental factors and disease states to arterial lesions, coronary heart disease and sudden death are being studied using a community patholoy approach. This study of a 100 percent sample of deceased men, 25-44 years of age, from the biracial community of New Orleans includes a detailed examination of the heart, coronary arteries, and the postmortem characteristics of the 80 percent of deaths which are autopsied. An explanation for an apparent anomalous difference in coronary heart disease in young Negro and Caucasian men is being sought. Experimental studies in nonhuman primates are being used to study the mechanisms of development and regression of diet-induced arterial lesions. Factors causing variability in rate of development of regression of diet-induced atherosclerotic lesions are being studied. Cholesterol and lipoprotein metabolism is also being investigated in primate animals to obtain an understanding of the mechanisms responsible for the large differences in serum cholesterol or lipoprotein concentration among animals. Tritiated thymidine uptake studies are used to study the role of cell proliferation in the pathogenesis of atherosclerosis. Archived coronary arteries, and associated clinical data obtained from 24,000 autopsies from 19 geographic and racial groups are being used to obtain a better understanding of the natural history of human atherosclerosis and its geographic distribution.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Heart Lung & Blood Inst. $549,355

2.0835,

RESEARCH AND RESOURCE BLOOD PROGRAM

A. Kellner, New York Blood Center of Greater N.Y. Community Blood Coun., *310 E. 67th St., New York, New York* 10021 (P01 HL 09011-16)

A broad research program both basic and applied, in those fields that underlie blood transfusion and transplantation: 1. The molecular mechanism which controls RNA transcription in the nucleus and its transport into cytoplasm. 2. Epidemiology of hepatitis. 3. Human Cytogenetics; a study of Bloom's syndrome. 4. The intracellular sites for the biosynthesis of proteins. 5. The regulation of transfer RNA methylating enzymes. 6. Operations research and the management of regional blood centers. 7. The structure and biosynthesis of fibrinogen. 8. The mapping of human chromosomes. 9. Characterization of the hepatitis B virus particles. 10. Characterization of the hepatitis B viruses.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Heart Lung & Blood Inst. $2,265,864

2.0836,

PULMONARY SCOR - AIRWAYS OBSTRUCTIVE DISEASES

B. Burrows, University of Arizona, School of Medicine, Dept. of Internal Medicine, *1501 N. Campbell Ave., Tucson, Arizona* 85721 (P50 HL 14136-07S1)

The work proposed is directed toward meeting the objectives of the Arizona SCOR, i.e., to elucidate the pathogeneses, pathophysiology, natural histories and factors contributing to the development of airway obstructive diseases (AOD) in order to prevent, detect, and/or treat AOD. To accomplish this, seven closely related projects, supported by Core units, comprise a multidisciplinary program involving and combing epidemiological, clinical, pathophysiological, experimental, and radiological approaches to the AOD problem. The prospective longitudinal epidemiological survey of the 4000 members of 1650 Tucson households will continue to study the role of environmental, host, and genetic factors, including atopy, asthma, and history of bronchiolitis or other childhood respiratory illness, in contributing to the risk of developing chronic bronchitis, emphysema, or other chronic obstructive pulmonary disease (COPD), and provides further opportunity to evaluate methods for early detection of subclinical COPD. Air versus helium oxygen flow-volume curves and chest radiographs will be evaluated in this context. In subpopulations, there are specific studies of the role of aeroallergens, atopy and IgE levels, airway reactivity, or alpha-1-antitrypsin Pi MZ phenotype in development of AOD. Pediatric lung function tests are being developed and will be utilized to study childhood airways diseases and their long-term consequences. Experimental studies are being employed to relate structure to function in canine models of AOD and in excised lung preparations and human autopsy material, combining physiological measurements with simultaneous roentgenographic image magnification and subsequent morphometry and refinements of high resolution radiologic imaging will continue.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Heart Lung & Blood Inst. $10,514

2.0837,

JOHNS HOPKINS LUNG CENTER - CHRONIC DISEASES OF AIRWAYS

H.A. Menkes, Johns Hopkins University, School of Medicine, Dept. of Medicine, *725 N. Wolfe St., Baltimore, Maryland* 21205 (P50 HL 14153-08)

In the development of chronic obstructive pulmonary disease (COPD) there is a transition period when the individual is asymptomatic and the physician is unaware of the disorder. The present SCOR program includes a collaborative multidisciplinary approach to the study of obstructive lung disease especially during its earliest stages. In the first section of the program epidemiologic and physiologic approaches are applied to investigate the etiology, risk factors, and the natural history of airways obstruction. In the second section, immunologic and physiologic approaches are used to study acute reactions of the airways and their relation to chronic disease. In the third section, pathologic and physiologic approaches are applied to evaluate chronic reactions in the development of airways obstruction. Our goal is to characterize the individual at risk for COPD. With that knowledge, it may be possible to introduce effective modes of intervention.

BIBLIOGRAPHIC REFERENCES: Traystman, R. J., Terry, P. B., and H. A. Menkes. Carbon-Dioxide - a major determinant of collateral ventilation. J. Appl. Physiol. 45: 69-74, 1978. Inners, C. R., P. B. Terry, R. J. Traystman and H. A. Menkes. Collateral ventilation and the middle lobe syndrome. Amer. Rev. Resp. Dis. 118: 305-310, 1978.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Heart Lung & Blood Inst. $1,041,615

2.0838,

A/S SCOR--LIPIDS, ATHEROSCLEROSIS AND THROMBOSIS

A.A. Spector, University of Iowa, School of Medicine, Dept. of Internal Medicine, *Jessup Hall, Iowa City, Iowa* 52240 (P50 HL 14230-09)

This is a multidisciplinary research project having a goal of elucidating basic biochemical and pathological mechanisms responsible for arteriosclerotic cardiovascular disease. It is made up of six research projects and two Core laboratories. Project 1 deals with the effect of membrane lipid modification on cell function as well as the regulation of cholesterol and fatty acid biosynthesis in leukocytes. Project 2 deals with the development and regression of atherosclerosis in a primate model. Project 3 deals with the function of human endothelial cells and the interaction between endothelial cells and platelets. Project 4 deals with plasma clotting factors, particularly factor VIII, thrombin, heparin cofactor and the binding of thrombin to cultured endothelial cells. Another aspect of this project deals with the properties of endothelial cells derived from mouse brain blood vessels. Project 5 is a clinical epidemiological project on coronary risk factors in school children. Project 6 concerns the role of lysosomal enzymes in atherosclerosis, with particular attention given to cholesteryl ester hydrolase. These projects are supported by Core laboratories.

BIBLIOGRAPHIC REFERENCES: Spector, A.A., Kiser, R.A., Denning, G.M., Koh, S.-W.M., and DeBault, L.E.: Modification of the fatty acid composition of cultured human fibroblasts. Journal of Lipid Research 20:536-547 (1979). Burns, C.P., Welshman, I.R., Edmond, J., and Spector, A.A.: Evidence for rate limiting steps in sterol synthesis beyond 3-hydroxy-3-methaglutaral coenzyme A reductase in

human leukocytes. Biochim. Biophys. Acta 572:345-351 (1979).

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Heart Lung & Blood Inst. $1,047,082

2.0839,

IMMUNE & FIBROTIC RESPONSES TO OCCUPATIONAL ENVIRONMENT

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The goal of this SCOR program is to provide the scientific basis for the prevention of fibrotic and immunologic lung diseases which are related to the occupational environment. A multidisciplinary approach is utilized in order to establish causal relationships, dose-response curves, and threshold levels of exposure in lung disorders which are related to the inhalation of mineral and organic dusts, and chemical vapors and gases. Disciplines incorporated in this Center include pulmonary physiology, epidemiology, biostatistics, immunology, chest roentgenography, bioengineering, environmental chemistry and industrial hygiene. Significant emphasis is placed on newer methods of characterizing the inhaled environment which should lead to establishment of those methods which relate best to the indexes of an altered biologic response, and therefore most closely estimate the true exposure dose. The overall significance of this program lies in the fact that these occupational lung disorders are potentially completely preventable, and data from these studies should lead to the establishment of rational occupational environmental standards for hazardous inhalants.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Heart Lung & Blood Inst. $539,851

2.0840,

A/S SCOR--EARLY NATURAL HISTORY OF ARTERIOSCLEROSIS

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The SCOR-A at LSU is involved in clinical and experimental studies related to the early natural history of Atherosclerosis and Essential Hypertension. The clinical research includes 5,000 children in the Bogalusa Heart Study, a biracial population under examination for extensive risk factor data. The study follows an epidemiologic design which is both cross-sectional and longitudinal. Anthropometric parameters, blood pressure, serum lipids and lipoproteins, reported smoking, and blood glucose are being observed. An interrelationship of these variables shows clustering of multiple risk factor variables beginning in older children. Extrapolation from adult studies, e.g., Framingham, suggests we can detect children with high or low risk for cardiovascular disease. Time-course changes of these variables indicate a high correlation of values from one year to the next indicating a significant 'tracking' is occurring. Children tend to persist in their respective ranks. Special sub-studies related to blood pressure and serum lipoprotein levels are in progress. Interesting bi-racial differences are suggesting different biological mechanisms are involved in changes of risk factor variables. Black children seem programmed for hypertension and white males show significant lipid changes contributing to the early development of coronary artery disease.

Experimental research on a nutritional model in non-human primates produced hyperlipoproteinemia and hypertension. In this model, an influence of sucrose on hypercholesterolemia and an accentuation of blood pressure has been noted. Other studies of the chemistry of the arterial wall have characterized two different proteoglycans which are significantly different from the well-characterized chondromucoprotein. Further studies on proteoglycans as they may interact with fibrous macromolecules are under investigation.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Heart Lung & Blood Inst. $1,132,094

2.0841,

EPIDEMIOLOGICAL STUDY OF ATHEROSCLEROSIS IN EVANS COUNTY

C.G. Hames, Evans County Dept. of Health, *2 N. Newton St., Claxton, Georgia* 30417 (R01 HL 03341-23)

Continue the surveillance of morbidity and mortality, including all clinical cardiovascular and cerebrovascular events; i.e., transitory ischemia, CVA, myocardial infarction along with the collection of pathological specimens and other necropsy data where possible, of all cohort study groups in the Evans County Studies; i.e., a) 1200 participants in NHLI lipoprotein phenotyping study; b) 1,000 black-white neonatal blood pressure study participants; c) 600 stepped vs. regular care participants in the NHLI-HDFP study; d) approximately 1,800 participants of the original 1960 Evans County Study cohort; e) 1,000 oral contraceptive users vs. 1,000 age, race matched non-oral contraceptive users; f) 650 Blacks and Whites typed of G6PD deficiency A, A (-) and B. Correlate the above parameters under study with morbidity and mortality; i.e. a) spectrum of Alpha-beta lipoprotein fractions with morbidity and mortality; b) blood pressure levels during the first year of life as a predictor of subsequent hypertension; c) compare Evans County neonatal black-white blood pressure levels with comparable groups in other geographical areas; i.e. genetic vs. environmental? d) determine differences, if any, in the 5 year survival of stepped care vs. regular hypertensive care in the NLHI Evans County Hypertension Detection and Follow-up Program; e) determine if kallikrein levels, heparin neutralizing activity or estrogen levels are related to morbidity and mortality in black-white oral contraceptive users vs. non-oral contraceptive users. Continue to utilize the already defined as well as new biracial pedigree cohorts for genetic models to study the possible inheritance of hypertension and hyperlipidemias. Maintain the study as a population laboratory for the Dept. of Epidemiology, School of Public Health, Univ. of North Carolina; Duke University; Medical Univ. of S.C. and other collaborative institutions in which to explore the association between the observed CHD and hypertension in the Evans County study population and new untested specific epidemiological correlates.

BIBLIOGRAPHIC REFERENCES: Farmer, P.K., Olewine, D.A., Comer, D.W., Edwards, M.E., Coleman, T.M., Thomas, G. and Hames, C.G. Frontalis Muscle Tension and Occipital Alpha Production in Young Males with Coronary Prone (Type A) and Coronary Resistant (Type B) Behavior Patterns: Effects of Exercise. Med. and Sci. in Sports, 10:51, 1978.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Heart Lung & Blood Inst. $51,775

2.0842,

MULTIPARAMETER METHODS FOR CARDIOVASCULAR RESEARCH

J. Cornfield, George Washington University, Columbian College Arts & Sciences, Dept. of Statistics, *2121 Eye St. N.W., Washington, District of Columbia* 20037 (R01 HL 15191-08)

New statistical methods for multiparametric problems arising in cardiovascular research are to be developed. 1. Lines of development newly initiated during the present grant period, although not originally planned for, are to be extended. These include new methods of analysis in matching studies, including the estimation of the odds ratio in case-control studies; weakly parametric methods of life-table analysis, such as assuming a monotone hazard function, but not its functional form; estimation of the performance characteristics of an estimated classification procedure, such as might be supplied by a sample discriminant function, when applied to a new body of data, as suggested by our work in the computerized interpretation of the ECG; investigation of the characteristics of a multi-hit dose-response curve of possible relevance in estimating low dose level effects of environmental agents that can be experimentally studied only at high dose levels, as suggested by our work with the FDA; and robust multivariate estimation. 2. Lines of development originally planned for during the present grant period are to be further extended. These include development of a model leading to estimates of the effects on disease risk of intermediate, as well as baseline, measurements of risk factors in prospective studies; pull-back estimates in multi-way classifications including contingency tables, in regression, with particular emphasis on step-wise regression and in the appraisal of multiple end-points.

BIBLIOGRAPHIC REFERENCES: Cornfield, J., Carlborg, F.W., and Van Ryzin, J., 'Setting Tolerances On The Basis of Mathematical Treatment of Dose-Response Data Extrapolated To Low Doses,' Proceedings of the First International Toxicology Congress, in press, 1978. Cornfield, J., 'Carcinogenic Risk Assessment,' Science, 198:693-699, 1977.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Heart Lung & Blood Inst. $107,316

2.0843,

VERMONT LUNG CENTER

J.E. Craighead, University of Vermont & State Agricultural College, School of Medicine, Dept. of Medicine, *85 S. Prospect St., Burlington, Vermont* 05401 (P60 HL 17292-05)

The Vermont Lung Center has as its major objectives: 1. The integration into a cohesive operational system of existing lung programs in research, education, clinical demonstration, and regional disease management, including dissemination of information and technical assistance, health statistics and prevention and control. 2. Interdisciplinary study, prevention and control of pneumoconiosis. 3. Research in the pathology and management of acute pulmonary trauma, in basic methodology of computer-assisted instruction in pulmonary physiology in the pathology, pathogenesis, biochemistry, immunology, and cell physiology of diffuse interstitial lung disease (Vermont SCOR). 4. Clinical demonstration and rapid application of new research findings in lung disease using the Problem Oriented Medical Information System (PROMIS). 5. Regional management of specified lung disease problems utilizing an inter-hospital computer network. 6. Graduate and post-graduate education using audio-visual aids and regional interactive television. 7. Public education and information geared to lung disease problems specified by the regional Lung Disease Management Committee. 8. Provision of a broadly based, multi-disciplinary Training Environment for undergraduate, graduate and post-graduate scientists, physicians, nurses, and allied health professionals in the various facets of research, clinical practice, teaching and continuing education in the biology of the lung, disease of the lung, and health care management of categorical problems related to the lung.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Heart Lung & Blood Inst. $1,233,333

2.0844,

THE IMPACT OF STRESS ON CORONARY HEART DISEASE

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The objective of this study is to determine whether groups of men aged 35-57 exposed to higher-than-usual frequencies of potentially stressful life events tend to have higher death rates, higher rates of coronary heart disease, and higher blood pressure levels and smoking rates, than a comparable contrast group with less exposure to stressful life events. In addition, the study aims to determine whether stressful life events are imposed in an individual as a result of being identified as high risk for coronary heart disease. That is, does the process of being informed of one's risk and, as a consequence, being asked to take preventive measures such as changing diet and smoking behaviors, losing weight, and taking medication for hypertension, operate as a specific stress factor and influence mortality?

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Heart Lung & Blood Inst. $66,747

2.0845,

STUDY OF ISCHEMIC HEART DISEASE

R.A. Rosati, Duke University, School of Medicine, Dept. of Medicine, *Box 3711, Durham, North Carolina* 27710 (P50 HL 17670-05)

The Duke University Medical Center Ischemic Heart Disease Specialized Center of Research (IHD-SCOR) is a multidisciplinary, interdepartmental clinical and fundamental research program directed at the reduction of death and disability from ischemic heart disease. This year has been marked by increased activity in the data management and radionuclide imaging projects, and strengthening of the fundamental research component, consistent progress of the other

clinical projects, and preparation of a renewal application of our IHD-SCOR.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Heart Lung & Blood Inst. $1,343,167

2.0846,

CARDIOVASCULAR FITNESS AND OTHER RISK FACTORS

L.D. Cady, University of Southern California, School of Medicine, Dept. of Community Medicine & Pub Hlth, *2025 Zonal Ave., Los Angeles, California* 90033 (R01 HL 18235-03S2)

Prospective exercise examination data for nine thousand employees are being analyzed by multivariate statistical techniques to show the degree of relationship between physical work capacity (PWC 160), oxygen consumption at exercise heart rates of 160 beats per minute and coronary heart disease morbidity in the context of other risk factors (cholesterol, triglycerides, uric acid, hemoglobin, resting and exercise blood pressures, overweight, skinfolds, smoking, age, resting and exercise electrocardiograms, etc). The precise measures of cardiovascular fitness are sensitive to changes in physical activity of ten minutes per day and the reliable ascertainment of cardiovascular events is made possible by complete access to computerized workers' compensation claims files, computerized personnel files, and retirement files.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Heart Lung & Blood Inst. $3,641

2.0847,

CARDIOVASCULAR FOLLOW-UP OF HYPERTENSIVE ADOLESCENTS

D.E. Fixler, University of Texas, Health Science Center at Dallas, Southwestern Medical School, Dept. of Pediatrics, *5323 Harry Hines Blvd., Dallas, Texas* 75230 (R01 HL 18456-04)

The natural history of adolescents with blood pressures at or above the 95th percentile has not been well defined. This proposal is a continuation of a cross-sectional prevalence study initiated in 1976, when 10,641 eighth-grade students were screened for high blood pressure. These students will be re-examined as tenth and twelfth graders. The purpose of this study is: 1) to determine the prevalence of hypertension and cardiovascular changes in an older adolescent population; 2) to determine at what age racial differences in the prevalence of hypertension develop among black, whites, and Mexican-Americans; 3) to determine if exercise conditioning has a beneficial effect on the blood pressures of hypertensive adolescents; 4) to determine if exercise stress testing indicates those prone to develop persistent hypertension; 5) to determine the effectiveness of propranolol treatment in hypertensive adolescents and its subsequent alterations on blood pressure response to exercise stress and echocardiographic findings. The hypertensive adolescents have been individually paired with cohorts having blood pressures below the fiftieth percentile and matched with respect to race, age, sex, and body size. The cohorts selected during the eighth-grade screening program have also had exercise stress testing and echocardiographic evaluation of cardiac hypertrophy and function. Those students found to have persistent hypertension during the tenth-and twelfth-grade years will be re-evaluated using these techniques. The blood pressure and electrocardiographic response to exercise stress testing and the echocardiographic findings wwll provide data to determine changes in prevalence of hypertensive myocardial alterations in older adolescents. The exercise training studies will determine whether physical conditioning effectively reduces elevated pressure in the adolescent population.

A large population of hypertensive adolescents has already been identified and had baseline cardiovascular studies. Continuation of this project will provide valuable information on the natural history and response to therapy of early essential hypertension.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Heart Lung & Blood Inst. $154,086

2.0848,

EPIDEMIOLOGY AND COURSE OF VIRAL MYOPERICARDITIS

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Retrospective and prospective studies will be conducted to more fully define the epidemiology and natural history of viral myopericarditis. Acute and convalescent sera from patients with clinically diagnosed myopericarditis, submitted to this laboratory between 1967 and 1975 and sera from the approximately 100 new cases submitted each year, will be tested by microneutralization for a significant antibody rise and/or specific immunoglobulin (Ig) M antibody to Coxsackieviruses B1 through B5. Immunofluorescence and immunoperoxidase techniques, in conjunction with density gradient serum globulin fractionation will be investigated as a more rapid and less complex means of detecting and quantitating specific IgM antibody. The relative importance of the different Coxsackievirus B sero-types to the etiology of myopericarditis and the ratio of this entity to all Coxsackie-virus B induced disease diagnosed by this laboratory also will be studied. We will seek to establish by contacting referring physicians and patients with and without Coxsackie B associated myopericarditis some of the following data: onset data, clinical course and differences between Coxsackie B and non-Coxsackie myopericarditis, descriptive epidemiologic characteristics of the population involved, and the course subsequent to the acute episode especially in regard to the development of chronic cardiac dysfunction. Finally, we will investigate other etiologies likely to be involved in this disease. If the Coxsackie B viruses are responsible for considerable serious cardiac disease, this information would justify efforts to develop a vaccine.

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2.0849,

EPIDEMIOLOGIC STUDY OF CHRONIC LUNG DISEASE

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An epidemiologic study of chronic obstructive lung disease (C.O.L.D.) is being done in the population of Tecumseh, Michigan. It consists of a longitudinal study of morbidity and mortality in persons examined in 1962-65. Follow-up and re-examination of the cohort was carried out between January, 1978 and June, 1979.

The principle objective of the study is to relate findings at the initial examination (risk factors) to subsequent illness, decline in lung function, and death. End points include chronic bronchitis, asthma, emphysema, other C.O.L.D., excessive decline in lung function and death from chronic lung disease and other causes. Risk factors include selected personal, demographic, physiologic, genetic and familial characteristics such as smoking and drinking habits, socio-economic status, experience of respiratory infections and allergic conditions, level of lung function, blood and serum protein type, skin sensitivity to allergens and immunoglobulin levels. The predictive ability of risk factors acting singly and in combination, will be assessed for each end point. Particular attention will be given to interaction between smoking and other relevant factors.

Additional objectives include improvement in diagnostic accuracy of different types of C.O.L.D. in epidemiologic studies, and identification of lung function tests which are most suitable for prediction and early detection of C.O.L.D. in the general population.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Heart Lung & Blood Inst. $146,665

2.0850,

THE DETERMINANTS OF RISK OF SUDDEN DEATH

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743 steadily employed men, age 40-65, have been examined comprehensively, with twenty-four hour ECG recordings, studied repeatedly for disorders of cardiac conduction and dysrhythmias, other evidences of heart disease, and potential risk factors and followed prospectively six to ten years with examinations at intervals of six months to four years. One hundred and twenty-one deaths have been investigated intensively, with observational data at the time of death in 114 cases. 74 arrhythmic deaths have been associated with chronic myocardial disease in 95% of cases (ischemia 84%, hypertrophy 83%, dilatation 22%, congestive heart failure 41%, heavy alcohol intake 29%), with acute myocardial disease in 77% of cases (acute ischemic heart disease 59%, sub-acute CHF 7%, acute anoxemia 28%), with chronic disorders of cardiac conduction system in 85% of cases (disorders of rate 34%, of pacemaker 30%, major supraventricular dysrhythmias 20%, conduction delays 32%, prolonged QT 23%, major ventricular dysrhytmias 48%; median, two of these), and with CNS arousal and physical activity. 253 variables in 12 categories of myocardial disease, disorders of rhythm and conduction, other cardiovascular disease, disorders of other organ systems, metabolic disorders, generalized pathological states, intake, premonitory symptoms, activity, behavior, social categories and age, and other general conditions are being analyzed in an attempt to define better the factors that are most predictive of the occurrance of sudden arrhythmic death, death in power failure, and new events of non-fatal heart disease.

BIBLIOGRAPHIC REFERENCES: Kosten, T., J. Kluger and L.E. Hinkle, Jr. Pathogenic Mechanisms of Unespected Sudden Cardiac Death. Psychosomatic Medicine 40:89, 1978.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Heart Lung & Blood Inst. $162,000

2.0851,

PROSPECTIVE STUDIES OF CONDUCTION DISEASE

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This is a continuing study of patients with chronic bifascicular block and intact atrioventricular conduction. Patients are studied clinically, electrocardiographically, and electrophysiologically (His bundle recording, pacing responses, and refractory periods). Attempts were made to delineate clinical, electrocardiographic, and electrophysiologic parameters which predict subsequent risks of AV block and sudden death. If a high risk group were to be defined, attempt at modification of life history with prophylactic pacing would be performed.

BIBLIOGRAPHIC REFERENCES: Bharati S., Rosen K, Towne W.D., Lev M: The conduction system in the baboon heart. Chest, 75: 62, 1979. Wyndham C.R., Meeran M.K., Smith T., Saxena A., Engelman R.M.; Levitsky S. Rosen K.M.: Epicardial activation of the intact human heart without conduction defect. Circulation, 59, 161, 1979.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Heart Lung & Blood Inst. $131,491

2.0852,

PULMONARY SCOR--CHRONIC DISEASES OF THE AIRWAYS

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The goals of this proposed SCOR program are: 1) to generate new knowledge relating to the physiology, pathology, pharmacology, and epidemiolmgy chronic diseases of airways; and 2) to apply this knowledge of to the study of new modalities of therapy and prevention. We seek the effective integration of laboratory and clinical research and its focus on airways disease. Project 1 examines one important reservoir from which clinically significant disease arises, and seeks to explore the progression and reversibility of airways disease. Projects 3, 4, and 5 grapple with major issues of etiology: genetic, physiologic, pharmacologic, and environmental interactions which may provide and accelerate the pathophysiological changes leading to debilitating airways disease. Project 6 examines one of the consequences of airways dysfunction which leads to disability and respiratory failure. With Project 7 we begin to consider interventions; other aspects of disability and approaches to therapy are explored in Projects 8 and 9. The core units (Projects 10 and 11) provide essential services for the described research. We believe these projects represent a significant interdisciplinary attack directed toward chronic diseases of airways.

BIBLIOGRAPHIC REFERENCES: Snedden, S.L., J.D. Brain, and J. Mead. Aerodynamics and aerosol deposition in dog lungs during steady expiratory flow. Physiologist 21:113, 1978. Sneddon, S.L., and J.D. Brain. Factors influencing aerosol deposition in small animals. Resp. Physiol. Submitted, 1979.
SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Heart Lung & Blood Inst. $420,463

2.0853,
PULMONARY SCOR:

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An integrated, multidisciplinary research program is in progress which has as a general goal the identification and control of acute, intercurrent processes which may influence growth and development of the respiratory system with resultant long-term sequelae. Longitudinal studies of infants and children are establishing normal patterns of growth of lung function and the impact on this of acute respiratory infections with emphasis on the syndrome of bronchiolitis. This prospective clinical study is complemented by retrospective approaches of three types: 1) comprehensive evaluations of patients referred for recurrent or chronic progressive pulmonary diseases (including those with cystic fibrosis, sarcoidosis and anti-protease or immune deficiencies) to identify responsible defects in pulmonary defense mechanisms; 2) follow-up studies of children in the community documented to have had infections during the past decade with agents such as respiratory syncytial virus; and 3) assessment of the burden of pulmonary disability among North Carolina Children by development, testing and validation of pediatric questionnaires to facilitate case finding and early diagnosis. Relevant basic laboratory studies are being performed using experimental models of respiratory diseases (animals and cultures of specialized pulmonary cells infected with representative agents) to define the mechanisms of injury, repair and protection. This combination of clinical and basic research should lead to improve means of diagnosis, therapy and prevention of respiratory diseases and their complications or sequelae.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Heart Lung & Blood Inst. $549,229

2.0854,
PROBLEMS IN PREVENTION OF RHEUMATIC HEART DISEASE

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Rheumatic fever and rheumatic heart disease remain as important causes of cardiovascular disease. The ultimate control of this theoretically preventable disease requires control of preceding streptococcal upper respiratory tract infections. However, important unanswered questions about the epidemiology of streptococcal infections and especially about individual susceptibility to these infections require answers. This study is designed to address these questions. In addition to studying the epidemiology of streptococcal respiratory tract infection (concentrating on the risk of intra-familial spread), this study will evaluate new diagnostic techniques and validate and correlate older techniques used in the diagnosis of this infection. Since it is thought that the carrier of group A streptococci presents both a smaller risk to himself (in terms of developing non-suppurative sequelae of group A streptococci) and to his contacts (less likely to spread the organism to others), it is essential that better techniques be devised to allow clinical differentiation between bona fide group A streptococcal infection and the symptomatic or asymptomatic carrier. This information may ultimately lead to a reduction in the incidence of rheumatic fever and thereby reduce the morbidity and mortality from rheumatic heart disease. The third year of the study will be carried out among index cases of pharyngitis and their family contacts seen in clinic-emergency room setting. Clinical observations and both established and new laboratory techniques will be serially obtained and correlated to assist in identifying and documenting host and bacterial risk factors affecting the epidemiology of streptococcal infections and in differentiating bona fide streptococcal infections from the carrier state.

BIBLIOGRAPHIC REFERENCES: Gastanaduy, A., Kaplan, E.L., McKay, C., Wannamaker, L.W.: Failure to eradicate group A streptococci from the pharynx. Circulation, 58:II:200, Oct. 1978. Gerber, M.A., Kaplan, E.L., Gastanaduy, A.S., McKay, C., Wannamaker, L.W.: Immunologic response to group A streptococcal upper respiratory tract infections in very young children. Pediatric Research, 113:389, 1979.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Heart Lung & Blood Inst. $91,305

2.0855,
RESPONSE OF THE LUNG TO INJURY

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Pulmonary emphysema and interstitial pneumonia are two diffuse lung diseases which may be viewed as responses of the lung to injury. One of the identifying features of emphysema is the specific alteration of the elastic tissue network, whereas in interstitial pneumonia, widespread involvement of many of the elements of the pulmonary parenchyma occurs. Understanding the nature of these processes has been limited in early stages of disease. We propose to study animal models of emphysema and diffuse interstitial pneumonia in a concerted attempt to gain insights into the pathophysiological and patho-biochemical changes which takes place in these progressing lesions. Lung mechanics and gas exchange will be examined. Connective tissue biochemistry, prostaglandins, catecholamines and cyclic nucleotides will be evaluated, and the full range of ultrastructural techniques will be applied to the various lesions. Modified elastases will be synthesized to study in these animal models. Studies on pure cell systems from lung will provide additional insights. In parallel studies, an assessment of lung growth and development in normal and pneumonectomized animals will be carried out employing many of the same physiologic, biochemical and ultrastructural techniques. Radioautography at the light and electron microscopic level are an integral part of all animal studies. The possible role of cell mediated immunity in the pathogenesis of these diseases will be investigated. A laboratory devoted to clinical epidemiological studies will interrelate with several of the medical science disciplines represented in the program. It is anticipated that the results of all these studies will give rise to greater understanding of processes of normal lung growth and the nature of the injuries and their repair which results in the development of pulmonary emphysema and chronic interstitial pneumonia. New diagnostic and therapeutic techniques may well derive from these studies.

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2.0856,
EPIDEMIOLOGICAL STUDIES OF CORONARY HEART DISEASE

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Approximately 5000 men have been examined to date in this third cycle. Analyses of Second Cycle data reveal similar risk factors exist in Puerto Ricans as in Framingham men, although the incidence of coronary heart disease is lower in Puerto Ricans. Previous work conducted under Contract No. PH-43-63-620.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Heart Lung & Blood Inst. $890,269

2.0857,
PREVENTION OF PROSTHETIC VALVE ENDOCARDITIS

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The proposed research will investigate methods for prevention of prosthetic valve endocarditis (PVE) caused by the bacterium, Staphylococcus epidermidis, the most common organism causing these infections. The study will involve three phases. In the first phase, the antibiotic susceptibility of isolates from patients with PVE will be determined, mechanisms of antibiotic resistance investigated, and the antibiotic susceptibility characteristics of the organisms related to time of onset of infections following surgery and the antibiotic prophylaxis used in each patient during surgery. In the second phase, antibiotic prophylaxis will be studied using a rabbit model of endocarditis. The value of prophylaxis in preventing infections due to antibiotic-resistant S. epidermidis and in selecting out these resistant isolates will be evaluated. The final phase of the study will be to define the hospital epidemiology of S. epidermidis and the methods of transmission of this organism to patients. Specific markers for hospital-acquired S. epidermidis will be sought using new epidemiologic tools, particularly those which characterize patterns of extrachromosomal DNA.

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2.0858,
BLOOD PRESSURE--PRECURSORS AND CONSEQUENCES

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In this study we will reexamine selected samples of a cohort of women formed during 1965-1967, as well as children born to this cohort.

A portion of these women who had blood pressure measured during a school survey at the ages of 14 to 20 subsequently pregnant, and some developed preeclampsia. They delivered children now 6-11 years of age. Reexamination of the mothers and examination of the children is planned to determine if blood pressure of children of mothers in whom preeclampsia was diagnosed differs from those of mothers in whom no such diagnosis was made.

Urinary electrolytes, dietary histories, socioeconomic levels and other information, as well as repeat blood pressure determinations, were obtained in other subsamples of the school cohort. Reexamination is planned to determine the correlation of the previously obtained variables with present blood pressure status. In addition, siblings previously characterized will be reexamined to allow analysis of blood pressure aggregation in the face of the establishment of separate households and differing environmental patterns with time.

BIBLIOGRAPHIC REFERENCES: Langford, H.G., Watson, R.L. and Thomas, Jeanne Gouras. Salt Intake in the Treatment of Hypertension. American Heart Journal 93:(4) 531-532, 1977. Langford, H.G. and Watson, R.L. Chapter entitled: Blood Pressure: Variations, Regulation and Measurement. In Scientific Foundations of Obstetrics and Gynecology. Edited by Phillip, E.E., Barnes, J. and Newton, M. Wm. Heinemann Medical Books, Ltd., London, pp. 391-408, 1977.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Heart Lung & Blood Inst. $160,812

2.0859,
EPIDEMIOLOGICAL STUDIES, PRECURSORS OF HYPERTENSION

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Our epidemiologic research, aimed at the identification of precursory factors for high blood pressure in young persons, is based on longitudinal observations of blood pressure and of concomitant variables of mothers and their children.

The bases for our research are twofold. First, we plan to use the extensive data that have been collected in a prospective, longitudinal cohort study, which started with some 20,000 pregnant women and proceeded with observations on the children born from these pregnancies. Secondly, we plan to extend our observations with a follow-up examination of a subcohort of about 2,000 mothers and their children when the latter are about 16 years old. Parallel to this examination we plan a medical record review of parents and child. A large part of the data has already been assembled and is maintained as a research tool by the Child Health and Development Studies (CHDS).

The basic study cohort of CHDS consists of some 20,000 pregnant women and the children born from these pregnancies. The families resided in the San Francisco Bay Area and were members of a prepaid medical plan, Kaiser Foundation Health Plan, which provides comprehensive medical care for the entire family.

The Child Health and Development Studies were designed and initiated in 1959 by Dr. J. Yerushalmy,

and are a research unit of the School of Public Health, University of California at Berkeley.
SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Heart Lung & Blood Inst. $94,460

2.0860,
ASTHMA EPIDEMICS AND ENVIRONMENT-WHEN, WHERE AND WHY
T.F. Goldstein, Columbia University, School of Public Health, Dept. of Epidemiology, *600 W. 168th St., New York, New York* 10032 (R01 HL 25793-01)
The objective of this study of epidemic asthma is to develop models enabling the predictions in time and space of asthma epidemics by first: finding reliable and objective procedures for identifying such epidemics, second: to examine and interpret long-term trends in asthma, third: to identify environmental factors including pollutants both man made and biological and meteorological parameters associated with the epidemics.
The procedure will use data from municipal hospital emergency rooms in New Orleans and New York City, meteorological and demographic data, and such information as is available on industrial pollutants or natural allergens as seems relevant. Appropriate statistical techniques for time series analysis and cluster analysis have already been developed by the group, and additional techniques will be developed as needed.
SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Heart Lung & Blood Inst. $124,044

2.0861,
DIABETES AND CARDIOVASCULAR RISK IN MEXICAN AMERICANS
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Historically, new facts and/or hypotheses bearing on the etiology, pathogenesis, and/or prevention of disease have often been discovered by epidemiological investigation of previously unstudied population with distinctive genetic and cultural attributes. Mexican Americans are such a population. There is reason to believe that this population developed a high prevalence of obesity and diabetes mellitus as it underwent a historic change from food scarcity to relative food abundance. There is also evidence to suggest that this situation may now be changing, i.e., that there may be a 'descending limb' to the rising affluence, rising obesity and diabetes curve.
We plan to study the distribution of 'diabetic pattern' (i.e., glucose intolerance, obesity, hypertriglyceridemia and perhaps also alpha-lipoprotein levels) and other cardiovascular risk factors in 2400 Mexican Americans and 1600 Anglos randomly selected from 6 census tracts in San Antonio, Texas. These tracts have been chosen so as to represent three socially and ethnically diverse regions of the city: a highly traditional, almost exclusively Mexican American neighborhood ('barrio'); an ethnically integrated area ('bicultural'); and a predominantly Anglo region ('suburbs'). We postulate that Mexican Americans will be progressively move acculturated to mainstream U.S. culture as one mores from the barrio to the suburbs, thus enabling us to test our basic hypothesis that 'diabetic pattern' cardiovascular risk factors vary inversely with degree of acculturation.
Cardiovascular risk factors to be measured include glucose intolerance, obesity, lipids, lipoproteins, blood pressure, and smoking history. Acculturation-related variables include generational status in the U.S., culture of upbringing, language patterns, familism, social mobility, and dietary patterns.
We will also evaluate the possibility that a criterion for diagnosing diabetes based on glycosylated hemoglobin may be superior to presently available criteria for use in epidemiological studies.
SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Heart Lung & Blood Inst. $217,475

2.0862,
PHYCHOSOCIAL FACTORS AND CHRONIC DISEASE
J.S. House, University of Michigan, Ann Arbor Campus, School of Public Health, Dept. of Epidemiology, *Ann Arbor, Michigan* 48104 (R01 HL 24545-01)
This project seeks to ascertain the relationship of psychosocial factors to chronic disease, risk factors, morbidity, and mortality through cross-sectional and prospective analyses of data from the Tecumseh Community Health Study. Interview and questionnaire data on psychosocial stress and satisfaction in work, family, and leisure activities will be related to medical examination and interview data collected at the same time (1967-1968) on chronic disease morbidity and risk factors and to mortality over the succeeding decade, through 1978. Controls will be introduced in major analyses for medical examination evidence of health status prior to 1967. Coronary heart disease, hypertension and chronic bronchitis will be focal concerns in cross-sectional analyses of morbidity and risk factors while cardiovascular diseases and cancer will be the major foci of prospective mortality analyses. The analyses will examine not only the direct relationship of work, family, and leisure stress and satisfaction to chronic disease, but also the extent to which these relationships are conditioned or modified, by a variety of individual and social factors (e.g., age, sex, work motivation and involvement, personal habits such as exercise, social support and integration). The relative and joint effects on chronic disease of work and nonwork sources of stress and satisfaction will be assessed.
SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Heart Lung & Blood Inst. $93,961

2.0863,
CLEARANCE OF MAGNETIC DUST FROM LUNGS OF SMOKERS
D. Cohen, Massachusetts Inst. of Technology, Francis Bitter National Magnet Lab., *170 Albany St., Cambridge, Massachusetts* 02139 (R01 HL 24540-01)
In a recent pilot study, we measured long-term pulmonary clearance in a small group of smokers and non-smokers; a one-time inhalation of magnetic dust was used as a harmless tracer. This dust was cleared much slower in smokers than in non-smokers; after one year, five times as much dust was retained in the lungs of smokers as in non-smokers. This higher retention may be one cause of the high rate of pulmonary disease experienced by smokers. We propose to further investigate this result with a larger three-part study. In the first part, a magnetic tracer dust will again be inhaled, and clearance will be measured with more elaborate techniques; six heavy and three ex-heavy smokers (of high tar-nicotine cigarettes), three heavy smokers (low tar-nicotin), and three non-smokers will be studied. Our purpose is to determine if this high retention (and attendant risk) is a function of nicotine-tar content, and if it declines to non-smoker levels in ex-smokers. In the second part, magnetic dust content will be measured in the lungs of ten heavy smokers and ten non-smokers, all with long exposure to urban dust. Also, the same measurements will be made of ten smoking and ten non-smoking arc welders. The purpose is to determine if the higher dust retention seen in smokers also occurs in individuals experiencing normal urban living or during occupational exposure. In the third part, the dust content from sections of autopsied lungs will be measured both magnetically and chemically. At least 150 cases divided into smokers and non-smokers, and including many urban dwellers, will be studied. The purpose is to correlate the amount of magnetic dust to total dust in the lung, and to lung pathology. This will determine if magnetic measurements are a good index of total retained dust, and of lung pathology.
SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Heart Lung & Blood Inst. $95,062

2.0864,
EPIDEMIOLOGY OF ATHEROSCLEROSIS
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Herein is described a genetic epidemiological study of the role of variation in lipoprotein phenotypes and lipid fractions in determining certain forms of atherosclerotic disease. This study will be based on 4,565 individuals in three different sets of pedigrees collected as part of the Rochester SCOR program in atherosclerosis (1971-1977). Pedigrees will be analyzed to provide insight into appropriate intervention strategies. In particular, we shall: l) determine the contribution of genetic and environmental variability to lipid variability within and among families; 2) test for heterogeneity of the genetic and environmental contributions to lipid variability among sets of families identified by probands with different lipid levels, quantitative lipoprotein phenotypes or atherosclerotic disease; 3) search for evidence of segregation at one or more loci with major effects on the lipid phenotype; 4) assess the relative risks of atherosclerotic disease in the adult relatives of different types of probands; and 5) relate sources (shared environment, shared polygenes and/or shared major loci) of familial aggregation of lipid phenotype to the risk of atherosclerotic disease.
SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Heart Lung & Blood Inst. $52,516

2.0865,
CHD INCIDENCE, MORTALITY, RISK FACTOR RELATIONSHIPS
L.T. Kurland, Mayo Foundation, Dept. of Medical Statistics & Epidemiology, *200 1st St. S.W., Rochester, Minnesota* 55901 (R01 HL 24326-01)
Medical care for the population of Olmsted County, Minnesota, is almost entirely provided by the Mayo Clinic and the Olmsted Medical Group and their affiliated hospitals. The records of these institutions and other outside sources have been assembled into a single diagnostic retrieval system and provide a unique resource for population-based epidemiologic studies of serious chronic disease.
Under the Rochester Epidemiologic Program Project (GM 14231), we are now completing a Coronary Heart Disease (CHD) study which will establish the local incidence rates for first manifestations of CHD under the subgroups angina pectoris (AP), myocardial infarction (MI), and sudden unexpected death (SUD) over the period 1950-1975. In that study we have 100% follow-up for five years nd 99.6% follow-up to 1/1/76, a 60% autopsy rate in the AP and MI groups, and 86% in the SUD group. Preliminary date indicate only minor changes in CHD incidence, improved survivorship in AP, and during the last ten years a dramatic decrease in the MI case fatality.
In order to obtain a better estimate of the contribution of changing incidence and survivorship to the decreasing mortality rate, we must expand the study from those MIs which are first diagnoses of CHD to all MIs occurring in the local residents. In addition, we propose to extend the coverage from the city of Rochester (current population 55,000) to all of Olmsted County (90,000). Finally, we propose to carry the entire study forward through 1982. Also, all local deaths are being uniformly re-coded to the ICDA 8th revision for the period 1960-1967; this should also be extended to cover 1950-82.
Olmsted County, Minnesota, is an ideal community for the studies proposed, since the medical recodes are of uniform high quality, cover the population of the county with excellent case ascertainment, and are already assembled and retrievable by diagnosis.
SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Heart Lung & Blood Inst. $68,231

2.0866,
LIFE STYLE AND CHRONIC DISEASE IN COLLEGE ALUMNI
R.S. Paffenbarger, Stanford University, School of Medicine, Dept. of Family Community & Preventive Medicine, *Stanford, California* 94305 (R01 HL 24133-01)
This epidemiologic study extends observations on 30,000 living former students from Harvard and 13,000 from the University of Pennsylvania to identify patterns of physical activity conducive to the avoidance or delay of hypertensive-arteriosclerotic diseases in middle life. Prospective observations utilize both historical and ongoing perspectives to: l. Identify the type, frequency, duration, and intensity of activities that predispose to reduced risk of first heart attack, stroke, and other cardiovascular diseases primary prevention. 2. Examine changes in physical activity patterns and other key aspects of life style for their relationships to heart attack risk. Patterns of exertion favoring coronary well-being will be studied in successive age group ranging 45-80 years. 3. Test competing hypotheses of benefit, (a) protection vs. selection and (b) average vs. peak levels of energy output. 4. Assess patterns of physical activity associated with prevention of heart attack recurrence and with survival (secondary prevention). 5. Examine sociopsychological and other risk factors for confounding and interacting with physical exercise in relation to heart attack risk; and 6. search for associations between life style and other specific chronic diseases, fatal and nonfatal.
Two-page mail questonnaires are used to log physical activity patterns, social habits, and health status of college alumni. Responses supplement data already compiled from college physical examination

and other records (1916-1950) investigative and followup mail questionnaires (1962 or 1966, 1972, 1977 or 1978), and official death certificates (1916-date).

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Heart Lung & Blood Inst. $209,333

2.0867,

COMMUNITY SURVEILLANCE OF CARDIOVASCULAR DISEASE

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Major trends in cardiovascular disability, illness and death occur in this country which are neither explained nor predicted, nor are they readily amenable to explanation by retrospective analysis. It is essential to any rational public health policy and plan that an advanced society explain the evolution, at times almost revolution, in chronic disease experience. It is likely that much of the cardiovascular disease experience is influenced by known, or strongly suspected, socioeconomic, environmental, cultural and behavioral factors. These and their physiological manifestations can be measured. It is therefore feasible and desirable to attempt surveillance and analysis of measurable aspects of health behavior, socio-economic indicators, risk characteristics and disease experience - in parallel - within defined geo-political or trade areas.

This application proposes such a monitoring system which would be thorough, systematic and on-going, involving a smaller-than-national unit, the Twin Cities of Minnesota, over the years 1979-83. The potential advantages of this local approach appear to us to be the depth, detail, and control possible, using manageable-sized teams and samples. Moreover, divergent or opposing mortality and morbidity forces, might be less likely operative than with nationwide sampling. Parallel trends or lag periods between socio-cultural changes and disease experience might be detected, and specific hypotheses examined about change. Within such a dedicated research program, disease trends, and risk factor changes would be identified, and methodological approaches developed, for application by other agencies.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Heart Lung & Blood Inst. $538,028

2.0868,

LIFE CHANGE STRESS AND SOMATIZATION IN HYPERTENSION

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Essential hypertension has been recognized as a major health problem in the United States, with particular impact on blacks, the poor and on women. The present study addresses the role that stressful life change events, subjective appraisal and somatic response patterns play in essential hypertension. The study specifically addresses the following objectives: (1) to determine whether stressful life change events are positively related to and account for a significant proportion of variation in blood pressure; (2) whether subjective appraisal of stress affects blood pressure singly or in interaction with the objective measure of stressful events; (3) to determine whether variations in blood pressure are positively correlated with distinct patterns of somatic response patterns especially a cardio-respiratory response tendency, and finally; (4) whether personal and familial history of cardiovascular difficulties and other socio-demographic factors such as sex, age and race contribute to explaining variation in blood pressure.

The study is designed as a survey study with a random sample of 300 adults, ages 21-65. These subjects will be paid volunteers who will undergo a 1 hour private interview in their homes during which time four blood pressure readings will be taken and a composite questionnaire with scales measuring the predictor variables will be administered. The degree of relationship between the predictor variables (i.e., correlations) and the extent to which they contribute singly or in consort to the proportion of explained variation in blood pressure (i.e., multiple regression analysis) will be ascertained.

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2.0869,

DETERMINANTS OF CHD RISK FACTORS IN ADOLESCENCE

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This proposal constitutes a cross-cultural cohort study of seven defined representative populations of adolescent subjects in order to quantitate and evaluate demographic, psycho-social, dietary and lipid variables which may contribute to later coronary heart disease (CHD) risk. The study cohorts have been chosen to permit comparisons between adolescents residing in a country of highest and lowest CHD incidence (USA and Greece, respectively), those who live in rural and urban areas (rural-urban transition), and adolescents who were born in the country of low incidence, but who have immigrated with their parents and are exposed to the socio-nutritional environment of the high CHD incidence country.

The endpoints of the study are of a 'risk factor' nature, that is the 'tracking' of lipid variables for a period of three years for three different age groups in order to include what is hypothesized to be a critical period in the pathogenesis of coronary arteriosclerosis (i.e., ages 9 through 17). A nexus will be effected between the lipid and other variable status of the study subjects, with sub-population, age-matched, geography-matched individuals who died accidentally, from whom coronary and aorta arterial tissue will be assessed for type and degree of fatty streaks and fibrous and/or arteriosclerotic vessel involvement.

This study will not only serve to Study associations between cohort subjects and their early CHD risk factor status, but will seek to develop an integrative assessment of how the host and environmental variables studied may contribute to, or protect against later CHD risk. Finally, it is also aspired that new hypotheses regarding intervention strategies in childhood and adolescence may be developed which prevent adult CHD.

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2.0870,

GENETICS OF HYPERTENSION AND ASSOCIATED VARIABLES

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High blood pressure, including essential hypertension, is a major risk factor of stroke, congestive heart failure, coronary heart disease and other cardiovascular diseases. The identification and study of childhood precursors of hypertension which could lead to methods effective in the prevention of adult hypertension is a major goal of the National High Blood Pressure in the Young Program, Epidemiology Branch, DHVD, NHLBI, of which this study is a part. Considerable evidence suggests that heredity plays a large and important role in determining blood pressure, particularly as it relates to essential hypertension. In the proposed study the mode of inheritance of genes involved with blood pressure regulation and associated variables will be investigated with an aim to providing information relevant to the epidemiology of hypertension. Particular attention will be paid to a search for major genes by using recently developed statistical methods designed for segregation and linkage analysis of quantitative traits in large pedigrees.

Five large (75-350 members) families have been ascertained, each through a proband with essential hypertension; four of these families are White and one is Black. Most members participated in an extensive data collection protocol involving variables of an anthropometric, biochemical, genetic, medical, physiological, psychological and sociological nature. Among the measured variables are: subcutaneous fat thicknesses; plasma lipid, lipoprotein and renin levels; urinary kallikrein and aldosterone levels; genetic markers (blood types, etc.); physical examination and clinical laboratory findings: systolic time intervals in response to numerous stresses; personality assessments; and socioeconomic status.

The identification of genetic effects including major gene influences in variables related to essential hypertension may help define important epidemiologic factors that: 1) relate to increased risk of hypertension; 2) account for differences in blood pressure among various subgroups of the population; 3) can identify children that have high risk for developing hypertension; 4) can identify homogeneous groups for further study of disease etiology.

BIBLIOGRAPHIC REFERENCES: Frey, M.A.B., Siervogel, R.M. and Selm, E.A., Effects of limb, posture and duration of immersion on response to the cold pressor test. Fed. Proc. 1978 (in press). Frey, M.A.B., Siervogel, R.M. and Selm, E.A., Cardiovascular responses to the cold pressor test. Proc. Ohio. Acad. Sci. 1978 (in press).

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2.0871,

PSYCHOSOCIAL STRESS AND SUDDEN CORONARY DEATH

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This research seeks to study a large differential in risk of sudden coronary death that has been found among men of relatively low and high educational levels. The setting is a prospective study of men with coronary heart disease among a population of 120,000 men aged 35-74, insured for medical care in New York City (Health Insurance Plan of Greater New York --HIP). Among a cohort of 1,739 men with prior myocardial infarction (MI), those demonstrating complex ventricular premature beats (VPB) in one hour of ECG monitoring show a cumulative probability of sudden coronary death, over a 5-year period, that is more than twice that experienced by the men free of such VPB. Further, among the men demonstrating complex VPB (early, runs, bigeminal or multiform VPB) in one hour, the least educated men are apparently at more than twice the risk for sudden coronary death shown by those with more than eight years of schooling.

The finding with respect to education is not explained by associations with a large number of other variables. This study will examine whether low education reflects a relatively high level of life-situation factors which, given the presence of complex VPB, may trigger the lethal arrhythmia mechanism. Information to characterize the MI patients is being obtained through a telephone interview of spouses of all patients -- both living and dead -- in the original HIP study of VPB and sudden death. Analyses of the interview data will be directed to classification of broad levels of psychosocial stress. Such categories will then be examined as one or more prognostic variables in assessing risk of sudden coronary death controlling for all other important factors. The existence of an extensive body of prognostic information about the large cohort of post-MI men provides an important resource in the analysis of the new psychosocial data.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Heart Lung & Blood Inst. $125,071

2.0872,

MULTICENTER POSTCORONARY RISK STRATIFICATION PROGRAM

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The proposed research is a multicenter prospective study to develop and validate widely applicable criteria for stratifying risk of cardiac death in the year following acute myocardial infarction. A homogeneous population (acute myocardial infarction) derived from a heterogeneous group of hospitals (university and community) widely dispersed in geography (New York, St. Louis, Rochester) will be studied to permit generalization of the results to the whole population at risk. Three special studies have been included in the clinical evaluation of the postinfarction population prior to hospital discharge: radionuclide ejection fractions for quantitative evaluation of left ventricular function, 24-hour Holter ECG tape recordings for the precise quantitation of the degree of electrical instability, and limited activity tests to assess overall cardiovascular function and the presence of activity-related myocardia ischemia.

Approximately 1000 patients who survive the early hospital phase of an acute myocardial infarction will be entered during a 24-month enrollment period. Routine clinical evaluation and special studies will be performed prior to hospital discharge. All patients will be followed for a minimum of one year with clinical follow-up evaluation at 3, 6 and 12 months. A standard Bruce-protocol exercise will be obtained at the three month follow-up visit. The main thrust of the data analysis are: 1) to identify functional risk variables which can be widely applied to risk stratification

in postinfarction patients; 2) to elucidate pathophysiologic mechanisms responsible for survival and cardiac death by uncovering interactions and associations among the risk indicators; 3) to critically evaluate existing clinical concepts involving postinfarction patients by testing a priori hypotheses on this prospective population; 4) to characterize current patterns of therapy in postinfarction patients to improve background information for the design of future therapeutic intervention trials, and 5) to classify mortality events carefully as to chronology, cause and preventability.
SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Heart Lung & Blood Inst. $362,776

2.0873,

POST-TRANSFUSION HEPATITIS IN NEWBORN CHILDREN

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The purpose of this project is to evaluate the incidence and etiology of post-transfusion hepatitis in newborn babies. Babies who recieve blood transfusions, primarily premature infants, and non-transfused control babies, are followed for six months after transfusion or hospitalization. Blood specimens are collected monthly during follow-up and are tested for alanine aminotransferase (ALT) level as evidence of hepatitis. Sera are also tested for serologic evidence of hepatitis A and B virus, cytomegalovirus or Epstein-Barr virus infection and are stored for testing of non-A non-B hepatitis agents which may be identified in the future. The goal of the project is to complete prospective follow-up of 200 recipients and 200 controls. The incidence and etiology of hepatitis will be compared in the two groups of babies and with data from a similar study (part of the Transfusion Transmitted Viruses Study) conducted among adults in the same institution.
SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Heart Lung & Blood Inst. $67,869

2.0874,

EARLY RISK PREDICTORS FOR CHRONIC PULMONARY DISEASE

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The present proposal is the continuation of the annual follow-up of a cohort of children aged 5-9 years and their family members. The objective of the study is to identify risk factors for obstructive airways disease which operate early in life.
To date it has been determined that: 1) 'high' risk families, as defined in this study, have lower levels of pulmonary function than other families. 2) Parents' cigarette smoking is associated with both lowered level of pulmonary function and an increased prevalence of wheezing in their children. 3) childhood respiratory illness appears to have limited impact on levels of pulmonary function in children in this study. 4) There is a very high year-to-year correlation in age, sex, height standardized pulmonary function in children suggesting that some children with relatively impaired pulmonary function are not likely to outgrow their lowered levels of function.
In the coming year continued screening of the cohort will occur. Analysis will focus on factors influencing the changes in level of function in growing children.
SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Heart Lung & Blood Inst. $105,939

2.0875,

ESTABLISH AN INFECTIOUS ENTERIC DISEASE STUDY CENTER

A.S. Monto, University of Michigan, Ann Arbor Campus, School of Public Health, Dept. of Epidemiology, *Ann Arbor, Michigan* 48104
An infectious Enteritic Diseases Study Center will be established at the University of Michigan. Incidence and etiology of disease will be determined in normal families and in hospitalized cases. The families will be randomly selected from the population of Tecumseh, Michigan. Efforts will be made to identify bacterial, viral, and parasitic agents associated with these illnesses. Serologic techniques will be used to determine infection rates on a uniform basis in the entire study population. New methods will be developed for recognition of infectious agents and for studying mechanisms of pathogenesis. The ultimate aim will be control through therapy and prophylaxis.
SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Allergy & Infectious Diseases funds n.a.

2.0876,

EVALUATION OF OCCURRENCE OF INFLUENZA & VACCINE EFFICACY

A.S. Monto, University of Michigan, Ann Arbor Campus, School of Public Health, Dept. of Epidemiology, *Ann Arbor, Michigan* 48104
Specimens for virus isolation will be collected in the community of Tecumseh to identify the appearance of influenza virus in this well-defined population. To study past history of seeding or the occurrence of influenza viruses other than the prevalent strain in the community, the collected sera will be tested against antigens of various type A influenza viruses. To determine current and future patterns of infection, approximately 1000 individuals resident in Tecumseh will be recruited for prospective study. The aim here will be to follow a significant number of individuals of all ages to determine the effect of vaccination, the fall off in antibody level induced over time, the seeding of influenza viruses into the community, and the distribution of infection according to antibody status.
SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Allergy & Infectious Diseases $251,069

2.0877,

CLINICAL EPIDEMIOLOGY AND PATHOGENESIS OF GONORRHEA (HUMAN, RABBITS)

K.K. Holmes, University of Washington, School of Medicine, Dept. of Medicine, *A-300 Health Sciences Ctr., SC-64, Seattle, Washington* 98195 (P01 AI 12192-050001)
This project is part of a broader program (AI 12192).
SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Allergy & Infectious Diseases funds n.a.

2.0878,

EPIDEMIOLOGY OF ROCKY MOUNTAIN SPOTTED FEVER

C.M. Willert, Duke University, School of Medicine, Dept. of Pediatrics, *Box 3711, Durham, North Carolina* 27710
Overall objectives are to more clearly define and provide an accurate assessment of the incidence of the disease (and various factors responsible for increases in incidence of the RMSF) and of the factors involved in transmission.
SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Allergy & Infectious Diseases $102,209

2.0879,

THE CLINICAL EPIDEMIOLOGY OF IMMUNOLOGIC DISEASE (HUMAN)

J.F. Fries, Stanford University, School of Medicine, Dept. of Medicine, *Stanford, California* 94305 (P01 AI 11313-070010)
This project is part of a broader program (AI 11313).
SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Allergy & Infectious Diseases funds n.a.

2.0880,

EPIDEMIOLOGY AND MICROBIOLOGY OF INFECTIOUS DISEASE

A.G. Dean, University of Hawaii System, Manoa Campus, John A. Burns School of Medicine, *2444 Dole St., Pacific Biomedical Res. Ctr., Honolulu, Hawaii* 96822
Attempt to elucidate the factors which control transovarial transmission of viruses in mosquitoes. Evaluate the significance of transovarial transmission of flaviviruses in mosquitoes for survival of the viruses in nature during adverse climatic conditions. Evaluate the role of vector mosquito competence in the epidemiology of dengue infection. Attempt to find laboratory methods of measuring dengue virus virulence. Attempt to identify the cells and tissues in which dengue viruses replicate in man and elucidate the pathogenesis of disease caused by the viruses. Attempt to improve laboratory methods for the detection and quantitation of dengue viruses and antibodies.
SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Allergy & Infectious Diseases funds n.a.

2.0881,

STUDY OF RESPIRATORY DISEASE

H.W. Kim, Childrens Hospital National Medical Center, *111 Michigan Ave. N.W., Washington, District of Columbia* 20010
Evaluate candidate vaccines for RSV, para-influenza, and influenza viruses in infants and young children. Study factors which are important in the pathogenesis and host's resistance. Continue clinical surveillance of vaccinees who have previously received cold adapted RS virus or ts-1 mutant virus for incidence of infection and illness during natural RS outbreaks. Search for Norwalk, orbi-virus or reovirus-like, and other previously undetected viral agents in gastroenteritis by EM and IEM. Determine etiological association of such agents with enteric disease. Determine ecology and epidemiology of the newer enteric viruses. Determine factors in pathogenesis and host resistance.
SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Allergy & Infectious Diseases $124,277

2.0882,

ECOLOGY OF A RECENTLY IDENTIFIED PATHOGENIC VIBRIO SP

J.D. Oliver, University of North Carolina, Charlotte Campus, School of Science & Mathematics, Dept. of Biology, *Hwy. 49 N., Charlotte, North Carolina* 28205 (R01 AI 17059-01)
The Center for Disease Control in Atlanta recently reported on a new species of a halophilic, lactose-fermenting Vibrio (L-plus Vibrio) which has been implicated in fatal cases of septicemia in man. Unlike the enteropathogen V. parahaemolyticus, to which it is closely related, this organism has been isolated from patients with severe tissue infections and extraintestinal lesions. Recent studies from this laboratory have shown that when the L-plus Vibrio is injected subcutaneously (s.c.) or intraperitoneally (i.p.) an extremely potent vascular permeability factor is produced which results in massive generalized edema. The acute vascular fluid loss leads to rapid and profound increases in hematocrit value, with death in experimental mice resulting in 3-6 hours from circulatory failure. The LD50 value in mice (ca. 8 times 10 to the 5th power cells injected i.p.) is two orders of magnitude less than that observed for V. parahaemolyticus. S.c. inocula in mice resulted in severe local infections, and for those surviving longer than 48 hours, tissue necrosis. These animals rapidly developed Vibrio bacteremia after injections. V. parahaemolyticus produced no morbidity or mortality when injected s.c. Injections of L-plus Vibrio into ligated ileal loops in rats and rabbits consistently proved to be lethal with a high density bacteremia resulting.
Because of the potential health hazard present if the L-plus Vibrio exists at any significant level in public beach waters, the present proposal describes studies which are attempts to characterize the distribution of the L-plus Vibrio along the eastern coast of the United States. The microbiological, chemical and physical factors affecting the ecology of the organism will be investigated. Samples to be examined include water, sediment, plankton, and shellfish at each of these sites. Because of their clinical importance, the presence in these samples of two related Vibrio species, V. parahaemolyticus and V. alginolyticus, will also be monitored.
SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Allergy & Infectious Diseases $77,674

2.0883,

VIRULENCE FACTORS OF E. COLI ENTEROTOXIGENIC FOR MAN

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Enterotoxigenic Escherichia coli, or ETEC, are a major cause of secretory diarrhea in man. ETEC

belonging to the most frequently isolated serotypes and producing both the heat-stable enterotoxin and the heat-labile enterotoxin have been found to produce fimbrial surface-associated antigens which play a major role in the pathogenesis of ETEC diarrhea. These antigens are called colonization factors because these fimbriae promote colonization of the intestinal mucosa by ETEC by an adherence mechanism. Two major colonization factor antigens have been discovered; these are CFA/I which is produced by serotypes 015:H11, 025:H42, 063:H-, 078:H11, 078:H12 and others, and CFA/II which is produced by serotypes 06:H16, 08:H9 and others. The work proposed here seeks to discover which ETEC antigens (heat-labile enterotoxin, somatic antigens, or colonization factor antigens) are relatively most important in stimulating immunoprotection against ETEC diarrhea. Also, immunity against ETEC diarrhea will be investigated in terms of the class of immunoglobulin (IgG, IgM, IgA, secretory IgA) involved in protection. Since ETEC diarrhea is characterized by colonization of the mucosal surfaces without invasion of host tissue it will be important to investigate antibody responses which occur in external secretions; i.e. small bowel fluids, saliva and milk. Epidemiological investigations will be continued and extended to include the question of immune responses arising as the result of natural or artificial exposure to ETEC. Hospitalized volunteers will be employed to approach specific questions concerning the immune response to ETEC. In addition, in vitro studies will be performed using human intestinal epithelial cells in tissue culture to study adherence of CEA-positive ETEC.

BIBLIOGRAPHIC REFERENCES: Evans, D.G., D.J. Evans, Jr., W.S. Tjoa and H.L. DuFont. Detection and characterization of colonization factor of enterotoxigenic Escherichia coli isolated from adults with diarrhea. Infect. Immunity In Press, 1978. Evans, D.G., T.K. Satterwhite, D.J. Evans, Jr., and H.L. DuPont. Differences in serological responses and excretion patterns of volunteers challenged with enterotoxigenic Escherichia coli with and without the colonization factor antigen. Infect. Immunity In Press, 1978.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Allergy & Infectious Diseases $72,841

2.0884,

EPIDEMIOLOGY OF HEPATITIS B ANTIGEN AND VIRAL HEPATITIS

V.M. Villarejos, Louisiana State University, Medical Center, School of Medicine, Dept. of Tropical Medicine, *1542 Tulane Ave., New Orleans, Louisiana* 70112 (R01 AI 12910-03S1)

In the third grant year it is proposed to continue and expand studies on the epidemiology of type B hepatitis.

Through surveillance and case finding, the epidemiological patterns of occurrence and mode of spread of type B hepatitis will continue to be studied, with emphasis on the definition of mechanisms of transmission and the role of chronic HBsAg carriers in the dissemination of the disease. Comparable data will be obtained for type A hepatitis.

The role of saliva as a vehicle of transmission of type B hepatitis will be investigated further. The infectivity potential of HBsAg carriers and acute hepatitis cases will be defined.

Studies will be conducted on patterns of serologic response in type B hepatitis, including investigation of the behavior of surface and core antigen, e-antigen and e-antibody. The serologic studies of type B hepatitis will be continued.

The investigation of anti-DNA in viral hepatitis will be pursued further.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Allergy & Infectious Diseases $59,538

2.0885,

IMMUNOLOGICAL STUDIES IN STREPTOCOCCAL SEQUELAE

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The immunological basis for the pathogenesis of rheumatic fever is generally accepted, but the detailed mechanisms are not clear. Studies are being extended to determine the degree and duration of specific lymphocyte reactivity to streptococcal antigens in rheumatic fever patients as compared to nephritics and controls. Our initial data suggest that rheumatics respond primarily to antigens from streptococcal strains isolated and associated with the disease and not to antigens associated with nephritogenic strains. To further clarify this observation, various antigenic extracts from different strains are being tested.

Further studies on the immunogenetics of rheumatic fever are being carried out with typing of rheumatics, nephritics, controls and their families for B-alloantigens. A high degree of correlation with a new antisera, 6623, has been made with rheumatics from Bogota, Colombia and the New York area. This is being extended to the relatively closed and racially distinct population in Trinidad.

The protein of MN 48,000 found recently to be excreted by streptoccal strains associated with nephritis will be purified in larger quantities for further characterization and development of an RIA system to detect antibodies to this protein in nephritis. Immune complexes found in large amounts in poststreptococcal sequelae and especially nephritis will be examined for the presence of this material.

BIBLIOGRAPHIC REFERENCES: Villarreal, H., Jr., Fischetti, V.A., van de Rijn, I., and J.B. Zabriskie. 1979. The occurrence of a protein in the extracellular products of streptococci isolated from patients with acute glomerulonephritis. J. Exp. Med. 149 (2): 459-472. Patarroyo, M.E., Winchester, R., Vejerano, A., Gibofsky, A., Chalem, F., Zabriskie, J.B., and H.G. Kunkel. 1979. Association of B-cell alloantigen with susceptibility to rheumatic fever. Nature 278: 173-174.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Allergy & Infectious Diseases $109,881

2.0886,

ENDEMIC SCHISTOSOMIASIS AND CHAGAS' DISEASE IN BRAZIL

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The research program is a multidisciplinary collaborative effort in Salvador, Brazil, with a primary focus on the clinical evolution, immunopathology, and epidemiology of Manson's schistosommiasis and of Chagas' disease. Three Harvard scientists, stationed in Brazil, engaged in collaborative research with counterparts from the Faculty of the Medical School of the Federal University of Brazil (UFBa), and from the Brazilian Ministry of Health through the Fundacao Oswaldo Cruz (FOC) and the Companhas de Saude Publica (SUCAM). The program is sponsored by the Pan American Health Organization (PAHO). Since 1972, three core facilities have been developed: (a) a base laboratory at the medical school in Salvador; (b) clinical resources on the medical wards of the Hospital Professor Edgard Santos; and (c) a censused, studied population in Castro Alves, a rural area 4 hours drive from Salvador, where prevalence rates for schistosomiasis and for Chagas' disease range from 50 to 90%. The program was initiated with a long-term grant from the Wellcome Trust, and by short-term grants from the Clark Foundation and from PAHO, support shortly to expire; the Wellcome Trust support will cease in 1980.

Research in progress on Chagas' disease includes: (a) Elucidation of specific morbidity and mortality by repetitive examinations of a defined population at 3 year intervals; (b) Comparison of value of Holter ambulatory electrocardiographic monitoring with standard techniques for characterization of arrhythmias in chronic Chagas' disease; (c) Investigation of the dynamics of transmission in 3 rural areas; (d) Exploration of possible cellular immunologic deficiencies in persistent infections; (e) Study of the role of immunopathologic mechanisms in pathogenesis.

Research in progress on schistosomiasis includes: (a) Follow-up of mass chemotherapy with respect to changes in morbidity; alteration in patterns of transmission and in serodiagnostic reactions; (b) Identification of environmental and social factors influencing transmission; (c) Detailed studies on the dynamics of vector snail populations.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Allergy & Infectious Diseases $367,367

2.0887,

IMMUNOBIOLOGY AND EPIDEMIOLOGY OF LEPROSY

K.E. Nelson, University of Illinois, Medical Center at Chicago, Peoria School of Medicine, Dept. of Preventive Medicine & Community Health, *1400 W. Main St., Peoria, Illinois* 60606 (P01 AI 16308-01)

This US-Thai collaborative program is designed to provide epidemiologic and immunologic information required for improved prevention or treatment of leprosy, and to provide better pharmacologic data for the use of common drugs in tropical areas of the world. The program is built upon the long-standing collaboration between the faculties of The University of Illinois College of Medicine and Chiang Mai University in northern Thailand. The Illinois core facility is the US center and includes laboratories for training Thai workers for work to be done in Thailand. The Chiang Mai core is the Thai laboratory and clinical facility. McKean Rehabilitation Institute, Chiang Mai, will provide access to 300 leprosy inpatients and 2000 outpatients through its associated villages and clinics. The component projects will investigate leprosy from epidemilogic, genetic, and immunologic viewpoints. M. leprae specific and nonspecific antibody, lymphocyte, and phagocytic cell responses will be characterized using techniques from the Universtity of Kentucky, and the University of Illinois. Studies of the role of immune complexes in leprosy and its complications including glomerulonephritis and erythema nodosum leprosum will be based at the University of New Mexico.

All component projects involve Thai co-investigators who, after training in the US, will implement the research in Thailand.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Allergy & Infectious Diseases $548,349

2.0888,

EPIDEMIOLOGY OF INFANT BOTULISM

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The objective of this proposal is to determine the epidemiology of infant botulism, and to develop a profile of the high-risk infant.

The spectrum of severity of this disease is now known to range from mild outpatient illness to fulminant, unexpected death that at autopsy is indistinguishable from Sudden Infant Death Syndrome (SIDS). In order to identify mild cases, active surveillance will be used in addition to the surveillance systems used to identify hospitalized and fulminant (SIDS) cases.

These objectives will be accomplished by means of a longitudinal case-control epidemiologic and laboratory study.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Allergy & Infectious Diseases $157,526

2.0889,

ST LOUIS ENCEPHALITIS VIRUS IN TROPICAL ECOSYSTEMS

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This project has been designed to elucidate the mechanisms by which St. Louis Encephalitis (SLE) virus cycles in tropical ecosystems, and to compare the biological characteristics of SLE strains representing different survival mechanisms of the virus in Panama an in the U.S.A., so as to assess possibilities of periodic introduction of the virus into the U.S.A. from the neotropics with the occurrence of urban epidemics and vice versa. A close monitoring for SLE activity will be maintained at three or more distinct tropical ecosystems where the virus previously was isolated. Dynamics of transmission will be studied by virus isolation from mosquitoes with determination of vectorial capacity of mosquitoes, including transovarial transmission and host preference. Viremia patterns of suspected vertebrates will also be studied. Characterization of SLE strains will be done at Yale University.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Allergy & Infectious Diseases $149,210

2.0890,

INTERNATIONAL RESEARCH IN INFECTIOUS DISEASES

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The primary objective of the proposed Tulane ICIDR is to develop research program in Colombia, South America, with headquarters in Cali, which will address major public health problems of the country, the neotropical region and the hemisphere, and which will be of interest and importance to the scientific community in other parts of the world. The research will be carried out as a collaborative effort between Colombian and American scientists on a broad interdisciplinary base and will focus primarily on parasitic diseases of man and, in certain instances, on related immunological problems. The major effort will be directed toward basic biological and epidemiological investigations of selected vector-borne, parasitic diseases of man including filariasis, leishmaniasis, trypanosomiasis and malaria. In connection with some of these activities, integrated studies on the vectors and vector-parasite relationships will be carried out. Parasitic diseases of the upper gastrointestinal tract namely, giardiasis and strongyloidiasis will be investigated with emphasis on the physiological environment in the gut which may favor the colonization by the parasites and produce symptomatic disease. Infectious diseases in pediatric populations of Colombia and the various factors which mediate the immune responses of children to infections represent other areas of special interest to the program. The Colombian Fund for Scientific Research (COLCIENCIAS) is the Colombian host and counterpart organization of the Tulane program. The program is open to Colombian scientists and institutions from throughout the country.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Allergy & Infectious Diseases $330,000

2.0891,

THE EPIDEMIOLOGY OF HUMAN INFECTIONS OF SPECIAL INTEREST

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This project emphasizes epidemiologic investigations of infectious diseases of particular interest to the research program of this laboratory. Current investigations include studies of the etiologic relationship of various spotted fever-group serotypes to human illness, and improvement in laboratory methods for diagnosis of rickettsial infections, particularly Rocky Mountain spotted fever.

BIBLIOGRAPHIC REFERENCES: Hechemy, K. E., Stevens, R. W., Sasowski, S., Michaelson, E. E., Casper, E. A., and Philip, R. N.: Discrepancies in Weil-Felix and microimmunofluorescence test results for Rocky Mountain spotted fever. J. Clin. Microbiol. 9: 292-293, 1979.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Allergy & Infectious Diseases funds n.a.

2.0892,

THE ETIOLOGY OF ACUTE INFECTIOUS NON-BACTERIAL GASTROENTERITIS

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OBJECTIVES: (1) To search for viruses which play an etiological role in the syndrome of acute infectious non-bacterial gastroenteritis of infants, children, and adults; (2) to cultivate (in vitro) the viral agents of acute infectious nonbacterial gastroenteritis; (3) to study the biophysical, immunological and epidemiological characteristics of such agents; (4) to reproduce the syndrome experimentally for the purpose of a) studying the pathophysiological and immunological responses of the host, and b) assaying the infectivity of viruses such as human rotaviruses and the Norwalk and Norwalk-like agents; (5) to develop effective immunoprophylaxis for the viruses of acute, infectious, nonbacterial gastroenteritis; (6) to develop efficient and sensitive assays for a) detection of the viral and bacterial agents associated with gastroenteritis and b) antibodies to these pathogens.

BIBLIOGRAPHIC REFERENCES: Greenberg, H.B., Gebhard, R.L., McClain, C.J., Soltis, R.D., and Kapikian, A.Z.: Antibodies to Viral Gastroenteritis Viruses in Crohn's Disease. Gastroenterology. 76:349-350, 1979. Yolken, R.H., Barbour, B.A., Wyatt, R.G., Kapikian, A.Z.: Immune Response to Rotaviral Infection-Measurement by Enzyme Immunoassay. JAVMA. 173: 522-554, 1978.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Allergy & Infectious Diseases funds n.a.

2.0893,

LABORATORY AND EPIDEMIOLOGIC STUDIES OF VIRAL HEPATITIS AGENTS

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This project consists of continuing studies of the chemistry, structure, epidemiology, immunology and pathology of the human hepatitis viruses. The goal of such studies is the control of human viral hepatitis by application of the most appropriate methods, including active and passive immunization, chemotherapy and interdiction of spread of the viruses.

PROGRESS: Partial biophysical and biochemical characterization of hepatitis A virus has been achieved and studies of hepatitis type A in non-human primates, using defined pools of virus, are almost complete. There is preliminary evidence for successful cultivation of hepatitis virus in vitro. An inactivated subunit vaccine for hepatitis type B has been developed and is undergoing extensive tests of safety and efficacy in man. A third hepatitis B antigen, e antigen, is being characterized and its relationship to infectivity is being explored. Evidence that populations of hepatitis B viruses may contain defective interfering particles has been obtained, and this finding is being utilized in renewed attempts to isolate the virus. A newly recognized clinical syndrome, type non-A, non-B hepatitis has been further defined and attempts to identify an etiologic agent intensified through transmission studies in chimpanzees.

BIBLIOGRAPHIC REFERENCES: Hansson, B.G., Purcell, R.H.: Sites that Bind Polymerized Albumin on Hepatitis B Surface Antigen Particles: Detection by Radioimmunoassay. Infection and Immunity, in press, 1979. Galbraith, R.M., Dienstag, J.L., Purcell, R.H., Gower, P.H., Zuckerman, A.J., Williams, R.: Non-A, Bon-A, Non-B Hepatitis Associated with Chronic Liver Disease in a Haemodialysis Unit. Lancer, in press, 1979.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Allergy & Infectious Diseases funds n.a.

2.0894,

BASIC STUDIES ON MYCOPLASMAS

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These efforts cover both basic and applied aspects of mycoplasmas and related wall-free prokaryotes, including their neurotoxins, antigens and other biological factors involved in virulence, their immunological interrelationships, and their possible role in human disease or disease of uncertain etiology. Current projects of interest concern the characterization and serological interrelationships of an expanding group of helical mycoplasmas (spiroplasmas) being isolated from plants and a variety of insects, especially ticks. Recent studies have confirmed that many of these new organisms possess overt pathogenicity for vertebrates (embryonated chicken eggs and suckling rats), suggesting that they may represent important pathogens for man. Further sero-epidemiological studies in many seem warranted. Recent collaborative studies on the acholeplasmas (non-sterol-requiring mycoplasmas) isolated from plant and animal sources suggest some alteration in the concept that these organisms are parasitic. The occurrence of free-living acholeplasmas in plants, some species of which had previously only been found in vertebrates, raises important questions about vector transmission and other host-parasite relationships of these organisms.

BIBLIOGRAPHIC REFERENCES: Tully, J.G., Rose, D.L., Whitcomb, R.F., and Wenzel, R.P.: Enhanced isolation of Mycoplasma pneumoniae from throat washings with a newly modified culture medium. J. Infect. Dis. 139: 478-482, 1979. Aulakh, G.S., Tully, J.G., and Barile, M.F.: Differentiation among some acholeplasmas by nucleic acid homology. Current Microbiol. 2: 91-94, 1979.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Allergy & Infectious Diseases funds n.a.

2.0895,

SYSTEMATICS AND VECTOR RELATIONSHIPS OF CERTAIN PARASITIC ARTHROPODS

C.M. Clifford, U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Allergy & Infectious Diseases, Arthropod Borne Diseases Section, *Hamilton, Montana* 59840 (Z01 AI 00069-48 EB)

The activities of this project currently comprise four main functions: 1) Identification of ticks received from various individuals and government agencies throughout the world. Only one other institution in the world is capable of performing this service. 2) Systematic study of certain groups of parasitic arthropods. The foremost tool in systematic studies, the scanning electron microscope, has greatly aided in elucidating toxonomic concepts in acarines actually or potentially involved in transmission of disease agents. 3) Final editing and storage of all RML and NAMRU-3 (Cairo) tick data in the Smithsonian data retrieval system. 4) Colonization of medically important arthropod vectors, which are furnished to outside investigators.

BIBLIOGRAPHIC REFERENCES: Clifford, C. M., Keirans, J. E., Hoogstraal, H., and Morel, P. C.: Observations on the subgenus Argas (Ixodoidea: Argasidae: Argas). 15. Identity of Argas (A.) magnus from Ecuador and Colombia. J. Med. Entomol. 15: 157-165, 1979. Siuda, K., Hoogstraal, H., Clifford, C. M., and Wassaf, H. Y.: Observations on the subgenus Argas (Ixodoidea: Argasidae: Argas). 17. Argas (A.) polonicus sp. n. parasitizing domestic pigeons in Krakow, Poland. J. Parasitol. 65: 170-181, 1979.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National inst. of Allergy & Infectious Diseases funds n.a.

2.0896,

NATURAL HISTORY OF TICK-BORNE RICKETTSIAL AGENTS AND THEIR PUBLIC HEALTH SIGNIFICANCE

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This project is concerned with studies of Rocky Mountain spotted fever and other tick-borne rickettsial diseases in the United States and other countries regarding ecology, identification, and characterization of the rickettsial agent(s) with their associated vectors. With collaboration of outside agencies (state health departments, public health laboratories, hospitals, physicians, etc.) source material for comparative studies on the various rickettsial types and information about the distribution of vector species associated with spotted fever in the United States is obtained. This project also considers the cellular and subcellular aspects of interaction between tick-borne agents, particularly rickettsiae, and their vectors.

BIBLIOGRAPHIC REFERENCES: Burgdorfer, W.: The Rocky Mountain wood tick: Beware its bite! Montana Outdoors May/June: 29-31, 1979. Hayes, S. F. and Burgdorfer, W.: Ultrastructure of Rickettsia rhipicephali, a new member of the spotted fever group rickettsiae in tissues of the host vector Rhipicephalus sanguineus. J. Bacteriol. 137: 605-613, 1979.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Allergy & Infectious Diseases funds n.a.

2.0897,

EPIDEMIOLOGY OF ROCKY MOUNTAIN SPOTTED FEVER

H.R. Fischman, Johns Hopkins University, School of Hygiene & Public Health, Dept. of Epidemiology, *615 N. Wolfe St., Baltimore, Maryland* 21205

Study the epidemiology of RMSF in Maryland to describe the medical handling, course, and outcome of cases in man, to identify risk factors responsible for transmission to man, and to more clearly understand

the nature of the rickettsia involved in human infection.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Allergy & Infectious Diseases $484,241

2.0898,

DYNAMICS OF STREP ANTIGENS, PHAGES, AND ANTIBODIES

L.W. Wannamaker, University of Minnesota, Minneapolis Campus, School of Medicine, Dept. of Pediatrics, *1305 Mayo, Minneapolis, Minnesota* 55455 (R01 AI 09527-15)

This study will attempt to pursue studies and analyses of the epidemiology, bacteriology, immunology and clinical aspects of Group A and non-group A infections. The significance of specific serological responses to infection, antigenic changes and resident prophages will be explored. The possible applications of these studies as preventive measures will be evaluated.

BIBLIOGRAPHIC REFERENCES: Kaplan, E.L. and Wannamaker, L.W.: C-reactive protein in streptococcal pharyngitis. Pediatrics 60:28-32, 1977. Benchetrit, L.C., Wannamaker, L.W. and Gray, E.D.: Immunological properties of hyaluronidases associated with temperate bacteriophages of group A streptococci. J. Exp. Med., 149:73-83, 1979.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Allergy & Infectious Diseases $108,410

2.0899,

CLINICAL EPIDEMIOLOGY - PATHOGENESIS OF GENITAL HERPES

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We propose to test our current hypotheses concerning HVH latency and recurrence in humans and as secondary objective further prospectively describe the clinical epidemioloy of genital HVH. Among patients with primary genital HVH only 30% subsequently recrudesced contrasted with 60% recrudescence in HVH-2 patients. We plan to recruit and follow additional primary disease patients to expand our data base and to determine the effects of covariable also associated with recrudescence, race, age, age of acquisition of disease, sexual behavior, and mediated immunity. We have also seen that only 10% of primary HVH-1 patients had detectable anti-HVH antibody compared to 93% of primary HVH-2 patients. We wish to see if preexisting anti-HVH antibody protects against type 1 or 2 clinical disease and to examine other variables which may interact to influence this. Lastly we plan to test the hypothesis that recurrent genital herpes depends upon a mechanism of antigenic draft. We will look for subtle antigenic differences using serial isolates from individual patients, serial sera from patients and rabbit anti-HVH raised against specific serial isolates.

BIBLIOGRAPHIC REFERENCES: Corey, L., Reeves W.C., Chiang, W.T., Vontver, L.A., Remington, M., Winter, C., Holmes, K.K.: Ineffectiveness of topical ether for the treatment of genital herpes simplex virus infection. New Engl. J. of Medicine. 299:237-9, 1978.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Allergy & Infectious Diseases $102,605

2.0900,

NOSOCOMIAL INFECTION IN SURGICAL PATIENTS

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We are studying the pathogenesis and epidemiology of post-operative infections to develop more effective approaches for their prevention and control. We have designed a new method for obtaining quantitative wound cultures using a micropore filter mounted on a nutritive agar media; this technique is more than two times as sesitive as presently available quantitative culture techniques. With this technique, we are analyzing factors which may predispose to or prevent intraoperative colonization of surgical wounds in an effectiveness of pre-operative and intra-operative interventions attempting to decrease bacterial contamination of the wound and subsequent infection.

We have begun a series of clinical studies designed to assess the efficacy of certain, previously unproven practices which have been advocated to reduce post-operative infection rates. We have shown that bacterial gas filters on inhalation anesthesia circuitary has no effect in preventing post-operative pulmonary infections. Previously, the use of such filters had been widely accepted without any clinical proof of efficacy. In addition, we have determined infection risks and calculated infection costs for a variety of surgical procedures: these data will help us to perform cost/benefit analyses of other, more efficacious preventive approaches.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Allergy & Infectious Diseases $114,852

2.0901,

LYMPHOCYTOTOXIC ANTIBODY AND IMMUNE REGULATION IN SLE

R.J. De Horatius, Thomas Jefferson University, Jefferson Medical College, Dept. of Medicine, *1025 Walnut St., Philadelphia, Pennsylvania* 19107 (R23 AI 14574-02)

Family studies of patients with systemic lupus erythematosus have shown an increased incidence of many autoantibodies. This has included lymphocytotoxic antibody and antibodies to nucleic acids. The proposed research project will examine the function of these antibodies on several parameters of immune regulation in the family members of patients with systemic lupus erythematosus. This will utilize in vitro studies of mixed lymphocyte reactivity, HLA determination, and lymphocytotoxic antibody assays. Comprehensive family studies and studies of human household contacts of dogs with lupus will allow determinations of the role played by environmental and genetic influences on the development of overt disease in SLE patients. These results will be analyzed with respect to other known genetic markers such as ABO and Rh blood typings. Attempts will be made to define the specificity of the lymphocytotoxic antibody with respect to the antigen against which it is determined. This will utilize lymphocytes from patients with other diseases shown in previous studies to have lymphocytotoxic antibody. This will be performed by means of appropriate absorption studies prior to the assay for lymphocytotoxic antibody.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Allergy & Infectious Diseases $50,760

2.0902,

THE EPIDEMIOLOGY OF VISCERAL LARVA MIGRANS

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The purpose of these studies is 1) to determine the validity (sensitivity, specificity) and reliability of the enzyme-linked immunosorbent assay (ELISA) for the serodiagnosis of toxocaral visceral larva migrans (VLM), and 2) to measure the prevalence of antibody in several populations of children (cross-sectional analysis), and to determine the epidemiologic characteristics of persons with normal and positive titers (case-control approach). These studies should enable us to assess the public health implications of environmental contamination with this nematode, to identify and quantitate the risk factors associated with infection, and to formulate recommendations for primary and secondary disease prevention.

BIBLIOGRAPHIC REFERENCES: Glickman, L., Cypess, R., Hiles, D. and Gessner, T.: 1979 Toxocara-specific Antibody in the Serum and Aqueous Humor of a Patient with Ocular and Visceral Toxocariasis. Am. J. Trop. Med. Hyg. 28:30-35. Glickman, L., Crumrine, P., Cypess, R. and Gitlin, D.: 1979 Toxocara Infection and Epilepsy in Children, J. Pediat. 94:75-78.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Allergy & Infectious Diseases $57,642

2.0903,

TRANSMISSION AND CONTROL OF CALIFORNIA-GROUP VIRUSES

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Recent findings, notably that Aedes triseriatus mosquitoes orally infected with La Crosse (LAC) virus do not produce transovarially infected progeny until the second oviposition following the infectious bloodmeal, have made it mandatory to determine survivorship to the 2nd and subsequent ovipositions in order to assess the significance of horizontal amplification via vertebrates in endemic survival of the virus. Efforts will focus, therefore, on the development of trapping techniques to be used in estimating mosquito survival to mating, the first and subsequent ovipositions and the first and subsequent bloodmeals.

The circumstances of human infection with LAC virus under urban and semi-urban conditions will also be investigated. Preiminary evidence indicates that a high proportion of human California encephalitis cases result from contact with Aedes triseriatus mosquitoes bred in discarded tires and other man-made containers.

BIBLIOGRAPHIC REFERENCES: Bhattacharyya, G.K., M.G. Karandinos & C.R. DeFoliart, 1979. Point estimates and cofidence intervals for infection rates using pooled organisms in epidemiologic studies. Amer. J. Epidemiol. 109(2):124-131. School, P.J., & G.R. DeFoliart, 1979. Pipe insulating cement for closing treehole breeding sites of Aedes triseriatus. Mosq. News 39(1):149.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Allergy & Infectious Diseases $64,071

2.0904,

PHILIPPINE SCHISTOSOMIASIS JAPONICA:

R.M. Lewert, University of Chicago, School of Medicine, Dept. of Microbiology, *5801 S. Ellis Ave., Chicago, Illinois* 60637 (R22 AI 07724-12S1)

The objectives of this project broadly stated are to conduct complementary field and laboratory investigations of Schistosoma japonicum infections with emphasis on immune phenomena which might be correlated with clinical disease states. We propose to monitor anti-body and cell mediated immune response including possibly significant associated phenomena in selected population groups living in an area where Schistosoma japonicum is highly endemic. Attempts will be made to correlate these observations with parasitologic and clinical data, with notes of fluctuation or changes over a five year period, and to assess if possible the degree to which the immune phenomena contribute directly to the pathology of the disease. The role of immune renal pathology, autoimmune reactions, antiglobulin antibody and cryoglobulins will be examined. These studies are being carried out as a cooperative program with the Phillipine Department of Health with field studies on Samar and Leyte, The Phillipines.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Allergy & Infectious Diseases $5,789

2.0905,

TOXOPLASMOSIS - NATURE OF INFECTION & IMMUNE RESPONSE

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The results of the proposed studies will provide a better understanding of the biology and immunology of Toxoplasma gondii and the epidemiology, diagnosis and treatment of acute and chronic congenital and acquired toxoplasmosis, and the unique role of Toxoplasma in infection in the immunologically compromised host. Genetic variation and virulence of cloned 'strains' of Toxoplasma will be studied and comparisons will be made of the antigenic structure of Toxoplasma to related and unrelated protozoa. Prospective studies of the incidence of congenital toxoplasmosis will be carried out by studying seroconversion during pregnancy. Prospective, as well as retrospective, studies of the incidence of retinochoroiditis in acquired infection will also be made. Presently available diagnostic procedures will be improved and new ones developed, including a radioimmunoassay for circulating antigen, increasing the sensitivity of the IgM-IFA test, determining the

feasibility of demonstrating Toxoplasma in brain biopsy material, and further characterization of the histopathology of the lymphadenopathic form. The site of circulating Toxoplasma in patients with parasitemia will be determined and the dynamics of endogenous reinfection will be studied in the normal and immunosuppressed host. The role of the lymphocyte-macrophage system in resistance to Toxoplasma will be studied, including: the nature of the lymphocyte response to Toxoplasma, suppression of specific lymphocyte recognition of Toxoplasma and activation of macrophages during acute human toxoplasmosis, the specificity of macrophage recognition of Toxoplasma, and the role of alveolar macrophages in resistance to Toxoplasma. The efficacy of newer antimicrobials and their synergistic effects will be evaluated in animal models.

BIBLIOGRAPHIC REFERENCES: Wing, E.J., Krahenbuhl, J.L., and Remington, J.S.: Studies of macrophage function during Trichinella spiralis infection in mice. Immunology 36:479-485, 1979. Mahmoud, A.A.F., Peters, P.A.S., Civil, R.H., and Remington, J.S.: In vitro killing of schistosomula of Schistosoma mansoni by BCG and C. parvum-activated macrophages. J. Immunol. 122:1655-1657, 1979.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Allergy & Infectious Diseases $209,029

2.0906,

HABITAT & TRANSMISSION OF PNEUMOCYSTIS CARINII

W.T. Hughes, Johns Hopkins University, School of Medicine, Dept. of Pediatrics, *725 N. Wolfe St., Baltimore, Maryland* 21205 (R01 AI 14769-03)

The objective of the research is to learn the mode of transmission and natural habitat of P. carinii. Prerequisite to these studies is the need for a susceptible P. carinii-free animal model to serve as a host under experimental challenges. We have been successful in developing such a model with CD axenic weanling germ-free rats maintained in a Hoeltge isolator and given sterile prednisone orally.

Because of morphologic, tinctorial and immunologic similarities of two algae, Prototheca and Chlorella, sp. these were investigated for their potential to cause disease in animals. Both of these organisms caused deep-organ infections in immunosuppressed rats.

BIBLIOGRAPHIC REFERENCES: Hughes, W.T.: Limited effect of trimethoprim-sulfamethoxazole prophylaxis on Pneumocystis carinii. Antimicrob. Agents Chemother. 16:333-335, Sept. 1979. Chipps, B.E., Saulsbury, F.T., Hsu, S.H., Hughes, W.T. and Winkelstein, J.A.: Non-candidal infections in children with chronic mucocutaneous candidiasis. Johns Hopkins Med. J. 144:175-179, June, 1979.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Allergy & Infectious Diseases $48,744

2.0907,

STUDY OF A NEW HUMAN PAPOVAVIRUS

D.L. Walker, University of Wisconsin, Madison Campus, Medical School, Dept. of Medical Microbiology ::, *307 N. Charles St., Madison, Wisconsin* 53706 (R01 AI 11217-07)

Proposed work includes: 1. Efforts to cultivate JC virus in cells other than human fetal glial cells. 2. Continued studies of the role of JC virus, and to a lesser extent BK virus, in human infections and disease. Much of the work will be concentrated on the epidemiology of JC virus and BK virus and on JC virus in progressive multifocal leukoencephalopathy. 3. Study of the oncogenicity of JC virus, particularly in primates.

BIBLIOGRAPHIC REFERENCES: Varakis, J., G. ZuRhein, B. Padgett, D. Walker. Induction of peripheral neuroblastomas in Syrian hamsters after injection as neonates with JC virus, a human polyoma virus. Cancer Research 38:1718-1722, 1978. Padgett, B. and D. Walker. Natural history of human polyomavirus infections. In Persistent Viruses, J. Stevens, G. Todaro and C. Fox, Eds., ICN-UCLA Symposia on Molecular and Cellular Biology, Vol. XI, Academic Press, N.Y., 1978 pp. 751-758.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Allergy & Infectious Diseases $130,882

2.0908,

HUMORAL, CELLULAR & GENETIC MECHANISMS IN AUTOIMMUNITY

H.O. McDevitt, Stanford University, School of Medicine, Dept. of Medicine, *Stanford, California* 94305 (P01 AI 11313-07)

The objective of the research proposal is to study mechanisms of immunogenetics, autoimmunity and immunosuppression in order to translate experimental findings and concepts of basic and clinical immunology into knowledge which is useful for the diagnosis and treatment of human disease. New cell surface antigens coded for by the major histocompatibility complex (MHC) in man will be defined, and their association with specific rheumatic and autoimmune diseases will be studied. The immune response of HLA-B27 positive and negative individuals to purified antigens from strains of Shigella which do and do not cause Reiter's syndrome will be studied. Patterns of autoantibodies and clinical presentation will be investigated in the rheumatic diseases in order to further classify subtypes of disease. Finally, a new modality of immunosuppression, fractionated total lymphoid irradiation, will be studied for efficacy in the treatment of rheumatoid arthritis, autoimmune diseases of laboratory rodents, and rejection of allogeneic bone marrow transplants in dogs.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Allergy & Infectious Diseases $395,047

2.0909,

LA CROSSE ARBOVIRUS STUDIES IN FORESTED AREAS

W.H. Thompson, University of Wisconsin, Madison Campus, Medical School, Dept. of Preventive Medicine, *307 N. Charles St., Madison, Wisconsin* 53706 (R01 AI 11547-07)

The natural maintenance cycle of LAC virus in forested areas will be studied in field and laboratory research focused on mechanisms and relative importance of vertical (transvarial) and horizontal (venereal and salivary transfer through mammals) transmission of virus.

Data on isolates from the mosquito vector and antibody rates in chipmunks and squirrels obtained from studies in an endemic area in suburban La Crosse will be compared with those obtained from the edge of this endemic area in central Wisconsin and from islands of LAC activity as recently located in a highly-populated suburban area near Milwaukee in eastern Wisconsin.

Selected cases of California encephalitis, occurring each year in Wisconsin and other midwestern states, will be studied for distribution and circumstances of infection. Results of epidemiologic surveys to be conducted in residents of the newly found isolated area of LAC virus in highly-populated eastern Wisconsin will be compared with results recently obtained in residents in the endemic area.

Enhancement of venereal infection and transovarial and salivary transmission rates, so far observed with LAC virus in colonized female Aedes triseriatus given blood-meals before mating, will be further studied with naturally infected females and F1 progeny.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Allergy & Infectious Diseases $117,915

2.0910,

VENEREAL DISEASE RESEARCH PROGRAM PROJECT

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This program project has research components: I. Clinical Epidemiology and Pathogenesis of Gonococcal Infections: Methods include auxo-typing, outer membrane protein typing, and fluorescent antibody typing, phagocytosis of gonococci by human polymorphonuclear leukocytes, and use of antigen-specific opsonizing antibody and bactericidal antibody. II. Genetic Studies of Neisseria gonorrhoeae: The general purpose of the proposed research is to study the genetic organization of the gonococcus, Neisseria gonorrhoeae, as well as other microorganisms that cause significant sexually transmitted diseases. The thrust of our research is aimed at recognizing the nature of the determinants that contribute to bacterial virulence. By using classical genetic methods coupled with the newer techniques of recombinant DNA research we have been characterizing the pili genes of the gonococcus. We hope to better understand the precise role by which pili permit gonococci to attach to epithelial cells of susceptible tissues. In another vein, we have shown that a plasmid species is common to all strains of chlamydia. It is possible that this plasmid encodes for a polypeptide important in the pathogenesis of chlamydial disease. III. Nonogonoccal Urethritis and Related Infections: The etiology of chlamydia-negative nongonococcal urethritis, and the clinical spectrum and immunology of chlamydia trachomatis infectons are being studied. IV. Treatment and Pathogenesis of Hemophilus vaginalis Infection: The role of H. vaginalis and anaerobic bacteria in the etiology and pathogenesis of nonspecific vaginitis, and the optimal methods for therapy of this infection are being studied.

BIBLIOGRAPHIC REFERENCES: Elwell, L.P., Roberts, M. and Falkow, S. 1978. Common beta-lactamase specifying R plasmids isolated from the genera Haemophilus and Neisseria. In Microbiology 1978, D. Schlessinger (ed) American Society for Microbiol gy, Washington, D.C. pp 255-256. Roberts, M. and Falkow, S. 1978. Plasmid-mediated chromosomal gene transfer in Neisseria Gon rrhoeae. J. Bacteri l. 134:66-70.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Allergy & Infectious Diseases $442,081

2.0911,

EVOLUTION AND EPIDEMIOLOGY OF ANTIBIOTIC RESISTANCE

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We will determine the basis, at the molecular level, for the apparent limitation of R-plasmid bacterial host range among hospital bacteria. Preliminary experiments indicate the presence of a migrating controlling DNA sequence analagous to that proposed for higher life-forms. This element will be further characterized by genetic and molecular parameters. The verification of the modus operandi of the proposed controlling element has important implications to the understanding of the epidemiology of infectious antibiotic resistance among Gram-negative bacteria common to the hospital environment.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Allergy & Infectious Diseases $39,570

2.0912,

NORTH CAROLINA PROGRAM ON SEXUALLY TRANSMITTED DISEASE

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This is a multidisciplinary program project, with research activities in the areas of gonorrhea and syphilis. Emphasis is on both basic microbiology and immunology, and applied problems such as organism identification and clinical epidemiology.

Four integrated projects focus on the gonococcus, including basic genetics, biochemistry and antigenicity of the cell surface; virulence and host immune response; and importance of cell-wall deficient forms in human disease. Two integrated projects examine the basic physiology, pathogenicity, and immunology of T. pallidum.

BIBLIOGRAPHIC REFERENCES: Sparkling, P.F.: Use of microbial genetics in the study of pathogenicity: Differentiation between correlation and causation. In D. Schlessinger (ed.), Microbiology 1979, pp. 249-253. American Society for Microbiology, Washington, D.C., 1979. Sox, T.E., Mohammed, W., and Sparling, P.F.: Transformation-derived plasmids in Neisseria gonorrhoeae with altered structure and function. J. Bacteriol. 138, May 1979.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Allergy & Infectious Diseases $499,751

2.0913,

ORIGIN OF PANDEMIC INFLUENZA VIRUSES

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The long-term objective of the proposed study is to elucidate the mechanisms of variation in influenza A

and B viruses. This includes both antigenic variation and variation in the other six gene products of influenza viruses. The objectives and methods are: 1) To prepare monoclonal antibodies to each of the gene products of the reference strains of H1N1, H3N2, and influenza B viruses. 2) To utilize monoclonal antibodies to determine the number and location of the antigenic determinants on the hemagglutinin and neuraminidase molecules of these viruses and to relate them to the primary structure of the molecules. The number of determinants will be established with monoclonal antibodies in serological assays. Antigenic variants will be selected, the surface proteins will be peptide mapped and variant peptides related to the primary amino acid sequence. The location of the antigenic determinants on the molecules will be determined by X-ray crystalography. 3) To characterize the gene product of influenza viruses with monoclonal antibodies and determine what constitutes an epidemiologically important strain using serological assays and RNA hybridization. 4) To establish the gene constellations of avian and mammalian influenza viruses that control tissue tropism and host range using recombinants between avian strains of influenza virus that replicate in the cells lining the intestinal tract of ducks and humans strain that do not replicate in ducks. 5) To elucidate the role of the different determinants on the gene products of influenza virus in antibody- and cell-mediated immunity using monoclonal antibodies in in vivo and in vitro assays.

BIBLIOGRAPHIC REFERENCES: Gerhard, W. and Webster, R.G.: Antigenic drift in influenza A viruses: I. Selection and characterization of antigenic variants of A/PR/8/34 (HON1) influenza virus with monoclonal antibodies. J. Exp. Med. 148:383-392, 1978. Webster, R.G.: The evolution of epidemic influenza viruses. In: Equine Infectious Diseases. IV. Proceedings of the 4th International Conference on Equine Infectious Diseases (J.T. Bryans and H. Gerber, eds.). Veterinary Publications, Princeton, New Jersey, pp. 305-313, 1978.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Allergy & Infectious Diseases $83,391

2.0914,

SUPPORT FOR INTERNATIONAL CENTER FOR MEDICAL RESEARCH

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Research will continue to be focused on the clinical and epidemiological aspects of acute diarrheal disease of children and adults. This work will now be done entirely in Panama, in collaboration with the Gorgas Memorial Laboratories, and other local Panamanian Institutions. The work will include a) epidemiologic studies of acute diarrhea in children seen at the Gorgas Hospital and at the Curcundu Urban Health Clinic, b) diarrheal surveillance in several well-defined rural Indian populations in Panama, and c) a controlled clinical study comparing two oral glucose-electrolyte solutions (50 or 90 mEq sodium/L) in the therapy of small children hospitalized with acute diarrheal diseases.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Allergy & Infectious Diseases $413,723

2.0915,

SUPPORT FOR INTERNATIONAL CENTER FOR MEDICAL RESEARCH

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The University of California International Center for Medical Research is devoted to (a) the promotion of research in international health, with emphasis on problems in Malaysia and the nearby Western Pacific and Southeast Asis; (b) furthering application of this reseach to domestic health problems in the United States; and (c) providing research opportunities for scientists in international health and related desciplines in a tropical environment. The Center staff comprises a few longterm scientists and a varying number of short-term scientists, usually on 2-year assignments.

Currrent research interests include Arbovirology (including medical entomology); Community Health (medical behavioral research with special reference to parasitism and infection, traditional medical systems and health in changing environments); Human Genetics (abnormal red cell metabolism, genetic traits in relation to disease and infection, and population genetics); Parasitology (emphasizing biological control of trematodes and snail immunity).

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Allergy & Infectious Diseases $356,369

2.0916,

ALLERGENICITY OF AIRBORNE PARTICULATES

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The proposed studies will extend ongoing investigations of the potential, as human allergens, of a variety of airborne biological particles of demonstrated abundance. Specifically, spores of select ascomycetes, basidiomycetes and myxomycetes will be obtained from field sources or, rarely, laboratory culture and extracted to provide material for kin and mucosal testing of selected atopic subjects. Comparative allergenic properties of distinct 'form species' of imperfect fungi will be assayed similarly and studied by the use of immunoadsorbents. Optimal methods for preparation of fungus extracts for clinical use will be sought and media for recovery of fungi from air compared critically. Present studies of the fungus flora of homes will be extended to survey possible actinomycete contamination and the role of humidifying equipment as a dominant source of microbial aerosols will be evaluated. Window air conditioning units will be studied, both as a means of excluding extramural aeroallergens and as a potential source of these agents. The possible occurrence of pollen allergens in association with aerosol fractions below 10 micra in equivalent diameter will also be sought.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Allergy & Infectious Diseases $78,143

2.0917,

EPIDEMIOLOGY OF ECHINOCOCCOSIS

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Hydatid disease is now known to be endemic in two regions of Utah and in a few isolated areas of neighboring states, such as the Navajo and Zuni Indian Reservations. Our project is a continued effort to identify important factors in the epidemiology of the disease and measures which can feasibly be implemented in preventive and control programs within this geographical area.

Studies proposed for the coming year include: (1) surveillance of sheep and dogs for Echinococcus granulosus in attempts to monitor the situation in known endemic regions and identify any new foci of infections, (2) develop an educational coloring book on hydatid disease for residents of central Utah and for Zuni Indians, (3) conduct and analyze additional attitudinal surveys on hydatid disease, (4) evaluate chemotherapeutic agents on E. multilocularis in cats and rodents, and (5) conduct electron microscope studies on E. granulosus, E. multilocularis, and Taenia hydatigena.

BIBLIOGRAPHIC REFERENCES: Andersen, F. L., G. A. Conder, and W. P. Marsland: Efficacy of injectable and tablet formulations of praziquantel against mature Echinococcus granulosus. Am. J. Vet. Res. 39:1861-1862, 1978. Andersen, F. L., G. A. Conder, and W. P. Marsland: Efficacy of injectable and tablet formulations of praziquantel against immature Echinococcus granulosus. Am. J. Vet. Res. 29:700-701, 1979.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Allergy & Infectious Diseases $59,398

2.0918,

HEPATITIS, HAA, AND ANTI-HAA IN MOTHERS AND INFANTS

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The research objectives of this study are to determine the efficacy of hepatitis B immune globulin (HBIG) in altering the incidence of hepatitis B virus (HBV) infection in infants born 1) to mothers with acute hepatitis B during the 3rd trimester of pregnancy and immediate 2-month postpartum period, and 2) to asymptomatic HBsAg carrier mothers. Infants born to mothers with acute type B hepatitis during the delivery period will receive one injection of HBIG within 2 weeks of delivery. All infants will be followed on a monthly basis and tested for evidence of HBV infection. These results will be compared to the 70% HBsAg positivity which we found in infants born to mothers with acute hepatitis B during the past 6 years (historical controls). Infants born to HBsAg carrier mothers will be divided into 2 groups according to the maternal HBeAg test. Those born to HBeAg mothers will be randomized in a double blind fashion for HBIG or saline placebo treatment. Infants born to HBeAg negative carrier mothers will be similarly randomized. Each infant will be treated within 2 weeks of delivery, and at 4, 8, and 12 months of age. All infants will be followed monthly for evidence of HBV infection. Also, we will follow the children who have been found to be persistently HBsAg during the course of this study. This includes clinical evaluation, tests of liver function, HBsAg titers, HBeAg, anti-HBe, DNA polymerase and anti-HBc measurements on a regular basis. If deemed necessary, further clinical studies will be performed to determine the type and extent of the liver disease which may develop. long term followup is required to elucidate the natural course of the hepatitis B infection in these infants. We are also studying the incidence of HBsAg infection in 1) family members of HBsAg carrier mothers and 2) family members of the persistently HBsAg positive infants. If HBsAg, then other studies will be performed to determine the type and severity of liver disease in these individuals. With he availability of the immune adherence test for hepatitis A (HA), we plan to study the incidence of type A hepatitis in pregnant females, and look for the presence of anti-HA in the cord blood and newborn infants. Hepatitis A infection will also be studied in the neonates with serial clinical, biochemical and serologic studies.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Allergy & Infectious Diseases $35,007

2.0919,

SUPPORT FOR WORLD REFERENCE CENTER FOR ARBOVIRUSES

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The World Reference Center for Arboviruses identifies and characterizes viruses suspected of being biologically transmitted by arthropods as well as certain other viruses similar in some respects to arboviruses. A collection of about 450 already characterized reference viruses and immune sera and ascitic fluids is utilized in neutralization, complement-fixation, hemagglutination-inhibition and immunofluorescence tests to determine the relationship of referred viruses to the reference viruses. Physical and morphological characteristics of selected new arboviruses are determined by electron microscopy and polyacrylamide gel electrophoresis. The collection is also used for serologic diagnosis of disease, study of epidemics and seroepidemiologic surveys. This collection of reference arboviruses is the only complete collection in the world. The long-term aim is to develop new research areas and research models in virology and epidemiology as has been done in the past with Congo-Crimean hemorrhagic fever and Lassa fever viruses, rabies-related viruses, tick-borne orbiviruses of Ixodes uriae, insect viruses (Baculoviruses) and the use of insect cell cultures.

BIBLIOGRAPHIC REFERENCES: Casals, J., Togavirus: Alphavirus, and Togavirus: Flavivirus, In 'CRC Handbook Series of Clinical Laboratory Science', Hsiung, G.D., and Green, R.N., eds., CRC Press Inc., in press, 1978. Casals, J., and Buckley, S.M., Lassa Fever, In 'Handbook of Zoonoses', J.H. Steele, Ed., CRC Press Inc., in press, 1978.

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2.0920,

DETERMINANTS OF VIRULENCE IN BACTEROIDES FRAGILIS

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The significant role that anaerobic bacteria play in suppurative infection in man has beeen firmly established. Among all the anaerobic species, Bacteroides

fragilis stands out as the most importnat pathogen because of its frequency of isolation and resistance to many antimicrobial agents. Despite the voluminous literature on B. fragilis, little is known about its pathogenic mechanisms. Current research on virulence factors have been hampered by an inability to distinguish strain differences within B. fragilis and by the lack of a genetic system. Recent studies have provided the genetic tools to facilitate systematic invesigation of potential virulence factors in B. fragilis. The objective of this proposal is to apply the techniques of molecular biology employed for the study of aerobic organisms to define the determinants of virulence in B. fragilis. The isolates selected for study will fit the phenotype description of the type strain of B. fragilis. Transferable drug resistance will be further characterized by studying the 2 megadalton clindamycin resistance plasmid and the larger transfer factor. A transformation system will be developed utilizing the clindamycin plasmid. Characteristics which have been suggested as virulence factors will be studied by obtaining derivatives of pathogenic strains lacking the attribute and testing these clones in a rat model of intraabdominal sepsis. Initial phenotypic characteristics to be studied are the polysaccharide capsule, superoxide dismutase, catalase, extracellular nucleases and lipases. Finally, the epidemiology of B. fragilis infections will be defined using the technique of phage typing. Virulent bacteriophage of B. fragilis will be utilized to develop the typing system to determine if there are specific species associated with infections in different parts of the country and with specific sites in the body. Phage types in the normal flora will be examined. The effect that hospitalization and preoperative antibiotics have on phage types will be studied. These studies will give some insight on whether B. fragilis infections are endogenous or nosocomial.

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2.0921,

EPIDEMIOLOGY OF INFECTION WITH ATYPICAL MYCOBACTERIA

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Persons infected by Mycobacterium intracellulare, as demonstrated by positive skin test to the antigen, are concentrated in the southeastern coastal area of the United States. This geographical distribution is unlike that of persons exposed to M. tuberculosis and provides a hypothesis to the possible source of infection with M. intracellulare and other atypical Mycobacteria. Our research proposed to continue testing the hypothesis that the source of the infection is Mycobacteria residing in either the estuaries or fresh water of the southeastern United States or animals (birds especially) that are associated with these habitats. These Mycobacteria are concentrated at the surface of bubbles formed during wave action and rain or spread in dusts. The experimental approach involves sampling air as well as surface and subsurface waters and soils in various areas of the southeastern United States, at and off the coast of Virginia, South Carolina, Maryland, etc. Initial studies by the principal investigators have already demonstrated the effectiveness of this approach. The concentration of Mycobacteria, their frequency of isolation, and identification of each isolate will be part of this study. The data concentration and frequency of isolation, and identification of each isolate will be part of this study. The data of concentration and frequency of isolation will be compared to samples from areas where the incidence of infection with M. intracellulare is lower (upstate New York and New England). In addition, the physiological ecology of these organisms is being investigated to determine the basis for the unique geographical distribution.

BIBLIOGRAPHIC REFERENCES: Gruft, H., A. Loder, M. Osterhout, B. C. Parker, and J. O. Falkinham, III. 1979. Postulated sources of M. intracellulare and M. scrofulaceum infections: Estuaries and ocean waters. Am. Rev. Respir. Dis. 120:1385-1388. Wendt, S.L., B.C. Parker, and J.O. Falkinham, III. 1979. Occurrence and distribution of human bacterial pathogens in Virginia surface waters. Bulletin 118. Virginia Water Resources Res. Centr. p. 1-68.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Allergy & Infectious Diseases $115,212

2.0922,

ECOLOGY OF PATHOGENIC VIBRIOS

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Studies on seasonal abundance and distribution of Vibrio and related species from a water supply in a cholera endemic area (Bangladesh) will be continued. Isolated strains will be subjected to extensive numerical analysis, examined for enteropathogenicity and antibiotic resistance patterns, and analyzed for presence of extrachromosomal genetic elements. The relationship of NAG strains of V. cholerae isolated from the water supply and from the Chesapeake Bay to classical and El Tor V. cholerae will be studied by systematic analysis and DNA/DNA hybridization studies. Analysis of enterotoxic factors of NAG vibrios, of V. parahaemolyticus and of Aeromonas hydrophila will be pursued on both ecological and molecular genetic bases. Correlations will be sought between individual strain characteristics and presence of extrachromosomal elements, and factors relating to pathogenicity and natural distribution. By using a computer based system, development of an online identification system for Vibrio species will be developed.

BIBLIOGRAPHIC REFERENCES: J. Kaper, H. Lockman, R.R. Colwell, and S.W. Joseph. 1979. Ecology, serology, and enterotoxin production of Vibrio cholerae in Chesapeake Bay. Appl. Environ. Microbiol. 37: 91-103. Kaper, H. Lockman, and R.R. Colwell. 1979. Ecology and toxigenicity of Aeromonas hydrophila in Chesapeake Bay. Abstract, Proc. Annu. Meet. Am. Soc. Microbiol. 1979.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Allergy & Infectious Diseases $48,603

2.0923,

STUDIES OF INFECTIOUS DIARRHEAL DISEASES

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This project focuses on the immunology, immunoprophylaxis, and microbiology of acute intestinal infections: viral, bacterial and parasitic. Antigens associated with gut flora appear to cause clonal expansion of antigen-sensitive cells of appropriate specificities in Peyer's patches and also drive the process of B-cell differentiation such that cells in Peyer's patches preferentially become committed to expression of IgA antibodies. Techniques for studying 'cross-priming' of mucosal surfaces by respiratory and enteric antigens have been developed. Protein deficiency has been shown to markedly impair a specific mucosal immune response to a protein antigen. The migrating patterns of IgA memory cells, antigen-specific suppressor cells and cells destined to produce specific IgA antibody after enteric immunization with cholera toxin have been partly determined. Cells conveying memory and suppression disseminate to distant mucosal surfaces whereas IgA plasmablasts home largely to the organ of origin. The DNA sequences for E. coli LT A- and B-subunits have been cloned separately and the recombinant plasmids are available for study. Efforts are underway to develop a more reliable adult animal model for toxigenic E. coli diarrhea so that E. coli strains which produce defective LT can be studied as possible live vaccines. Detailed studies of the viral nucleic acids and proteins of the SA-II and porcine rotaviruses are underway. Progress has been made in purification of the structural polypeptides of SA-II; the rates of synthesis of these and non-structural polypeptides in infected cells have been studied; a serodiagnostic facility to support clinical and epidemiologic studies of human rotavirus infections has been established.

BIBLIOGRAPHIC REFERENCES: Barry, W. S., Pierce, N. F. Protein deprivation causes reversible impairment of the mucosal immune response to cholera toxoid/toxin in rat gut. Nature 281:64-65, 1979. Levine, M. M., Nalin, D. R., Craig, J. P., Hoover, D., Bergquist, E. J., Waterman, D., Holley, M. P., Hornick, R. B., Pierce, N. F., Libonati, J. P. Immunity to cholera in man: Relative role of antibacterial versus antitoxic immunity. Transactions of The Royal Society of Tropical Medicine and Hygiene 73:3-9, 1979.

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2.0924,

NATURAL HISTORY OF THE ORGANISM OF LEGIONNAIRES' DISEASE

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The objective is to characterize the natural history of the organism of Legionnaires' disease. Experiments, divided into three groups, will attempt to: a) Clarify the ecologic niche: We will investigate the morphology of the transition from intracellular to cell-free growth, and the potential of spore-like structures to germinate; b) Elucidate mode of transmission: By pathologic techniques, we will compare the pathology produced in guinea pigs by 3 routes of inoculation: air, water and intraperitoneal; c) Delineate pathology: By light, immunofluorescent and electron microscopy we will describe the pathology of Legionnaires' disease in guinea pigs and humans, including distribution and features of the organisms within lesions. We will attempt to develop a diagnostic test for the acute phase of the illness. Data from the experiments will be used to clarify the taxonomy of the organism.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Allergy & Infectious Diseases $85,964

2.0925,

CONTROL OF HOSPITAL-ACQUIRED URINARY TRACT INFECTIONS

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These studies are designed to increase our understanding of the epidemiology, significance, pathogenesis, and control of nosocomial urinary tract infections in hospitalized patients who receive indwelling urethral catheters. In the past four years, we have established a program for the daily bacteriologic monitoring of urinary drainage systems and, using a unique computerized medical records system, developed techniques for implementing prospective, randomized, controlled studies of preventive methods.

In recent studies, we have identified bacterial colonization of the urethral meatuscatheter junction as an important risk factor for later bacteriuria, and demonstrated the failure of prevention using an iodophor disinfectant applied twice daily to the meatal surface. We will continue these studies by evaluating other topical antimicrobials for meatal care as well as other preventive approaches, such as the use of silicone catheters, weekly changes of catheters, and systemic treatment with trimethoprim-sulfamethoxazole.

We will continue our long-term epidemiologic studies of the incidence and associated risk factors for catheter-related gram-negative bacteremia. We propose to evaluate a test for antibody-coating of urinary bacteria as an epidemiologic tool to predict morbidity and persistance of bacteriuria.

We will utilize our monitoring system to develop techniques to eliminate unnecessary catheterization and to encourage early removal of catheters. The ultimate goal of our project is to develp practical methods for prevention and control of catheter-associated infections that can be used in all hospitals. Toward this end, we will implement and test suitable methods in a nearby private hospital that has not been the site of previous study.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Allergy & Infectious Diseases $43,439

2.0926,

EPIDEMIOLOGY OF THE GROUP B STREPTOCOCCUS

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Pregnant women and newborn infants will be followed to detect and measure group B streptococci, an important cause of newborn infections. The purpose is to understand the epidemiology and carriage of this bacterium, particularly with reference to the gastrointestinal tract. Healthy adult volunteers will be studied to locate the sites of streptococcal carriage in the gastrointestinal tract. Patients and their contacts will be studied in a veneral disease clinic to

evaluate the importance of sexual transmission in streptococcal spread.
SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Allergy & Infectious Diseases $73,775

2.0927,
PNEUMOCOCCAL VACCINE IN THE INSTITUTIONALIZED ELDERLY
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To evaluate the current pneumococcal vaccine in the institutionalized elderly by observing vaccine-associated reactions and subsequent incidence and etiology of pneumonias and pneumonia-associated mortality.
We plan to study approximately 1,900 patients from 4 different chronic-care institutions. The study population will consist of approximately 700 patients who have been institutionalized for less than 400 days at the time of vaccination and additional 1,200 new admissions who will be entered over the next 12 months. These patients will be selected because they are at an especially high risk for acquiring pneumococcal pneumonia; they will be followed for 1-2 years (depending on their data of entry) or until discharge. Prior to vaccination extensive in-services will be performed to insure that all respiratory infections will be investigated by clinical examination, chest roentgenograms, and cultures of respiratory secretions and blood prior to starting antimicrobials. Special studies to identify and recover S. pneumoniae (pneumococcus) will include direct Quellung reaction with omniserum and counterimmunoelectrophoresis of respiratory secretions, selective-inhibitory media and typing of all isolates with Danish monovalent typing sera. Vaccinees will be observed for immediate-acute, local and constitutional reactions. This population will be exposed to approximately 700 patient years of risk per year of developing a pneumonia. Information will be obtained on the incidence of pneumonia, bacteremia, and mortality (total pneumococcal and pneumococcal due to sera types contained in the vaccine) per 1,000 patient years; the etiology of all radiologically confirmed pneumonias and the pneumoccal types associated with respiratory events, radiologically confirmed pneumonias and pneumonia-associated deaths. Surveillance figures collected at the Monroe Community Hospital for four years prior to vaccination will be used for comparison.
SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Allergy & Infectious Diseases $57,258

2.0928,
PSYCHOSOCIAL AND BIOCHEMICAL RISKS FOR MONONUCLEOSIS
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Psychosocial factors in the development of clinical illness have been extensively documented. It is probable that at least one mode of action of these factors is through modifying host-resistance as an outcome of central nervous system physiology, including hypothalamic neuroendocrine pathways. Since the disposition and metabolism of hypothalamic monoamines, especially dopamine, is reported to be intimately related to several hypothalamic releasing hormones, blood platelet monoamine oxidase (MAO) activity, as a genetically stable marker, is postulated to be a simple screening procedure for hypothalamic dopaminergic physiology. Perhaps psychosocial factors and platelet MAO activity can be ultimately synthesized in a multivariate equation, predicting risk for clinical symptoms of infectious mononucleosis (IM). Such risk for physical illness, when considering preliminary platelet MAO data alone, appears to be antithetically related to risk for certain psychiatric illnesses.
Following two successive years of preliminary, prospective studies of IM in college age students, a fully-prospective epidemiologic design has now been generated to include a variety of psychosocial instruments in addition to prospective evaluations of platelet MAO activity. Preliminary evidence to date identifies clinical IM as dependent upon brain and behavior. The existence of a fluorescent method for Epstein-Barr virus (EBV) antibody screening, utilized prospectively, is the principal serological basis upon which clinical IM and inapparent EBV infections are discriminated. Through such means of prospective discrimination, the psychosocial and biochemical risk factors are evaluated and synthesized within the broad interactive fields of modern medicine and psychiatry.
BIBLIOGRAPHIC REFERENCES: Shaskan, E. G., Peszke, M. A., and Niederman, J. C. Studies of Platelet Monoamine Oxidase Activity in Epstein-Barr and Dengue Virus Infections: Possible Applications to Research in Schizophrenia. Schizophrenia Bulletin, in press, 1980.
SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Allergy & Infectious Diseases $62,373

2.0929,
ENVIRONMENTAL-OCCUPATION HYPERSENSITIVITY CHEST DISEASE
J.E. Salvaggio, Tulane University of Louisiana, School of Medicine, Dept. of Medicine, *1430 Tulane Ave., New Orleans, Louisiana* 70112 (P50 AI 13401-05)
During the coming year we proposed to continue investigative pursuits in three areas. (1) Characterization of antigens and detection of specific antibody in coffee worker's asthma. (2) Induction of autoantibodies and the role of autoallergic factors in selected forms of occupational interstitial fibrosis (silicosis and asbestosis). (3) Preparation and characterization of antigens from different species of fungi which are abundant in the New Orleans environment and may be responsible for epidemics of asthma in this area of the country.
In our studies of coffee worker's asthma, we have begun to isolate and analyze allergens in green coffee and castor beans during the 01 year. Investigative studies of the biochemical and biological properties of these allergens will be pursued during the 02 years. With regard to our studies on autoantibodies in diffuse interstitial fibrosis we have spent the first year identifying populations and collecting sera from patients with silicosis and asbestosis plus appropriate controls. Early data are also available on the incidence of antinuclear antibody in these patients. During the 02 year, these findings will be extended to assaying sera for antibody to specific nucleic acids and other nuclear antigens, in an attempt to identify antigens which might act as diagnostic markers for patients with silicosis and asbestosis who develop associated connective tissue diseases. Concerning the project on mold sensitive environmental asthma, we have, during the 01 year, analyzed antigenic relationships among species of various aspergilli by RAST inhibition. During the second year, we shall attempt similar studies searching for shared antigens among various basidiomycete cultures and preparing basidiomycete antigens of cytoplasmic and metabolic origin.
BIBLIOGRAPHIC REFERENCES: Salvaggio, J.E. and R.M. Karr. Hypersensitivity Pneumonitis: State of the Art. Chest, 75 (Suppl.):270S-274S, 1979. Karr, R.M., S.B. Lehrer, B.T. Butcher, M.R. Wilson, V. Anicetti and J.E. Salvaggio. Analysis of antigenic relationship among species of Aspergillus. J. Allergy Clin. Immunol., 63:213, 1979.
SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Allergy & Infectious Diseases $130,632

2.0930,
SPOTTED FEVER IN TICKS, DOGS AND MAN ON CAPE COD
J.L. Waner, Harvard University, Boston Campus, School of Public Health, Dept. of Microbiology, *55 Shattuck St., Boston, Massachusetts* 02115 (R01 AI 13552-03S1)
Seven dogs from Cape Cod and 8 dogs from Martha's Vineyard were diagnosed clinically and serologically as having Rocky Mountain spotted fever; R. rickettsii was isolated from 3 of the dogs. R. montana, however, has been isolated from approximately 1% of the ticks examined. R. montana appears to have antigens in common with R. rickettsii as evidenced by antibody determinations made from the sera of sick and asymptomatic but sera-positive dogs. Sera from asymptomatic dogs previously shown to be reactive with R. rickettsii were reactive to the same or to a higher degree with R. montana.
SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Allergy & Infectious Diseases $2,484

2.0931,
FACTORS AFFECTING PREVALENCE OF HERPESVIRUS TYPE II
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The purpose of this study is to determine the relationship between specific patterns of sexual behavior and the prevalence of antibodies to herpesvirus type II, and to determine whether these patterns vary by social class. The study will be useful in determining the sexual and socioeconomic risk factors for herpesvirus type II infection; this information will in turn assist in directing preventive measures to the highest risk groups. Prevention of infection is worthwhile because there is evidence that herpesvirus type II not only causes a number of usually minor ilinesses, particularly genital herpes, but also produces congenital malformations and neonatal disease in the offspring of infected women, and because this virus may be etiologically related to cervical cancer.
The study design is a cross-sectional survey of a sample of English-speaking men and women between the ages of 35 and 50, residing in Metropolitan Toronto. Information on specific sexual behavior, use of contraceptives and demographic attributes will be ascertained by interview and blood samples will be drawn for radio-immunoassay determination of antibodies to herpesvirus type II. A feasibility study of Toronto has demonstrated that a high proportion (90%) of eligible subjects respond favorably to the questionnaire and cooperate with a blood sample.
SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Allergy & Infectious Diseases $52,516

2.0932,
NEONATAL CHLAMYDIA INFECTION - INCIDENCE AND TREATMENT
E.R. Alexander, University of Washington, School of Public Health & Community Medicine, Dept. of Epidemiology, *4000 15th Ave. N.E., Seattle, Washington* 98105 (R01 AI 16110-01)
Chlamydia trachomotis, an intracellular parasite, is the etiologic agent of trachoma, non-gonococcal urethritis and inclusion conjunctivits. It can also infect the cervix of women and during pregnancy, the organism may be acquired by the infant during passage through the birth canal at delivery. The infant may subsequently develop inclusion conjunctivitis or pneumonia. We intend to investigate in this proposal, the risks and consequences of perinatal chlamydial infection and to explore various means of intervention and treatment.
These objectives will be accomplished by means of prospective incidence studies, prophylaxis and treatment trials: 1) We shall study the efficacy of prenatal treatment of pregnant women with chlamydial infection, with erythromycin on the eradication of the infection and the prevention of subsequent chlamydial infection in the infant. 2) Evaluate erythromycin ointment as an alternative neonatal ocular prophylaxis for the prevention of neonatal chlamydial infection. 3) Evaluate oral erythromycin versus topical sulfonamide for the treatment of neonatal chlamydial conjunctivitis. 4) Determine the incidence of pneumonia due to C trachomatis in infants under one year of age and evaluate the comparative efficacy of treatment with oral erythromycin or ampicillin. 5) Determine if C. trachomatis plays a role in middle ear disease in children, and finally 6) Investigate the prevalence of chlamydial infection in the families of infected infants.
SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Allergy & Infectious Diseases $148,790

2.0933,
PHYSIOLOGY AND METABOLISM OF LEGIONELLA PNEUMOPHILA
R.D. Miller, University of Louisville, School of Medicine, Dept. of Microbiology & Immunology, *101 W. Chestnut, Louisville, Kentucky* 40202 (R01 AI 16121-01A1)
Legionella pneumophila is the etiologic agent for a recently recognized and described form of acute pneumonia. Since its isolation less than three years ago, this bacterium has been the subject of extensive research in many areas of investigation. Only recently, however, has information begun to emerge which hints at the natural habitat of this bacterium,

how it is transmitted to humans, and how it is able to cause disease. An association with the water in air-conditioning systems, and the isolation of the bacterium from nonepidemic environmental water sources has suggested that the bacterium is ubiquitous in nature, but these studies did not define the physical and nutritional parameters of the habitat. This proposal is designed to provide a better understanding of the overall metabolic capabilities of this organism, and to determine the conditions (nutritional, physical, etc.) under which this bacterium is able to survive and/or grow in the environment. Using a chemically defined medium, we will investigate the specific nutrient requirements for growth. Corroborative data will be obtained by analyzing the incorporation of radiolabeled compounds into cellular components, oxidation of compounds as energy sources, and measurement of enzyme activities associated with these processes. We will also study various parameters of the survival of starvation in water or other aqueous environments. Variables to be studied include the influence of cell density and cellular morphology,presence of certain inorganic compounds, and the role of the storage polymer poly-Beta-hydroxybutyrate.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Allergy & Infectious Diseases $37,575

2.0934,

EPIDEMIOLOGY OF CHLAMYDIA TRACHOMATIS INFECTIONS

J.T. Grayston, University of Washington, School of Public Health & Community Medicine, Dept. of Epidemiology, *4000 15th Ave. N.E., Seattle, Washington* 98105 (R01 AI 16222-01)

This project is designed to increase knowledge of the epidemiology of human Chlamydia trachomatis infections. The etiological role of these organisms in trachoma, non gonorrheal urethritis (of the male), inclusion conjunctivitis of the newborn, and pneumonitis of infancy has been established and much has been learned about the epidemiology of C. trachomatis infections of the eye, the genital tract, and newborns in both trachoma endemic and nonendemic areas of the world. Evidence regarding the disease significance of C. trachomatis infections of the female genital tract (cervicitis, salpingitis, peritonitis and perihepatitis) has been accumulating and studies of these infections are proposed. Although no etiological significance has yet been demonstrated, the organisms have been isolated from the middle ear, pharynx and the rectum. We have serologic epidemiological data from U.S. population groups strongly suggesting that these organisms cause more frequent infection than can be accounted for by known eye and genital tract disease. Our serological data suggests that C. trachomatis is etiologically associated with pneumonia of children after infancy and in adults. A series of studies of the role of C. trachomatis in pneumonia and acute lower respiratory disease are proposed. In addition we plan to utilize our unique specific serological test (micro immunofluorescence) for both serum and local secretions in preliminary studies of various disease syndromes potentially associated with C. trachomatis (acute respiratory disease, chronic obstructive pulmonary diseases, sinusitis, otitis, ideopathic inflammation of the bowel) to identify targets for some specific etiological and epidemiological studies. Patients with compromised pulmonary (e.g. cystic fibrosis) or immunological systems will be studied to determine the potential role of C. trachomatis in their disease process. Also, couples with infertility problems will be similarly investigated.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Allergy & Infectious Diseases $116,298

2.0935,

BASIC AND APPLIED RESEARCH IN PROTOZOAN DISEASES

T.C. Jones, Cornell University, Medical Center, Cornell Medical College, Dept. of Medicine, *1300 York Ave., New York, New York* 10021 (P01 AI 16282-01)

Diseases caused by the Leishmania-Trypanosoma complex are of major importance in the Wester Hemisphere. The diseases exhibit marked variation in clinical manifestations yet, taxonomically, biochemically and immunologically, they maintain many similarities which may provide clues to pathogenesis. Control of these diseases will result from careful evaluation of pathogenic mechanisms, antimicrobial therapy, disease patterns, and methods of accurate diagnosis. This program project brings together basic science and clinical investigators from Cornell University Medical College and The Rockefeller University and respected Brazilian investigators from the University of Bahia and the University of Brasilia. The central focus of this collaborative effort is the integration of basic and applied clinical research. The major research areas include: 1) basic parasitology, immunobiology and pharmacology of Chagas' disease and leishmaniasis; 2) clinical disease patterns, epidemiology and genetics these disease; and 3) application of immunologic techniques for understanding pathogenesis and for reliable diagnosis. Central to this grant is the attempt to coordinate the activities of investigators from different disciplines to allow exchange of limited resources, to bring these investigators in contact with young researchers abroad, and to advance our understanding of important human diseases.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Allergy & Infectious Diseases $606,329

2.0936,

SERODIAGNOSIS OF SUBCLINICAL LEPROSY (PROPOSAL I)

T.M. Buchanan, University of Washington, School of Medicine, Dept. of Medicine, *A-300 Health Sciences Ctr., SC-64, Seattle, Washington* 98195 (R21 AI 16290-01)

We propose to develop an enzyme-linked immunoassay (ELISA) and a radioimmunoassay (RIA) capable of detecting antibodies to M. leprae specific protein antigen(s) to be used in an immuno-epidemiological study of leprosy in the countries of Sri Lanka (Proposal II) and Mexico (Proposal I). Antibody levels and skin test results will be obtained from untreated contacts of leprosy patients. This information will be correlated with subsequent development of tuberculoid leprosy (T) or lepromatous leprosy (L) in contacts with frequent or less frequent exposure to leprosy patients.

Experiments will be performed to learn more about purification of leprosy bacilli from host tissues without the use of proteolytic enzymes. We will concentrate on protein antigens on the surface of M. leprae since we have obtained evidence outlined below that an antigen(s) exists that is relatively specific for M. leprae and that it is a protein located on the surface of M. leprae. This protein will be purified to a single component as evaluated by SDS polyacrylamide gel electrophoresis and its molecular weight and isoelectric point will be determined. It will then be used in a quantitative immunoassay to detect specific antibodies to this protein in sera from leprosy patients or contacts with leprosy patients. Antigen fractionation and purification will be performed both in Mexico and Seattle, and use of the purified M. leprae specific protein in a quantitative Enzyme Linked Immuno Sorbant Assay (ELISA) will be performed in all three countries. Personnel from the University of Washington will spend 5-6 months per year in each country to assist the development of the ELISA method and its application for testing sera contacts of leprosy patients. Separate funding will be sought to allow 2-6 month training periods for one collaborator each year either from Mexico or Sri Lanka to learn new immunochemical techniques in the Seattle laboratory.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Allergy & Infectious Diseases $43,091

2.0937,

GENETICS OF IMMUNE RESPONSE IN MAN

D.G. Marsh, Johns Hopkins University, School of Medicine, Dept. of Medicine, *725 N. Wolfe St., Baltimore, Maryland* 21205 (P01 AI 13370-03S1)

Human immune response phenotypes, including specific IgE and IgG antibody and lymphocyte responses to ultrapure pollen allergens, and total basal serum IgE level, are of uncertain genetic determination. These phenotypes will be explored for consistency, familial aggregation and genetic determination in people selected for allergy and their families. If these traits are indeed found to be Mendelian, then linkage analysis and genetic mapping, including possible mapping of Ir loci in the major histocompatibility complex, will be done.

Populations to be studied include a series of allergic volunteers; a set of family-based Amish rural dwellers; and a new group of allergic persons identified from an occupational survey (with suitable comparison groups).

Particular features of this project will be: (1) the use of ultrapure allergens for all immunologic analysis; (2) serological typing of non-HL-A antigens expressed on lymphocytes; (3) careful study and characterization of the mixed lymphocyte response; (4) use of Galtonian as well as Mendelian genetic models in statistical analysis; (5) development of new techniques for linkage analysis of closely-linked loci in human populations.

We anticipate that many new findings concerning the genetics of allergy and immune response in man will emerge from this project which will be of direct relevance in our understanding of human disease.

BIBLIOGRAPHIC REFERENCES: Santilli, J., Jr., Potsus, R.L., Bias, W.B., Schacter, B. and Marsh, D.G.: Relationship of histocompatibility antigens with atipic disease states and mold sensitivity. J. Allergy Clin. Immunol 61:166, 1978, (Abstract). Lowenstein, H. and Marsh, D.G.: Crossed Immuneofectrophoretic analysis of ragweed pollen allergens. J. Allergy Clin. Immunol. 61: 180, 1978, (Abstract).

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Allergy & Infectious Diseases $122,983

2.0938,

SEXUAL DYSFUNCTION IN END-STAGE RENAL DISEASE

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An evaluation of the incidence of sexual dysfunction in male patients with advanced renal failure. An examination of the effect of chronic dialysis on sexual disturbances. An assessment of whether sexual dysfunction in these patients is related to the presence of depression. An evaluation of the autonomic nervous system in male uremic patients with sexual dysfunction. An investigation of the blood levels of sex hormones in these patients and a correlation of these levels with sexual function. An investigation of sexual disturbances in control age-matched males with various other chronic illnesses, but without significant impairment in renal function. A study of the relationship between secondary hyperparathyroidism and both sexual dysfunction and abnormalities in sex hormones with an examination of the effect of suppression of parathyroid gland activity on these disturbances.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Arthritis Metabolism & Digestive Diseases $80,407

2.0939,

DIABETES IN THE PACIFIC - GENETIC-ENVIRONMENT INTERACTIONS

P.Z. Zimmet, Royal Southern Memorial Hospital, Dept. of Metabolic Medicine & Epidemiology, *260 Kooyong Rd., Box 185 Caulfield S., Melbourne, Victoria, Australia* (R01 AM 25446-01)

The major objectives of the proposed research are to determine: a. whether specific genetic markers exist in the maturity-onset diabetic or in individuals who have predisposing genes for diabetes. b. whether the differing susceptibility of various ethnic groups to maturity-onset diabetes is related to the pesence or absence of these genetic markers. c. to establish the relative role of other factors such as age, nutrient intake, physical activity, obesity, stress, etc. in the causation of diabetes in genetically susceptible individuals. d. the definition of possible preventative factors relating to diabetes in high prevalence populations. On the basis of these findings it is hoped that intervention programmes might be undertaken.

It is hoped to achieve these objectives by measurement of genetic markers (e.g., tissue typing, red blood cell enzymes and serum proteins with known gene loci). The studies will be carrid out on Caucasian, Melanesian, Polynesian, Micronesian, and American Indian populations.

Such a study provides a broad spectrum of ethnic groups with varying susceptibility to diabetes. It will allow the comparison of genetic and various environmental factors which may influence the development of diabetes in these populations.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Arthritis Metabolism & Digestive Diseases $149,247

2.0940,

SEXUAL DISORDERS RESULTING FROM DIABETES

G.G. Abel, Columbia University, College of Physicians & Surgeons, Dept. of Psychiatry, *630 W. 168th St., New York, New York* 10032 (R01 AM 25630-02)

An estimated 30 to 50% of female and male diabetics develop significant sexual disorders as a result of their diabetes and yet little is known about the extent of the emotional consequences of these dysfunctions, how to separate dysfunctions resulting from organic versus psychogenic causes, how effective current sexual re-education programs are at reversing the emotional consequences of the organic dysfunctions. Furthermore, few members of the diabetic team understand how to recognize these sexual disorders or how to treat them. The research team is employing controlled group studies and the clinical interview, attitudinal measures and physiological sleep recordings of genital arousal, to (1) objectively assess the prevalence of sexual disorders and their emotional consequences in male and female diabetics, (2) validate physiologic methods to separate common organic disorders from psychogenic disorders, (3) objectively measure the prevalence of organic sexual disorders in diabetics reporting impotence or nonorgasmia and (4) evaluate the effectiveness of sexual counseling at teaching alternative sexual styles to the organically dysfunctional. Finally, (5) teaching materials will be developed and demonstrated to teach the diabetic team accurate diagnosis and treatment of these sexual disorders.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Arthritis Metabolism & Digestive Diseases $156,844

2.0941,

GENETIC EPIDEMIOLOGY OF DIABETES IN RUBELLA DEAFNESS

W.E. Nance, Virginia Commonwealth University, School of Basic Sciences & Graduate Studies, Dept. of Human Genetics, *901 W. Franklin St., Richmond, Virginia* 23284 (R01 AM 25786-01)

A five-year prospective study will be conducted to determine the prevalence and incidence of metabolic and immunologic indices of islet cell damage and/or glucose intolerance in a cohort of 100 adolescent children with rubella embryopathy at the Maryland School for the Deaf in relation to the maternal and offspring HLA phenotypes. The study will thus exploit the naturally occurring paradigm of isletopathy in children with congenital rubella who were born during the 1964-65 pandemic to test the general hypothesis that diabetes can arise from a genetically determined adverse host response to viral infection either in the affected individual or in the mother during pregnancy. The study will further define the rubella syndrome and could lead to the identification of specific maternal factors that are of importance in the etiology of diabetes and birth defects. Longitudinal observations of blood glucose and insulin response to a standard oral glucose challenge will be obtained along with C-peptide assays, insulin antibody determinations, Hb Alc measurements and screening for auto-antibodies to islet cells and other tissues. These studies, along with HLA typing, will permit an accurate characterization of the type of juvenile diabetes that occurs in the rubella syndrome as well as providing evidence as to whether immunoglogic abnormalities can precede or only follow the onset of glucose intolerance in this high-risk population.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Arthritis Metabolism & Digestive Diseases $121,047

2.0942,

AROMATIC AMINES AND LUPUS ERYTHEMATOSUS

M.M. Reidenberg, Cornell University, Medical Center, Cornell Medical College, Dept. of Pharmacology, *1300 York Ave., New York, New York* 10021 (R01 AM 25963-01)

Observations that implicate aromatic amines and not their acetylated metabolites as a cause of systemic lupus erythematosus (SLE) have been made. We plan to definitively evaluate this in man by comparing the rate of development of ANA in patients receiving procainamide with that in patients receiving N-acetylprocainamide. We also plan to study the rate of ANA development in mice fed procainamide, acetylprocainamide, aromatic amines from food dyes including FD and C Red number 2 and its reduction product, naphthionic acid, and N-acetylated naphthionic acid, and hair dye constituents including diaminoanisole and its N-acetylated product to learn if environmental aromatic amines can incite ANA production and learn the structure-activity relationship for this effect. We plan to study both transglutaminase activity in plasma and whole body N-oxidizing activity of patients with idiopathic SLE and compare them to appropriately selected controls to learn if patients with SLE have high activity of these two pathways by which an aromatic amine might be convalently bound to a nuclear macromole making it foreign and antigenic. If either of these pathways are active in SLE, family studies of the patients will be done to evaluate the role of inheritance in the activity of the pathway.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Arthritis Metabolism & Digestive Diseases $83,115

2.0943,

COMPARISON OF OVERWEIGHT AND OBESITY AS RISK FACTORS

J. Habicht, Cornell University, Ithaca Campus, New York State College of Human Ecology, Division of Nutritional Sciences, *Ithaca, New York* 14850 (R01 AM 26236-01)

We propose to do an epidemiological analysis of existing data derived from the Health Examination Survey on the adult populaton of the U.S. as the basis for an analysis of the relationships between obesity and overweight, with carbohydrate tolerance and blood pressure. We will use anthropometric measurements to characterize different physiologically meaningful variables, such as obesity, which are related to overweight. We will then ascertain which of these variables are most closely associated to blood pressure and glucose tolerance, and hypertension and diabetes, in the sense of pathologically elevated blood pressure and impaired glucose tolerance, according to accepted criteria. Our purpose is to identify risk indicators for diabetes and hypertension and to clarify the biological basis for the association of diabetes and hypertension with overweight. In addition, we wish to evaluate the relative utility of different indicators of weight and fatness in epidemiological studies.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Arthritis Metabolism & Digestive Diseases $15,032

2.0944,

EPIDEMIOLOGY OF DIABETES IN TECUMSEH

L.D. Ostrander, University of Michigan, Ann Arbor Campus, School of Public Health, Dept. of Internal Medicine, *Ann Arbor, Michigan* 48104 (R01 AM 26331-01)

A great deal of information has been collected from 1959 through 1979 about the physical, physiological, social, economic and familial characteristics of residents of Tecumseh, Michigan. Multiple variables from these data will be related to prevalence and incidence of diabetes and its complications. Alterable environmental, physical and physiological factors which contribute to risk of diabetes and its pathological manifestations will be identified.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Arthritis Metabolism & Digestive Diseases $84,712

2.0945,

WORKSHOP - GENETICS AND HETEROGENEITY OF GI DISEASES

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The methods of genetics are powerful tools for increasing our understanding of the etiology and pathogenesis of disease. This is especially so when such studies utilize all the physiologic and biochemical tools available to delineate the heterogeneity of what may first appear to be one disorder.

The purpose of this workshop is to bring together an interdisciplinary group of investigators - gastroenterologists, geneticists, epidemiologists, physiologists - to 1) discuss the current state of knowledge of the genetics and heterogeneities of common gastrointestinal disorders, 2) to delineate what areas would benefit from application of currently existing technology and methodologies, and 3) to foster interdisciplinary approaches and collaborative efforts in future studies. The ultimate goal of this workshop is to stimulate research into the genetics of the gastrointestinal disorders, thereby increasing our knowledge of the etiology, pathogenesis, and natural history of this group of disorders.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Arthritis Metabolism & Digestive Diseases $29,800

2.0946,

EPIDEMIOLOGY OF CANINE AND HUMAN SYSTEMIC LUPUS ERYTHEMATOSUS (SLE)

J.H. Klippel, U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Arthritis Metabolism & Digestive Diseases, Connective Tissue Disease Section, *9000 Rockville Pike, Bethesda, Maryland* 20205 (Z01 AM 41036-02 ARB)

This project will compare the incidence of clinical and serologic autoimmune abnormalities in members of households exposed to known cases of canine SLE or appropriately matched control dogs.

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2.0947,

HEMOGLOBIN A, LEVELS IN DIABETES

P.H. Bennett, U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Arthritis Metabolism & Digestive Diseases, Southwestern Field Studies Section, *Phoenix, Arizona* 85016 (Z01 AM 54021-01 DD)

Glycosylated hemoglobin concentrations were measured in 400 Pima Indians, aged 15 to 91 years, who were participating in the epidemiological studies of diabetes in the Gila River Indian Reservation in Arizona. At the same time plasma glucose levels, fasting and two-hours post-glucose load (75g), were determined and compared with the hemoglobin to see which test might be the best indicator of the presence of diabetes. Previously the glucose levels, have been described by a model of two overlapping Gaussian distributions. Attempts were made to fit the same model to the glycosylated hemogiobin concentrations. Only a single distribution was observed in the young males (15 to 24 years). In the young females a single model was seen corresponding to the normal population with a few outlying values indicating the presence of a small number of diabetics in this age group. In those aged 25 years and over, the glycosylated hemoglobins were bimodally distributed and like the glucose levels were a satisfactory fit to the overlapping Gaussian distribution model. These observations indicate the presence of two subpopulations in the Pima Indians, one normal and one diabetic.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Arthritis Metabolism & Digestive Diseases funds n.a.

2.0948,

DESCRIPTIVE EPIDEMIOLOGY OF GLOMERULONEPHRITIS AND OTHER URINARY DISORDERS

J.A. Cutler, U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Arthritis Metabolism & Digestive Diseases, Epidemiology & Field Studies Branch, *9000 Rockville Pike, Bethesda, Maryland* 20205 (Z01 AM 69012-01 EFS)

This project applies an orientation to specific renal and urinary diseases to analysis of previously collected data from death certification and health surveys. Distribution of morbidity and mortality by secular time, geography, and personal characteristics in the U.S. population is being compared to previous studies in selected groups. The main purposes of this work are (1) to examine the plausibiliy of various etiologic hypotheses, especially for glomerulonephritis, and (2) as an aid to planning epidemiologic studies, including future versions of NCHS health surveys and specific analytic studies.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Arthritis Metabolism & Digestive Diseases funds n.a.

2.0949,

STUDY OF HYPERPARATHYROIDISM - ETIOLOGY, DIAGNOSIS AND TREATMENT

G.D. Aurbach, U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Arthritis Metabolism & Digestive Diseases, Metabolic Diseases Branch, *9000 Rockville Pike, Bethesda, Maryland* 20205 (R01 AM 43006-04 MD)

The project goal is the evaluation and treatment of hyperparathyroidism. Patients with persistent postoperative hyperparathyroidism are referred for evaluation and treatment. Hereditary hyperparathyroidism in particular is under investigation in the hopes of delineating hereditary molecular abnormalities in glandular regulation, as exemplified in the multiple endocrine neoplasia syndromes. Evaluation ranges from epidemiologic studies of families to in-house studies of patients and to in vitro analyses of excised tissue. Techniques currently being employed and improved include radioimmunoassay of parathyroid hormone, selective arteriography and selective venous sampling for parathyroid hormone, parathyroid gland cryopreservation and autotransplantation, and transcatheter parathyroid gland infaraction.

BIBLIOGRAPHIC REFERENCES: Brown, E.M., Brennan, M.F., Broadus, A.E., Marx, S.J., Gardner, D.G., Spiegel, A.M., Downs, R.W., Jr., Attie, M.F., and Aurbach, G.D.: Human parathyroid autografts: Comparison of function in vivo and in vitro. J. Clin. Endocrinol. 48: 648-654, 1979. Doppman, J.L., Brown, E.M., Brennan, M.F., Spiegel, A.M., Marx, S.J., and Aurbach, G.D.: Angiographic ablation of parathyroid adenomas. Radiology 130: 577-582, 1979.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Arthritis Metabolism & Digestive Diseases funds n.a.

2.0950,

COMPLICATIONS AND OUTCOME OF DIABETIC AND PREDIABETIC PREGNANCIES

P.H. Bennett, U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Arthritis Metabolism & Digestive Diseases, Southwestern Field Studies Section, *Phoenix, Arizona* 85016 (Z01 AM 69001-10 EFS)

To determine the effects of diabetes mellitus and prediabetes on the complications and outcome of pregnancy in women in the Gila River Indian Community.

The characteristics of all pregnancies among residents of the Gila River Indian Community will be determined. Each pregnant woman will have a modified glucose tolerance test during the third trimester and following delivery and will be retested at approximately two yearly intervals in conjunction with the prospective study of diabetes mellitus in the same community. The characteristics of the pregnancies in women who subsequently become diabetic will be compared to those among women who were diabetic at the time of pregnancy and those who remain nondiabetic.

BIBLIOGRAPHIC REFERENCES: Bennett, P. H., Webner, C., and Miller, M.: Congenital Anomalies and Diabetic and Prediabetic Pregnancy, Elliott, Katherine, and O'Connor, Maeve (Eds): Proceedings of the Ciba Foundation Symposium 63 (new series). In Pregnancy Metabolism, Diabetes and the Fetus, London, 1979, pp. 207-225.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Arthritis Metabolism & Digestive Diseases funds n.a.

2.0951,

GILA RIVER INDIAN COMMUNITY AUTOPSY STUDY

P.H. Bennett, U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Arthritis Metabolism & Digestive Diseases, Southwestern Field Studies Section, *Phoenix, Arizona* 85016 (Z01 AM 69006-08 EFS)

The postmortem characteristics of Pima Indians of the Gila River Indian Community will be investigated so that findings in subjects with and without diabetes mellitus can be correlated with studies in living subjects.

Postmortem examinations will be performed on members of the Gila River Indian Community whenever possible, regardless of whether the subjects have prior evidence of diabetes. Tissues will be examined by light and electron miscoscopy and the histology related to the clinical findings in the same subjects. Trace metal contents of tissues will be measured to determine relationships of trace metals to diabetes. The data collection will be continued for several years with periodic analyses of the data.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Arthritis Metabolism & Digestive Diseases funds n.a.

2.0952,

DIABETES MELLITUS IN THE GILA RIVER INDIAN COMMUNITY

P.H. Bennett, U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Arthritis Metabolism & Digestive Diseases, Southwestern Field Studies Section, *Phoenix, Arizona* 85016 (Z01 AM 69000-14 EFS)

The natural history of the various manifestations and vascular complications of diabetes mellitus are being studied and evaluated in an Amerindian community. Various associated conditions and factors, including heredity, body weight, and blood pressure, that may have a bearing on the frequency and severity of diabetes and/or its complications are under investigation.

BIBLIOGRAPHIC REFERENCES: Bennett, P. H.: Recommendations on the Standardization of Methods and Reporting of Tests for Diabetes and its Microvascular Complications in Epidemiologic Studies. Diabetes Care 2: 98-104, 1979. Kawate, R., Yamakido, M., Nishimoto, Y., Bennett, P. H., Hamman, R. F., and Knowler, W. C.: Diabetes Mellitus and Its Vascular Complications in Japanese Migrants on the Island of Hawaii. Diabetes Care 2: 161-170, 1979.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Arthritis Metabolism & Digestive Diseases funds n.a.

2.0953,

NATURAL HISTORY OF ARTHRITIS AND RHEUMATISM ON THE GILA RIVER INDIAN COMMUNITY

P.H. Bennett, U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Arthritis Metabolism & Digestive Diseases, Southwestern Field Studies Branch, *Phoenix, Arizona* 85016 (Z01 AM 69009-14 EFS)

The development and progression of various forms of arthritis is being investigated in an American Indian population. The patterns of joint disease will be examined to determine if distinctive patterns of degenerative joint disease can be recognized, and if so, their evolution and outcome will be followed. In addition, the prognostic significance of various factors related to rheumatoid arthritis and ankylosing spondylitis will be examined.

The study which includes clinical, radiographic and serologic studies of joint disease is part of a prospective study of the Gila River Indian Community, in which studies of diabetes mellitus and related diseases are being undertaken.

BIBLIOGRAPHIC REFERENCES: Spagnola, A.M., Bennett, P.H., and Terasaki, P.I.: Vertebral Ankylosing Hyperostosis (Forestier's Disease) and HLA Antigens in Pima Indians. Arthritis and Rheum. 21: 467-472, 1978.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Arthritis Metabolism & Digestive Diseases funds n.a.

2.0954,

DIABETES AND ARTHRITIS IN PIMA-MARICOPA INDIAN TRIBES

H.O. Hedrick, Gila River Indian Community Council, *Box 97, Sacaton, Arizona* 85247

No summary has been provided to the Smithsonian Science Information Exchange.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Arthritis Metabolism & Digestive Diseases $72,330

2.0955,

LYME ARTHRITIS - A NEW EPIDEMIC DISEASE

A.C. Steere, Yale University, School of Medicine, Dept. of Medicine/Epidemiology & Public Health, *333 Cedar St., New Haven, Connecticut* 06510 (R01 AM 20358-03)

We have recently uncovered a new, epidemic disease, Lyme disease, probably caused by an infectious agent transmitted by Ixodes dammini ticks. In Lyme disease, immune complex formation is associated with lesions in the skin, joints, heart, or nervous system. We plan to define the natural history of this illness, its course and prognosis, etiology, vector, and pathogenesis. To accomplish these objectives, a surveillance network of primary physicians has been established to refer patients with Lyme disease; the natural history of the illness will be described from the serial examination of these patients. All patients will be contacted at least yearly to gain information about recurrent symptoms. All cases reported to us from physicians outside Connecticut will be computed to determine the geographic distribution of the disease in the United States. Immune complexes and cryoprecipitates will be sought for in the sera of each patient at each visit, and characterized. In collaboration with Dr. Robert Winchester at Rockefeller University, complete immunogenetic profiles will be done on selected patients and their families. The natural cycle and preferred hosts of Ixodes dammini will be studied in the field. Ixodes dammini collected in the field will be pooled and extracts inoculated into tissue cultures, mice, and monkeys. Tissue culture cells and skin biopsy specimens will be examined by indirect immunofluorescence. Immune complexes will be fractionated and an attempt made to identify putative antigens. If a serologic test can be developed for Lyme disease, positive diagnosis will be possible in all affected patients, and studies will be conducted to determine attack rates within sample human and animal populations. The results would provide the basis for decisions about control measures.

BIBLIOGRAPHIC REFERENCES: Hardin, J.A., Walker, L.C., Steere, A.C., Trumble, T.C., Tung, K.S.K., Williams, R.C., Jr, Ruddy, S., and Malawista, S.E.: Circulating immune complexes in Lyme arthritis. Detection by the 125I-Clq binding, Clq solid phase, and Raji cell assays. J Clin Invest 63:468-477, 1979. Reik L., Steere A.C., Bartenhagen, N.H., Shope, R.E., and Malawista, S.E.: Neurologic abnormalities of Lyme disease. Medicine, July, 1979, in press.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Arthritis Metabolism & Digestive Diseases $312,613

2.0956,

FAMILIAL AGGREGATION OF INFLAMMATORY BOWEL DISEASE

A.M. Lilienfeld, Johns Hopkins University, School of Hygiene & Public Health, Dept. of Epidemiology, *615 N. Wolfe St., Baltimore, Maryland* 21205 (R01 AM 20467-02)

This study is attempting to determine if family members (parents, siblings, offspring, and spouses) of newly hospitalized cases of ulcerative colitis and proctitis, regional enteritis, and Crohn's disease of the colon have greater prevalence of these diseases than family members of controls. Newly hospitalized cases are being ascertained through a case register in Baltimore and from local hospitals. Medical records of cases are being abstracted; and reviewed by a gastroenterologist. Cases and family members will be interviewed regarding previous illnesses; tobacco, alcohol, and dietary habits; and demographic characteristics. Information will be obtained concerning all family members, living and dead.

Hospital controls will be matched by sex, color, and age to each case. Hospital controls and their family members will be interviewed in the same manner as cases, and medical records will be obtained. Neighborhood controls will be matched to cases by sex, color, and age. These controls and their family members will be interviewed in the same manner as cases, and medical records will be obtained. Death certificates will be obtained for all cases and family members who have died.

Serum will be collected from cases, controls, and family members, and will be frozen at -70 degrees centigrade for future studies.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Arthritis Metabolism & Digestive Diseases $325,672

2.0957,

SPECIALIZED CENTER OF RESEARCH IN UROLITHIASIS

L.H. Smith, Mayo Foundation, *200 1st St. S.W., Rochester, Minnesota* 55901 (P50 AM 20605-03)

The central research theme of the Mayo Clinic Specialized Center of Research (SCOR) in Urolithiasis is to examine the factors that promote and prevent crystal growth within the urinary tract in order to

further understand the mechanisms that allow stone formation and to improve treatment to prevent this complication. The specific objectives of the Mayo Clinic SCOR in Urolithiasis are: 1) to examine sites of reabsorption and secretion of the major ion species within the nephron; 2) to better define the relative roles of supersaturation, inhibitor activity, matrix and epitaxy in animal models and patients with calcium urolithiasis; 3) to measure the effect of therapy on the multiple factors involved in crystal growth in the urine of patients actively forming stones in the urinary tract; 4) to identify abnormalities caused by stone producing stresses that result in urolithiasis in some patients as well as prestress abnormalities that may allow the formation of a stone within the urinary tract; and 5) to study in a systematic way the epidemiology and genetics of urolithiasis in a well defined population base.

BIBLIOGRAPHIC REFERENCES: Smith, L. H., Werness, P. G., Bergert, J. H. and Lee, K. E.: Inhibitors of calcium crystal growth in idiopathic calcium urolithiasis. Proceedings of the American Society of Nephrology, pg. 29A, 1978. Werness, P. G. and Smith, L. H.: Calcium oxalate dihydrate seeded crystal growth. Fed. Amer. Soc. Exp. Biol. 1979.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Arthritis Metabolism & Digestive Diseases $234,145

2.0958,

GENETICS OF RHEUMATIC DISEASE IN ISOLATED POPULATIONS

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No summary has been provided to the Smithsonian Science Information Exchange.

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2.0959,

EPIDEMIOLOGY OF DIABETES AMONG NEW IMMIGRANT YEMENITES

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We propose to extend our recent preliminary observations in 'new immigrant Yemenites' who had a low prevalence of diabetes (0.03%) in the years 1958-60 showing that in part of the families diabetes has become highly prevalent (9%) above the age of 30, while in other families no diabetes was detected. In families with diabetes, the diabetics consume significantly more mono and disaccharides than non-affected relatives of the same age and sex. Indicating the necessity for interaction between genetic and dietary factors for diabetes to be manifested, a result similar to our experimental observation where, by genetic selection, two strains of rats were inbred, one which after being fed a high fructose (1), glucose (2) or sucrose (3) diet develops diabetes, having common features with the human disease including vascular complications while the other strain fed the same diet remains normal. 700 more 'new immigrant Yemenites' and 300 non-Yemenites as controls will be re-examined. Diabetes will be detected by an oral glucose tolerance (g.t.) the genetic familial tree and dietary intake - carbohydrate, mono and disaccharides, fat, protein and fiber - of each individual will be studied.

We will also try to identify marker(s) of diabetes in the affected and non-affected families by the following tests: a) early phase of insulin release following i.v. g.t.; b) glucagon response; c) insulin receptors in blood granulocytes; d) blood lipids - beta lipoproteins, cholesterol, triglycerides and LDL; e) HLA antibodies and f) antipancreatic islet cells.

The proposed study in a group with almost no diabetes 20 years ago that has changed to a Western environment and in which there are today families with a high prevalence of diabetes and families without diabetes is a unique group to study the interaction of the genetic factor(s) and the different factors related to the manifestation of diabetes such as sex, obesity, age, physical activity, dietary intake, and the different tests which may be used as indicators for the genetic susceptibility to diabetes.

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2.0960,

SEXUAL DISORDERS RESULTING FROM DIABETES

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An estimated 30 to 50% of female and male diabetics develop significant sexual disorders as a result of their diabetes and yet little is known about the extent of the emotional consequences of these dysfunctions, how to separate dysfunctions resulting from organic versus psychogenic causes, how effective current sexual re-education programs are at reversing the emotional consequences of the organic dysfunctions. Furthermore, few members of the diabetic team understand how to recognize these sexual disorders or how to treat them. We propose using, controlled group studies and the clinical interview, attitudinal measures and physiological sleep recordings of genital arousal, to 1. objectively assess the prevalence of sexual disorders and their emotional consequences in male and female diabetics, 2. validate physiologic methods to separate common organic disorders from psychogenic disorders, 3. objectively measure the prevalence of organic sexual disorders in diabetics reporting impotence of nonorgasmia, and 4. evaluate the effectiveness of sexual counseling at teaching alternative sexual styles to the organically dysfunctional. Finally, 5. teaching materials will be developed and demonstrated to teach the diabetic team accurate diagnosis and treatment of these sexual disorders.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Arthritis Metabolism & Digestive Diseases $12,503

2.0961,

DIABETES MELLITUS AND SEXUAL DYSFUNCTION

R.C. Schiavi, City University of New York, Mount Sinai School of Medicine, School of Medicine, Dept. of Psychiatry, *5th Ave. at E. 100th St., New York, New York* 10029 (R01 AM 20845-03)

Although the association of diabetes and potency disorders is well recognized, there is limited information on the pathophysiology of erectile disorders in the diabetic male and few procedures that may assist in the differential diagnosis between psychogenic and organic importance. There is also an almost total lack of information concerning the influence of diabetes mellitus upon sexual function in the female patient.

The overall objective of this application is to study sexual dysfuntions in diabetic patients. Studies are proposed to gather data on the prevalence and nature of sexual problems in a population of female diabetics. For this purpose, a detailed semi-structured interview, and a self-report scale of sexual function will be completed by a group of female diabetics and a comparison group of non-diabetic patients. The second objective of the proposed research is to evaluate the diagnostic value of assessing nocturnal penile tumescence for the evaluation of potency disorders in diabetic male patients. For this purpose, the nocturnal erection pattern of four groups of subjects are compared: diabetic men from sexual disorders, diabetic men with erectile dysfunctions, psychologically impotent non-diabetic men and normal controls.

BIBLIOGRAPHIC REFERENCES: Schiavi, R.C. Some problems in the differential diagnosis of erectile disorders. Sexuality and Disability 2:66, 1979. Schiavi, R.C. and Hogan, B. Sexual problems in diabetes mellitus. Diabetes Care 2:9, 1979.

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2.0962,

EPIDEMIOLOGICAL STUDY OF ANALGESIC USE AND RENAL DISEASE

T. Murray, University of Pennsylvania, School of Medicine, Dept. of Medicine, *36th & Hamilton Walk, Philadelphia, Pennsylvania* 19174 (R01 AM 20920-02S1)

The purpose of this study is to determine the 'relative risk' of developing end-stage renal disease secondary to chronic interstitial nephritis after the use of various types and total doses of analgesics. The methodology being employed is that of a case control study. The cases are patients with end-stage interstitial nephritis who are on dialysis in the Greater Delaware Valley (South Eastern Pennsylvania and South Western New Jersey). The controls will consist of three groups: 1) patients on dialysis from the same area who have chronic glomerulonephritis, 2) hospital controls; and 3) community controls. Utilizing data obtained from questionnaires and from the abstracting of medical records, it will be possible to characterize a dialysis patient as having chronic interstitial nephritis or chornic glomerulonephritis and to determine if various causes (other than analgesic use) for either were present. In addition, a detailed quantitative estimate of analgesic consumption over the last 20 years will be obtained. Comparison of the analgesic exposure of cases and each of the control groups will permit calculation of a relative risk statement.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Arthritis Metabolism & Digestive Diseases $12,271

2.0963,

LONG-TERM STUDY OF ASYMPTOMATIC AND FUTURE DIABETES

S.S. Fajans, University of Michigan, Ann Arbor Campus, Medical School, Dept. of Internal Medicine, *1335 E. Catherine St., Ann Arbor, Michigan* 48104 (R01 AM 00888-25)

This is a continuing long-term project in which a large number of nondiabetic relatives of diabetic patients, as well as asymptomatic mildly diabetic patients are being studied periodically. We hope to learn more about the natural history of various types of diabetes mellitus from the points of view of: 1) genetics, 2) possible environmental factors, 3) carbohydrates intolerance, 4) insulin secretion, 5) other pancreatic hormone secretion, 6) occurrence of pancreatic islet cell antibodies, 7) HLA antigen types, 8) development of microangiopathy, 9) development of macroangiopathy, 10) development of neuropathy, 11) evaluation of factors which alter the expression of these manifestations.

BIBLIOGRAPHIC REFERENCES: Fajans, S.S. and Floyd, J.C., Jr.: Diabetes Mellitus. In: Contemporary Metabolism: Analytical Reviews of Basic and Clinical Progress, Freinkel, N., ed., Plenum Pub. Corp. New York, Vol. 1 1979, in press.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Arthritis Metabolism & Digestive Diseases $85,264

2.0964,

DIABETES--PATHOGENESIS, DETECTION, AND ORAL AGENTS

J.S. Soeldner, Joslin Diabetes Foundation Inc., Elliott P Joslin Research Laboratory, *170 Pilgrim Rd., Boston, Massachusetts* 02215 (R01 AM 09748-13)

To clarify the genetic components of human diabetes, a prospective study of the offspring of two diabetic parents and the apparently unaffected monozygotic twins with a diabetic twin mate will be continued and extended. Emphasis will be placed upon the determination of histocompatibility antigens and the relationships of these antigens to the presence or absence of overt diabetes and/or carbohydrate intolerance as evaluated by oral glucose tolerance test and other appropriate perturbations. Detailed evaluations of serum insulin, plasma glucagon and serum growth hormone responses will be made and related to histocompatibility antigens. Extensive evaluations of plasma cholesterol, HDL cholesterol and triglycerides will also be determined and related to the metabolic-hormonal aspects.

In all of these prospective studies, glycosylated hemoglobin would be evaluated at least three times per year in all study groups and in appropriate normal controls.

To determine the relationship between the degree of diabetes (from frank overt diabetes to mild chemical diabetes) on capillary morphology, muscle capillary basement membrane thickness will be evaluated by electron microscopy in study subjects.

The mechanism of insulin secretion in these groups (generally characterized by a small but significant defect in insulin release) will be pursued by evaluating insulin secretion following the administration of not only glucose but also various hexoses other than glucose and evaluating the subsequent insulin responses, glucose utilization ad also by gastric inhibitory polypeptide determinations.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Arthritis Metabolism & Digestive Diseases $393,430

2.0965,

HORMONES AFFECTING MINERAL METABOLISM

A.H. Tashjian, Harvard University, Boston Campus, School of Public Health, Dept. of Physiology, *55 Shattuck St., Boston, Massachusetts* 02115 (R01 AM 10206-14)

The broad objectives of this research plan are to investigate three kinds of hormonal or locally produced agents that affect mineral metabolism in bone. Studies will focus on: 1) Calcitonin, 2) nonpeptide factors (especially prostaglandins), and 3) parathyroid hormone. Calcitonin receptors in bone will be characterized, and the control of their modulation and role in 'escape' from the biological actions of the peptide will be studied. Calcitonin biosynthesis in normal and malignant thyroid C-cells and in other tissues will be investigated. Additional studies in human medullary thyroid carcinoma will focus on cellular immune mechanisms, pharmacological control, and epidemiology. New studies on two prostaglandin-producing tumors in animals will serve as models for the hypercalcemias of cancer; these include examination of the mechanisms of action of prostaglandins in bone, the role of local prostaglandin production by bone cells, and the metabolism of prostaglandins by bone. Studies of parathyroid hormone will probe its mechanisms of action on bone cells, including localization and characterization of its receptors, and the role of vitamin D in parathyroid hormone biosynthesis and release. The experiments proposed are designed to investigate several fundamental aspects of hormones affecting mineral metabolism in in vitro and animal models and to relate these findings to clinically important disorders of bone metabolism in man.

BIBLIOGRAPHIC REFERENCES: Wolfe, H.J., Bitman, W.R., Voelkel, E.F., Griffiths, H.J., and Tashjian, A.H., Jr., Systemic effects of the VX2 carcinoma on the osseous skeleton: A quantitative study of trabecular bone. Lab. Invest. 38:208-215, 1978. DeLellis, R.A., May, L., Tashjian, A.H., Jr. and Wolfe, H.J., C-cell granule heterogeneity in man: An ultrastructural immunocytochemical study. Lab. Invest. 38:263-269, 1978.

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2.0966,

THE ROLE OF VIRUSES IN RENAL TRANSPLANT PATIENTS

H.H. Balfour, University of Minnesota, Minneapolis Campus, School of Medicine, Dept. of Laboratory Medicine & Pathology, *1305 Mayo, Minneapolis, Minnesota* 55455 (R01 AM 18883-04)

The majority (70-90%) of renal transplant patients have evidence of viral infection, usually with cytomegalovirus (CMV), during the first months post-transplant. Preliminary, mostly retrospective studies at our institution and elsewhere have indicated an association between viral infections and acute febrile illnesses, transplant rejection and mortality. However, answers are needed to the questions 1) what is the source of the patient's virus? 2) do viruses cause clinically important illness? 3) how do viral infections affect immune function and relate to episodes of transplant rejection? 4) do viruses other than CMV play a significant role? Our objective is to answer these questions by performing an intensive prospective epidemiologic viral study. The source of virus will be sought by culturing donors, donor organs, transplant staff, and blood products which the patients receive. CMV isolates and patient sera will be studied for strain specificity which might indicate whether CMV infections are exogenous or reactivation of latent infection. The relationship of viral shedding with serious clinical illness will be examined by prospective studies of the patients with frequent viral culturing and detailed clinical observations. Nonspecific and specific humoral and cell-mediated tests will be done to examine the relationship of viral infection to immune function, and these studies will be correlated with episodes of rejection. The tests include quantitation of T and B cells, a battery of viral antibody titers with emphasis on herpesviruses, mitogen stimulation using PHA, Con A, and CMV antigen, mixed lymphocyte culture, lymphocyte mediated cytotoxicity toward CMV antigen, and allogeneic induced CMV release from patient lymphocytes. The virologic technics will enable us to study the role of viruses other than CMV. These studies have broad implications for elucidating the etiology and managing episodes of transplant rejection, and for providing appropriate epidemiologic, prophylactic and therapeutic approaches for the prevention or treatment of virus infections in renal transplant patients.

BIBLIOGRAPHIC REFERENCES: Howard, R.J., Balfour, H.H., Jr., Seidel, M.V., Simmons, R.L., and Najarian, J.S.: Effect of murine cytomegalovirus on cell-mediated immunity. Transplant Proc. 9:355-358, 1977. Howard, R.J., Kalis, J.M., Balfour, H.H., Jr., Marker, S.C., Simmons, R.L. and Najarian, J.S.: Viral infections in kidney donors and recipients: A prospective study. Transplant Proc. 9:113-116, 1977.

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2.0967,

JUVENILE DIABETES MELLITUS - EPIDEMIOLOGY & ETIOLOGY

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The incidence of J.O.D. less than 16 years of age will be determined for the first time in a defined community. The incidence will be related to age, sex, race and geographic area of residence. Seasonal and temporal trends will be evaluated. Secondary cases of J.O.D. within families during a 10 year follow up will be identified. The interrelationship of the demographic characteristics with HLA type, immunoglobulin and autoantibodies within and between families will be measured. Genetic analysis will include analysis of both immediate and extended families and will include HLA typing, immunoglobulin and autoantibody studies. The distribution of glucose tolerance within the families in relation to immunology, genetic and epidemiological characteristics will be considered. Viral antibody studies at the time of the initial diagnosis of a case within a family and prior to secondary case will be also be included. These studies should help determine the interrelationship of host and environmental factors in the etiology of J.O.D.

BIBLIOGRAPHIC REFERENCES: Drash Allan L: The Etiology of Diabetes Mellitus. New England Journal of Medicine, 300, 1211-1212, 1979.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Arthritis Metabolism & Digestive Diseases $302,732

2.0968,

DYSPEPSIA, PEPTIC ULCER AND ITS COMPLICATIONS

J.H. Kurata, University of California, Los Angeles Campus, School of Public Health, Dept. of Epidemiology, *405 Hilgard Ave., Los Angeles, California* 90024 (R01 AM 25330-01)

This proposal is divided into three sections, each designed to further elucidate the epidemiology of peptic ulcer disease: Section one - Dyspepsia negative to all tests and duodenal ulcer. Three samples will be drawn from patients from the Wadsworth V.A. clinics: 100 men with duodenal ulcer; 100 men with dyspepsia negative to all tests; and 100 control men without any history of ulcer disease matched to the duodenal ulcer cases on the basis of age and race. Risk profiles, based on medical, psycho-social and biochemical variables, will be developed for each of these groups. The dyspeptics negative to all tests will be compared with the duodenal ulcer cases and the controls to determine if this group, or a subset, can be considered as representing a pre-ulcer population. Section two - Complications of peptic ulcer. One hundred men with a history within the past year of complications of peptic ulcer will be matched by age, race and duration of ulcer symptomatology to male ulcer patients with no history of complications. Risk profiles, similar to those described above, will be developed for each group. Efforts will be made to determine whether such a profile can help identify ulcer patients at high risk for future complications. Section three - Through a subcontract, investigate the interaction of genetic and environmental factors in peptic ulcer. First degree relatives of the subjects in the above sections will be studied in an attempt to evaluate the interaction of specific environmental factors with specific genetic forms of the spectrum of peptic ulcer disease.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Arthritis Metabolism & Digestive Diseases $69,877

2.0969,

LIFE STYLES AND BONE DENSITIES OF THE AGED

R.B. Sandler, University of Pittsburgh, School of Health Related Professions, Division of Interdisciplinary Programs, *4200 5th Ave., Pittsburgh, Pennsylvania* 15260 (R01 AM 21190-02)

Two objectives were targets of the first year of a 2-year project, designed to provide a methodological baseline for a later study on the relationship in postmenopausal women between Life Styles and Bone Densities.

The first objective was to refine the method of bone density measurement with Computerized Axial Tomography (CAT) by: (1) identifying the major sources of variability in the precision of CT scanning and accuracy of bone density measurement, (2) devising means of achieving accurate long-term, high-precision bone density measurements at the lowest possible radiation.

To this end glass rod phantoms were employed to calibrate the machine and heavy tungsten filters were used to remove most of the lower energy x-rays. The use of filters produced a more nearly monochromatic beam and reduced the x-ray dose of each scan to about 80 mrem. With the reduction in x-ray dose, three separate scans could be used for each measurement of bone density to average out the variability due to longitudinal positioning of the limb and thus increase the precision of the method.

The second objective was to recruit postmenopausal volunteers and characterize them with respect to specific epidemiological parameters --that, on analysis, may be correlated with the density values in long bones. The volunteers were successfully recruited and are now being processed for the relevant data.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Arthritis Metabolism & Digestive Diseases $79,582

2.0970,

CAUSES OF DIABETES AND OBESITY IN OKLAHOMA INDIANS

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In the etiology of diabetes the strength and character of the genetic influences have been poorly defined. Among the main reasons for this are the inadequacies of the data collected, particularly those concerning the present and previous fatness of both probands and family members. In a whole population of Indian adults in which diabetes and obesity are rife, a study is proposed in which data collection would be uniquely complete, including information on glucose tolerance and both present and previous adiposity on all available adults (about 3,200). This will include about 700 with fasting hyperglycemia and several hundred more with varying degrees of impairment of glucose tolerance. Propitious circumstances include the large families, the geographic proximity of family members, and a centralized record system that provides information (on weight and other data) extending over the past 40 years. This will allow a determination of the inter-relationships of obesity and heredity, including an assessment of the extent to which the familial aggregation of maturity-onset diabetes is secondary to the familial aggregation of obesity. Another aspect of the study will be comparison of familial patterns of insulin-independent diabetes of obese and insulin-dependent diabetes of the lean. In diabetes the extent to which there is familial concordance of susceptibility to retinopathy will be examined. Other observations will be designed to confirm that juvenile-onset diabetes is rare in Oklahoma Indians, and to explore possible causes of the paucity.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Arthritis Metabolism & Digestive Diseases $97,994

2.0971,

BONE QUALITY CHANGES IN HUMANS - A 20-YEAR FOLLOW-UP

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Approximately 1,000 persons who underwent bionutritional and medical tests (including radiographs of the hand and os calcis for x-ray bone mineral quantitation) will be retested after a 20-25 year time lapse. Changes in individual bone mineral content and corti-

cal volume during the intervening quarter century will be determined by radiographic densitometry using the Texas Woman's University method (with recently incorporated improved technology); direct radiographic scaling of bone morphology; and, terminally, by gamma ray absorptiometry using the Norland-Cameron method.

Bone changes during the time period will be compared with the 'normal' profile of bone development/regression currently being ascertained through our contractual work with the National Center for Health Statistics. This work encompasses bone mineral and cortical thickness measurements of 12,000 individuals who have been computer-selected by the Bureaus of Census to represent the United States population.

The specific aim of the proposed program is to determine if bone rarefaction with age is uniform and universal, or if nutritional, environmental/occupational, or pathologic factors are conducive to deviations from the normal profile which may result in the syndrome known as osteoporosis.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Arthritis Metabolism & Digestive Diseases $31,639

2.0972,

HEPATITIS B INFECTION AND REACTIONS TO HOMOGRAFTS

W.T. London, Inst. for Cancer Research, *7701 Burholme Ave., Philadelphia, Pennsylvania* 19111 (R01 AM 21958-01)

The objectives of this proposal are: 1) To test the hypothesis that survival of the kidney and bone marrow grafts in human is related to the response of recipients to hepatitis B infection before transplantation 2) To gain insight into the mechanism by which responses to hepatitis B virus (HBV) might be related to responses to organ grafts. Specifically, to test the hypothesis that there is cross reactivity between an antigenic determinant on HBV and a male associated antigen.

Preliminary observations of human kidney and bone marrow grafts suggest that recipients with antibody (anti-HBs) to the surface antigen of HBV (HBsAg) are likely to reject such grafts within six months of transplatation, particularly if the organ donor is a male. These and other epidemiological and experimental studies are consistent with the hypothesis stated above.

We plan to test this hypothesis by: 1) Extending the clinical and epidemiological studies of kidney and bone marrow transplantation in relation to the responses of graft recipients to hepatitis B infection before transplantation; 2) By investigating whether the postulated cross reacting antigen is present on sperm as shown by an association between antibodies to HBV and antisperm antibodies in humans (vasectomized men) or experimental animals; and 3) By studying in in-bred mice the mechanism of early rejection of male to female skin grafts from male donors by female recipients immunized against HBsAg.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Arthritis Metabolism & Digestive Diseases $110,051

2.0973,

NEUROPATHOLOGIC-EPIDEMIOLOGIC STUDY-COLLABORATIVE PERINATAL PROJECT (HUMAN)

A. Leviton, Childrens Hospital Medical Center, *300 Longwood Ave., Boston, Massachusetts* 02115 (P30 HD 06276-080009)

This project is part of a broader program (HD 06276).

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Child Health & Human Development funds n.a.

2.0974,

CLASSIFICATION AND EPIDEMIOLOGY OF SCHOOL PROBLEM SYNDROMES

A. Leviton, Childrens Hospital Medical Center, *300 Longwood Ave., Boston, Massachusetts* 02115 (P30 HD 06276-080010)

This project is part of a broader program (HD 06276).

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Child Health & Human Development funds n.a.

2.0975,

EFFECTS OF PLACEMENT SERVICES AND CLIENT MANAGEMENT ON MORTALITY AND ADAPTATION

R.K. Eyman, University of California, Los Angeles Campus, Neuropsychiatric Inst., *760 Westwood Plaza, Los Angeles, California* 90024 (P01 HD 05540-080002)

This project is part of a broader program (HD 05540).

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Child Health & Human Development funds n.a.

2.0976,

EPIDEMIOLOGY OF MORPHOLOGIC DISORDERS OF NEONATAL BRAIN (HUMAN)

A. Leviton, Childrens Hospital Medical Center, *300 Longwood Ave., Boston, Massachusetts* 02115 (P30 HD 06276-080008)

This project is part of a broader program (HD 06276).

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Child Health & Human Development funds n.a.

2.0977,

SIDS RISK FACTOR COOPERATIVE STUDY

L.S. Hillman, St. Louis Regional Maternal & Child Health Council, *607 Grand Ave., St. Louis, Missouri* 63103

The contractor will participate in a collaborative study along with five other centers to collect and process information on SIDS cases and controls in an effort to develop a group of risk factors which will characterize infants who subsequently die. This information will hopefully be used to identify a subset of infants at birth who are at high risk.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Child Health & Human Development $64,537

2.0978,

SIDS RISK FACTOR COOPERATIVE STUDY

J. Goldberg, Loyola University of Chicago, Maywood Campus, Loyola University Stritch School of Medicine, Dept. of Community & Family Medicine, *2160 S. 1st Ave., Maywood, Illinois* 60153

Participate in a collaborative study along with five other centers to collect and process information on SIDS cases and controls in an effort to develop a group of risk factors which will characterize infants who subsequently die. This information will hopefully be used to identify a subset of infants at birth who are at high risk.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Child Health & Human Development $104,028

2.0979,

EVALUATE RISK OF SERIOUS COMPLICATIONS IN IUD WEARERS

G.K. Stewart, Planned Parenthood Assn. of Sacramento, *1507 21st St., Suite 100, Sacramento, California* 95814

No summary has been provided to the Smithsonian Science Information Exchange.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Child Health & Human Development $5,309

2.0980,

MYOCARDIAL INFARCTION & THE ROLE OF ORAL CONTRACEPTIVES

D.E. Krueger, George Washington University, School of Medicine & Health Sciences, Dept. of Medicine, *2121 Eye St. N.W., Washington, District of Columbia* 20037

The contract program supports research intended to determine the relationship between the risk of death from myocardial infarction and the use or oral contraceptives among women of the U.S. A classical case control study approach will be utilized. This phase of the procurement will deal with the interviewing of subjects, or data collection phase.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Child Health & Human Development $0

2.0981,

RISK OF SERIOUS COMPLICATIONS IN IUD WEARERS

H. Foreman, University of Minnesota, Minneapolis Campus, School of Public Health, Dept. of Biometry, *1325 Mayo Memorial, Minneapolis, Minnesota* 55455

This contractor is one of nine organizations participating in a prospective case-control study to evaluate the risk of serious complications in IUD wearers. Within the overall purpose, these data collectors will interview women to determine: whether the use of IUD's appear to result in complications; and whether certain types of IUD's have a greater hazard for complications than other types.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Child Health & Human Development $10,855

2.0982,

HEALTH STATUS OF VASECTOMIZED MEN--CO-ORDINATING CENTER

F.J. Massey, University of California, Los Angeles Campus, School of Public Health, Dept. of Biostatistics, *405 Hilgard Ave., Los Angeles, California* 90024

Act as a coordinating center for a collaborative study involving several data collection groups which would provide health status information on approximately 20,000 vasectomized men and a similar number of controls. Manage and analyze the data to determine the nature and extent of significant medical risks which may be associated with elective vasectomy as a contraceptive problem.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Child Health & Human Development $415,000

2.0983,

CONTRACEPTIVE AGENTS ON BIRTH DEFECT FREQUENCY

S. Ramcharan, Kaiser Foundation Research Inst., *1956 Webster St., Room 310 B, Oakland, California* 94612

The contractor will perform a prospective study of the effects of contraceptive agents, related methods and procedures on frequency of birth defects. The contractor will collect data on 46,000 women who are being seen at the Kaiser (obstetrical) clinic to determine if the use of certain contraceptives prior to or at the time of conception increases the risk of having an offspring with a birth defect.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Child Health & Human Development $305,501

2.0984,

ABORTION--SUBSEQUENT REPRODUCTIVE FUNCTION/PREGNANCY

C.S. Chung, University of Hawaii System, Manoa Campus, School of Public Health, Dept. of Public Health Sciences, *Spalding Hall, Room 255, Honolulu, Hawaii* 96822

Quantify the effects of induced abortion on subsequent reproductive function by performing a classical cohort study of 16,500 women who collectively underwent 17,700 recorded abortions in the State of Hawaii between July, 1970, and July, 1974. Compare pregnancy outcome rates of pregnancies occurring to these women between January, 1971, and December, 1976, to rates of two control groups: the

entire set of live births and fetal deaths for the period January, 1971, through December, 1976, minus those occurring to women in the 'recorded abortion' group; and births or fetal deaths occurring to women with no recorded abortion history matched to the 'recorded abortion' group by maternal age, racial background, residence (urban vs. rural), and birth order. Specifically, compare rates of fetal death, neonatal death, prematurity, ectopic pregnancy, and labor and delivery complications.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Child Health & Human Development funds n.a.

2.0985,

A STUDY OF LOW FERTILITY COHORTS IN THE UNITED STATES

J.C. Ridley, Georgetown University, Kennedy Inst. for the Study of Hum. Reproduction & Bioethics, *3900 Reservoir Rd. N.W., Washington, District of Columbia* 20007

Contractor shall: Develop, refine, and pretest interview schedule; Analyze pretest and revise schedule; Survey of 1,500 ever-married, white, noninstitutionalized women of the 1901-1910 birth cohorts and approximately 550 husbands of these women who were married before age 40; Prepare analytic reports for publication; and Prepare a monograph. The objectives of the study are to: Describe the fertility behavior of the 1901-1910 birth cohorts; Measure the incidence of contraceptive practice, induced abortion, sterility, and subfecundity; Test a number of economic hypotheses; and Elucidate fertility differentials.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Child Health & Human Development $74,314

2.0986,

CONGENITAL, NATAL AND EARLY POSTNATAL CMV INFECTIONS - LONGITUDINAL STUDY (HUMAN)

C.A. Alford, University of Alabama in Birmingham, School of Medicine, Dept. of Pediatrics, *1919 7th Ave. S., Birmingham, Alabama* 35233 (P01 HD 10699-030004)

This project is part of a broader program (HD 10699).

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Child Health & Human Development funds n.a.

2.0987,

EPIDEMIOLOGICAL STUDY ON ORAL CONTRACEPTIVE AND STROKE

L.P. Chow, Johns Hopkins University, School of Hygiene & Public Health, Dept. of Population Dynamics, *615 N. Wolfe St., Baltimore, Maryland* 21205 (R01 HD 11536-02)

The proposal is to study the association, if any, that exists between oral contraceptive usage and increased risk of stroke among married women of childbearing age in a developing country. The study will be undertaken with the epidemiological case-control approach. Taiwan is selected as the study site because of her excellent household registration and vital statistics system and medical care services.

The association between the use of hormonal contraceptives and thromboembolic diseases of the heart, lung and brain has now been fairly well established on a number of epidemiological studies conducted mainly in the United Kingdom and United States. Similar studies to confirm, or deny, such association is much needed in the developing countries where the genetic background, life style, and dietary habits of people are different. The family planning policy implication of the proposed study is self-evident.

In the coming (second) year, approximately 200 stroke patients, 400 hospital controls, and 400 matched healthy neighborhood controls will be additionally interviewed to bring up the total sample size for the entire study to 300, 600, and 600 respectively in these categories.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Child Health & Human Development $86,463

2.0988,

CONTRIBUTION OF IRON DEFICIENCY TO MENTAL RETARDATION

J.C. Martin, University of Washington, School of Medicine, Dept. of Psychiatry & Behavioral Sci, *A-300 Health Sciences Ctr., SC-64, Seattle, Washington* 98195 (P01 HD 11680-01S1)

The most widespread nutritional deficiency in the country today is iron, particularly in pregnant women and children in different socio-economic strata. A variety of metabolic disturbances and physiological and developmental changes appear to be concommitants of iron deficiency during pregnancy, including low birth weights, increased still-birth rate, elevation of toxemia, and possible increases in fetal anomalies. Some studies suggest that iron deficient children have lower I.Q.'s and poorer academic performance. In addition they are described as inattentive, hyperactive, perseverative, and poorly integrated, all behaviors which would retard their learning and performance.

Recent evidence for central nervous system disorders from iron deficiency which involve the serotonin pathway and by implication mental function, led to the enclosed program project. This is a collaboration between the departments of Psychiatry & Behavioral Sciences, Pediatrics, Laboratory Medicine, Medicine, Biostatistics and the Child Development Mental Retardation Center.

Th metabolic and behavior concommitants of iron deficiency will be examined both longitudinally in the infants of iron deficient women, and cross-sectionally in iron deficient children. In addition an animal model will be utilized in parallel studies.

Eight senior investigators are submitting four related research projects to be performed collaboratively.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Child Health & Human Development $5,608

2.0989,

ESTIMATION OF DEMOGRAPHIC INDICES FROM IMPERFECT DATA

A.J. Coale, Princeton University, Woodrow Wilson School of Public & International Affairs, Dept. of Economics, *Box 430, Princeton, New Jersey* 08540 (R01 HD 11720-02)

The proposal is to carry out a program of research aimed at developing models of fertility, nuptiality, and mortality to serve as tools of estimation of demographic quantities from deficient and fragmentary data; to facilitate population projections; and, in general, to provide more reliable description of demographic patterns and trends than is possible on the basis of raw data adjusted by use of presently existing models. The development of refinement of model life tables will progress on three main fronts. First, it will make use of international data on causes of death which were not available when the Coale and Demeny model life tables were prepared. By disaggregating and recombining, using a pattern of weights, the life tables can take on greater biological realism. Second, there will be a refinement of the very early and very late ages, in which health changes have the most immediate impact. Third, greater use will be made of Brass' linear logit transformation of standard sets of survival probabilities. Model nuptiality patterns appear to fit the data so well that there is no intention to develop them further except indirectly in the fertility tables. Model fertility patterns are the most recent of the three types and, as is intended, can be considerably extended. Rather than working on purely empirical grounds, as the earlier proposal indicated, there will be an effort to integrate research on birth intervals in natural fertility populations and micro-level models of fecundability, and then to bring in the role of contraception.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Child Health & Human Development $81,217

2.0990,

DETERMINANTS OF CHILD MORTALITY

M.R. Rosenzweig, Yale University, Graduate School, Dept. of Economics, *206 Elm, New Haven, Connecticut* 06520 (R01 HD 12172-02)

The proposed research is concerned with the development of approaches to evaluating the impact of family planning and medical inputs on infant health. The major objective of the research is the measurement of the joint effects of family behavior, environmental factors and health program inputs, such as the use and availability of medical inputs, female labor-force participation, family size, cigarette smoking and pollutants, on infant mortality rates and birthweight. Statistical procedures will be used which take into account the potentially simultaneous nature of related household decisions and child health outcomes. Data on socioeconomic characteristics of family members, behavior, and measures of child health from national surveys will be analyzed in conjunction with aggregate data on the price and availability of various medical services in the region in which the household resides. The areal information on prices and conditions confronting the household may be assumed exogenous to its behavior and health outcomes. Linking this areal data to household records permits, therefore, one to identify how a variety of program activities and prices affect birthweight and child survival both directly and indirectly by influencing related household behavior. Within the limitations of existing data files and the many and imperfectly integrated hypotheses concerning the causes of child health status, the proposed research aims to test certain of these hypotheses in a common statistical and economic framework.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Child Health & Human Development $82,982

2.0991,

EPIDEMIOLOGY OF EARLY REPRODUCTIVE LOSS

Z.A. Stein, Columbia University, College of Physicians & Surgeons, Dept. of Public Health, *630 W. 168th St., New York, New York* 10032 (R01 HD 12207-02)

An epidemiologic, cytogenetic and pathologic study of spontaneous abortions is being carried out. The purpose of this study is to identify factors asssociated with spontaneous abortion and elucidate the mechanism for this association by examining associations with the karyotypic and morphologic characteristics of the conceptus. A surveillance system based on spontaneous abortions has been set up. We will test the feasibility of using this system to monitor the environment for mutagens and teratogens.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Child Health & Human Development $343,737

2.0992,

ELECTRON MICROSCOPY IN CONGENITAL VIRAL INFECTIONS

A.J. Nahmias, Emory University, School of Medicine, Dept. of Pediatrics, *1364 Clifton Rd. N.E., Atlanta, Georgia* 30322 (R01 HD 12358-02)

The proposed studies are aimed at extending our investigations on the possible role of microbial agents in the causation of major congenital malformations and/or significant acute clinical manifestations in the newborn. Electron microscopy (EM) and immune electron microscopy (IEM) will be applied to: (a) detect viruses (old or new) in the affected infant's urine, serum, cerebrospinal and/or ventricular fluid, throat or stool, which cannot be identified by more conventional virological techniques; (b) obtain a more rapid diagnosis of agents already known to be involved with these conditions, e.g. cytomegalovirus. Maternal serum will be particularly valuable to test by IEM, since the mother would be expected to have been infected with the putative agent involving her fetus. Any virus detected by these techniques will be: (a) studied as regards its possible causality to the disease process; (b) identified by its size, morphological and biochemical characteristics and by its effect in various tissue culture and animal systems. Infants will be followed by laboratory, clinical and epidemiological means to establish the consequences of such an infection.

The long-term goals of these investigations is to improve diagnosis, so as to permit earlier preventive and therapeutic measures, as well as to find newer agents that might be involved in major congenital malformations which affect at least 1% of all deliveries and for which a known cause (genetic, chromosomal or environmental) can be found in less than 5% of cases.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Child Health & Human Development $60,671

2.0993,

NEWBORN INTENSIVE CARE AND NEONATAL MORTALITY IN NYC

N.S. Paneth, Columbia University, College of Physicians & Surgeons, Dept. of Pediatrics, *630 W. 168th St., New York, New York* 10032 (R01 HD 12626-02)

The object of this study is to measure the impact of newborn intensive care on a geographically defined population, the newborns of New York City. The primary outcome of interest is mortality, from late fetal to infant, with particular emphasis on neonatal mortality and its subdivisions.

Using New York City live birth, infant death and fetal death certificates, we will examine mortality within birthweight categories in several different ways for each of three levels of neonatal care. This analysis will proceed both cross-sectionally and over time. We will also attempt to correlate characteristics of hospital functioning with outcome, and analyze the contribution of infant transport to the overall effect of new born intensive care.

We hope as a result to generate information that will provide a sound basis for perinatal planning and that will be a first step toward understanding the interaction between neonatal interventions and brain-damaging conditions of childhood.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Child Health & Human Development $144,868

2.0994,

PHARMACOKINETICS & TERATOGENICITY OF ANTICONVULSANTS

R.E. Ramsay, University of Miami, School of Medicine, Dept. of Neurology, *1400 N.W. 10th Ave., Box 520875, Coral Gables, Florida* 33152 (R01 HD 12740-01)

The objective of the proposed project is to study prospectively (1) the effects which pregnancy has on the epileptic patient and (2) the teratogenic effect of anticonvulsant drugs. Evidence to date indicates that pregnancy may alter the pharmacokinetics and metabolism of drugs. Alterations in drug dosages are definitely necessary to maintain seizure control during pregnancy. Seizures exacerbate in more than 50% of pregnant epileptics, even when drug dosages are appropriately changed. The frequency of this change has not been accurately documented and the etiology, which may be secondary to changing hormone levels, has not been clarified. Studies on teratogenesis of anticonvulsant drugs have concentrated on the changes in the children but have not examined the mothers during pregnancy to document their metabolic or drug status. In this project, we propose to examine both the mothers during pregnancy and their offspring. The children will be reexamined periodically for years. Major malformations occur in 6 to 8% of children born to mothers taking anticonvulsant drugs. Up to 30% may have dysmorphic features. Delayed maturation and development has also been reported to occur but the true incidence, severity and etiology has not been defined. In this study, we hope to elucidate some of these questions by monitoring the mothers during pregnancy and serially examining the children for neurological, developmental and morphologic abnormalities.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Child Health & Human Development $45,613

2.0995,

FUNCTIONAL BIOCHEMICAL IMPACT OF MICRONUTRIENT DEFICITS

E. Pollitt, University of Texas, Health Science Center at Houston, School of Public Health, Dept. of Nutrition & Behavioral Sciences, *6515 Freeman, Houston, Texas* 77025 (R01 HD 12843-01)

In connection with an aim of establishing whether there are any function derangements associated with malnutrition this study will determine the short- (7 days) and long- (12 weeks) term effects of oral iron on attention, learning and memory among preschool children. It will be carried out in the Pacific lowlands of rural Guatemala with three groups of preschool children who differ in their body iron status (as indicated by hemoglobin status) as follows: Hgb greater than 11.5 gms.%; (2) 10 less than Hgb less than 11.5; (3) 8 greater than Hgb greater than 10. A secondary purpose is to obtain epidemiological data on zinc nutrition, lead poisoning and morbidity among the same sample of children.

A first screening of the hematological conditions of 96 children between 3 and 6 years of age where the study will be conducted has been already completed. Prevalence data indicate a high number of both moderate and severe cases of sideropenia. A behavioral pilot study in villages near where the study will be conducted has also been completed to determine the cultural fitness of the psychological tools to be used.

Research will use a prospective before- and after-treatment design (including placebo) with six subgroups of children of equal size matched on sex, age, anthropometry and SES. Assignment of the two subgroups within each of the three hematologic conditions will be randomized. Behavioral data will be collected before initiation of treatment, after short- and long-term treatment. Intra-individual and inter-individual comparisons will therefore be made in data analysis. Data collection includes clinical and anthropometric measurements; biochemical and hematologic determinations; and behavioral evaluations. Behavioral tests are selected from a theory that differentiates structural from process features of cognition.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Child Health & Human Development $152,760

2.0996,

ROLE OF HUMAN MILK IN INFANT NUTRITION AND HEALTH

R.R. Howell, University of Texas, Health Science Center at Houston, School of Medicine, Dept. of Pediatrics, *Box 20036, Houston, Texas* 77025 (P01 HD 13021-01)

This Core Section proposal describes the advantages which will accrue to the investigations which are components of this Program Project application. The 7 component projects are directly linked by virtue of common human milk donors and samples. Included in this Core Section are descriptions of (1) the logistics of sample collection, (2) the acquisition of a demographic data base for subsequent correlation with results of various assays to be performed on the milk samples (as well as other tissues), and (3) a shared computer-based system of data collection, storage, and analysis. The epidemiologists, computer programmer, and nurse specialists will function as core resource workers for all investigators included in this Program Project.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Child Health & Human Development $467,743

2.0997,

SMOKING, NUTRITION, SOCIAL CLASS, AND PERINATAL LOSS

D. Rush, Columbia University, School of Public Health, Dept. of Pediatrics, *600 W. 168th St., New York, New York* 10032 (R01 HD 13370-01)

We have observed more intense effect of smoking on perinatal mortality with decending social status (Rush and Kass, 1972). In a recently completed randomized controlled trial, nutritional supplements in pregnancy completely protected against the low birth weight associated with heavy maternal smoking in a deprived, public clinic population.

The first objective of this research is to explore further, among these heavy smokers, the effects of the nutritional trial on other outcomes of pregnancy, including placental structure and function, and newborn and one year old growth and development, particularly psychological function.

The second objective is to test whether the data of four large surveys of Pregnancy (The 1958 British Perinatal Mortality Survey, The 1970 British Births Study, The Cardiff Births Survey, and The Jerusalem Perinatal Study) support the possibility of nutritional mediation of the more intense effect of smoking with descending social status. Depressed maternal weight and/or weight gain in pregnancy have sometimes been associated with smoking, and sometimes not. The hypothesis that nutritional effects are linked with social status could explain these seemingly contradictory observations.

The contribution of smoking to the social class gradient of perinatal outcomes will be quantified. Next, we will study the extent of potentation of the effect of smoking by low maternal weight and/or weight gain. We will then judge whether the effect of smoking on the fetus is in part mediated by lowered weight and/or weight gain, and whether this path in part accounts for the interaction of smoking and social class on perinatal outcome.

These studies are meant not only to improve our understanding of smoking in pregnancy, but to elicit possible strategies for prevention.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Child Health & Human Development $126,522

2.0998,

THIRD INTERNATIONAL CONGRESS OF TWIN STUDIES

W.E. Nance, Virginia Commonwealth University, School of Basic Sciences & Graduate Studies, Dept. of Human Genetics, *901 W. Franklin St., Richmond, Virginia* 23284 (R13 HD 13561-01)

This grant will support the scientific program of the Third International Congress of Twin Studies which will be sponsored by the International Society for Twin Studies in Jerusalem, Israel, in June, 1979. Symposia, workshops, meetings for contributed and invited papers, and a poster session are planned. Topics to be discussed include the biological, epidemiological, psychological, and genetic aspects of the twinning phenomenon as well as methodological and statistical aspects of the use of twins for biomedical research. Examples of applied research in the areas of birth defects, behavior genetics, pharmacogenetics, cardiovascular disease, cancer genetics, and obstetrical care will be presented and the proceedings of the Congress will be published to make them accessible to the general biomedical community.

Twin studies have always played a major role in the genetic analysis of complex human traits. As increasingly sophisticated methodologies are developed and new phenotypes are examined, twin studies promise to assume an even greater importance during the next two decades as an efficient means of resolving genetic, environmental and maternal effects in man and for testing specific therapeutic hypotheses. The International Society for Twin Studies, through its publications and Congresses, can facilitate the realization of these potentialities.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Child Health & Human Development $8,830

2.0999,

RESPIRATORY FUNCTION DURING SLEEP, AND RISK FOR SIDS

C.T. Hoppenbrouwers, University of Southern California, Los Angeles County General Hospital, *3551 University Ave., Los Angeles, California* 90007 (R01 HD 13689-01)

The general objective of the proposed study is to improve ability to identify infants at increased risk for SIDS. Our study plan consists of identification of risk groups, based on current epidemiologic and physiologic data, as subsequent siblings of SIDS, 'near miss' for SIDS, premature infants born to teenage mothers and controls. We will study the infants longitudinally during the ages of highest risk for SIDS to detect developmental patterns. We will focus on cardiorespiratory variables during sleep states since respiratory control mechanisms vary with sleep state. Oxygen levels will be continuously recorded during monitoring sessions because the ultimate significance of altered breathing patterns depends on their effect on blood gas level. Specific variables of respiratory rate, heart rate, apnea, asynchronous breathing will be examined in relation to risk for SIDS, age and sleep state. Each variable has been selected because it should provide support for the hypoxia model for risk for SIDS. In infants with selected abnormal respiratory patterns, pulmonary function studies will be performed in order to clarify the underlying mechanisms.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Child Health & Human Development $136,891

2.1000,

CASE-CONTROL STUDIES

J. Schlesselman, U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Child Health & Human Development, Biometry Branch, *9000 Rockville Pike, Bethesda, Maryland* 20205 (Z01 HD 00806-02)

Abook on case-control studies is being written which will detail the logic of the study design, provide explicit recommendations for its application, and describe a variety of methods for the analysis of case-control data. The book is planned as a reference for

researchers and advanced students in medicine, public health, epidemiology, and statistics.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Child Health & Human Development funds n.a.

2.1001,

THE GEOGRAPHIC VARIATION OF FETAL AND INFANT MORTALITY AND LOW BIRTH WEIGHT IN THE UNITED STATES, 1969-1974

C.A. Keller, U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Child Health & Human Development, Epidemiology Branch, *9000 Rockville Pike, Bethesda, Maryland* 20205 (Z01 HD 00304-02 EB)

The assembly of a large number of variables, including pregnancy outcome, has provided data on the marked variability in infant and fetal mortality among different populations in the U.S. The correlation of adverse pregnancy outcome rates with environmental variables will make it possible to assess the relative importance of the various factors associated with these rates in a large population. These data will also provide a basis for the assessment of changes in infant and fetal mortality which may be occurring in some populations.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Child Health & Human Development funds n.a.

2.1002,

STUDIES BASED ON THE MEDICAL BIRTH REGISTRY OF NORWAY, 1967-1973

H. Hoffman, U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Child Health & Human Development, Biometry Branch, *9000 Rockville Pike, Bethesda, Maryland* 20205 (Z01 HD 00801-04)

These studies have focused on: (1) the relation of the quality of medical care to the risk of perinatal death in Norway, (2) the tendency to repeat similar birth weight and gestational age in subsequent pregnancy outcomes to the same mothers, and (3) perinatal mortality in relation to order of birth and size of sibship.

BIBLIOGRAPHIC REFERENCES: Bakketeig, L.S., Hoffman, H.J. and Sternthal, P.M.: Obstetric service and perinatal mortality in Norway. Acta Obstetrica et Gynecologica Scandinavica, Supplement. 1978, (in press). Hoffman, H.J., Bakketeig, L.S. and Stark, C.R.: Twins and perinatal mortality-a comparison between single and twin births in Minnesota and in Norway, 1967-1973. In Nance, W.E., Allen, G. and Parisi, (Eds.): Twin Research (Part B): Biology and Epidemiology. New York, N.Y., Alan R. Liss, Inc., pp. 131-142, 1978.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Child Health & Human Development funds n.a.

2.1003,

THE EFFECT OF ILLEGITIMACY ON INFANT MORTALITY FROM LINKED BIRTH-DEATH RECORDS IN MINNESOTA, 1967-1973

C.A. Keller, U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Child Health & Human Development, Epidemiology Branch, *9000 Rockville Pike, Bethesda, Maryland* 20205 (Z01 HD 00305-02 EB)

Illegitimacy has often been implicated as a risk factor in infant mortality. An analysis of linked birth-death records from Minnesota which allows information from birth certificates to be related to infant death rates, has indicated that among very young women, in whom most illegitimacy occurs, marital status is not a risk factor for early neonatal mortality, but may be for post-neonatal deaths.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Child Health & Human Development funds n.a.

2.1004,

THE SEASONALITY OF INFANT MORTALITY FROM LINKED BIRTH-DEATH RECORDS IN NORTH CAROLINA, 1967-1973

R. Nugent, U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Child Health & Human Development, Epidemiology Branch, *9000 Rockville Pike, Bethesda, Maryland* 20205 (Z01 HD 00306-02 EB)

The observed seasonality of neonatal deaths in the U.S. has implications as to the rule of environmental agents, e.g., infectious organisms, during pregnancy in influencing pregnancy outcomes. Since seasonality of conceptions may generate seasonality of neonatal death rates, linked birth-death records from North Carolina are being utilized to examine this relationship so that seasonality of death rates can be assessed independently of any seasonal variation in conceptions.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Child Health & Human Development funds n.a.

2.1005,

ASSESSMENT OF THE RISK OF ABNORMALITIES FROM HUMAN IN VITRO FERTILIZATION

J.J. Schesselman, U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Child Health & Human Development, Biometry Branch, *9000 Rockville Pike, Bethesda, Maryland* 20205 (Z01 HD 00809-01)

A review of epidemiologic data relating to the risks of spontaneous abortions chromosomal abnormalities and congenital malformations was conducted to establish a baseline against which experience from pregnancies resulting from in vitro fertilization might be compared.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Child Health & Human Development funds n.a.

2.1006,

STUDY OF LINKED INFORMATION OF INFANT DEATH CERTIFICATES AND LIVE BIRTH CERTIFICATES FOR SELECTED U.S. STATES

H. Hoffman, U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Child Health & Human Development, Biometry Branch, *9000 Rockville Pike, Bethesda, Maryland* 20205 (Z01 HD 00802-04)

The objective is to assemble a multi-state data file of infant deaths in which prior linkage with birth certificate information has been performed. The studies to be done on the data set include associations between infant (and fetal) mortality with the standard information on birth certificates (e.g. birth weight, gestational age, maternal age and race, parity, etc). These studies will be compared with similar studies on a 1950 and 1960 cohort of U.S. births. Additional comparisons will be linked data from Canada (1971), Great Britain (1970) and Norway (1976-1973).

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Child Health & Human Development funds n.a.

2.1007,

EPIDEMIOLOGY OF BEHAVIOR DISORDERS IN PRESCHOOL CHILDREN

F. Earls, Childrens Hospital Medical Center, *300 Longwood Ave., Boston, Massachusetts* 02115 (P30 HD 06276-080148)

This project is part of a broader program (HD 06276).

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Child Health & Human Development funds n.a.

2.1008,

LACTOSE INTOLERANCE IN CANADIAN AND UNUIT CHILDREN

J.J. Eliestad Sayed, University of Western Ontario, *1151 Richmond St., London, Ontario, Canada* N6A 3K7

No summary has been provided to the Smithsonian Science Information Exchange.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Child Health & Human Development $183,770

2.1009,

EPIDEMIOLOGY OF TROPHOBLAST DISEASE (HAWAII)

P.A. Jacobs, University of Hawaii System, Manoa Campus, John A. Burns School of Medicine, Dept. of Anatomy & Reproductive Biology, *2444 Dole St., Pacific Biomedical Res. Ctr., Honolulu, Hawaii* 96822 (R01 HD 07879-060005)

This project is part of a broader program (HD 07879).

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Child Health & Human Development funds n.a.

2.1010,

AMENORRHEA, PITUITARY ADENOMA, AND ORAL CONTRACEPTIVES

R.B. Jaffe, University of California, San Francisco Campus, School of Medicine, Dept. of Gynecology Obstetrics & Reproductive Sciences, *551 Parnassus Ave., San Francisco, California* 94122

OBJECTIVE: Participate as a data contributing center in multicenter collaborative study to determine the relative risk of secondary amenorrhea with and without pituitary adenoma in relation to oral contraceptive exposure.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Child Health & Human Development funds n.a.

2.1011,

INCIDENCE AND FAMILY PATTERNS OF NEURAL TUBE DEFECTS (HUMAN)

P. Dignan, Childrens Hospital Medical Center, *3245 Burnet Ave., Cincinnati, Ohio* 45229 (P30 HD 05221-100062)

This project is part of a broader program (HD 05221).

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Child Health & Human Development funds n.a.

2.1012,

PACIFIC STATE HOSPITAL-BEHAVIORAL AND EPIDEMIOLOGICAL RESEARCH (HUMAN)

H. Grossman, University of California, Los Angeles Campus, Neuropsychiatric Inst., Mental Retardation Research Center, *760 Westwood Plaza, Los Angeles, California* 90024 (P30 HD 04612-110032)

This project is part of a broader program (HD 04612).

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Child Health & Human Development funds n.a.

2.1013,

EFFECT OF LOW LEVEL LEAD EXPOSURE ON NEUROPSYCHOLOGICAL PERFORMANCE (CHILDREN)

H.L. Needleman, Childrens Hospital Medical Center, *300 Longwood Ave., Boston, Massachusetts* 02115 (P30 HD 06276-080111)

This project is part of a broader program (HD 06276).

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Child Health & Human Development funds n.a.

2.1014,

EFFECTS OF PRENATAL EXPOSURE OF LEAD ON FETUS

H.L. Needleman, Childrens Hospital Medical Center, *300 Longwood Ave., Boston, Massachusetts* 02115 (P30 HD 06276 080112)

This project is part of a broader program (HD 06276).

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Child Health & Human Development funds n.a.

2.1015,

MALIGNANT MELANOMA OF WOMEN ON CONTRACEPTIVE STEROIDS

R.M. Elashoff, University of California, Los Angeles Campus, School of Public Health, Dept. of Biostatistics, *405 Hilgard Ave., Los Angeles, California* 90024

OBJECTIVES: Characterize the association between use of oral contraceptives and occurrence of malignant cutaneous melanoma by a case-control study, determine relative risk and causative and confounding factors. Specifically: design manuals of operation; design and pre-test questionnaire(s); specify study protocol; identify cases and controls; organize data processing; and submit questionnaire(s) to the Contracting Officer for obtainment of approval from the Office of Management and Budget.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Child Health & Human Development funds n.a.

2.1016,

OUTCOME OF SUCCESSIVE PREGNANCIES FOR NORWEGIAN WOMEN

L.S. Bakketeig, Universitetet i Trondheim, *7000 Trondheim, Norway, Norway*

Study the epidemiology of low birth weight and preterm delivery using the outcome of several successive pregnancies in a large population of women. Since the mother's identification number is recorded on the birth certificates, it is possible to retrieve medical information about consecutive births to the same mother. This system of data collection was begun in 1967, data is now available over a ten year span. This time period will provide a sufficient number of large sibships in order to examine the importance of familial tendencies for pregnancy outcome.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Child Health & Human Development funds n.a.

2.1017,

LONG-TERM EFFECTS OF DIETHYLSTILBESTROL DURING PREGNANCY

A.L. Herbst, University of Chicago, School of Medicine, Dept. of Obstetrics & Gynecology, *5801 S. Ellis Ave., Chicago, Illinois* 60637

Continue examinations of both male and female offspring of women given diethylstilbestrol (DES) or placebos during pregnancies in 1951 and 1952 in double blind study. The aim is to assess the possible long-term effects of DES on sexual development, fertility, complications in pregnancy, and the development of precancerous lesions or carcinoma. It is also proposed to continue follow-up of the mothers who were administered DES or placebos during pregnancies. They should be contacted at least once during the three-year period for telephone interview, with documentation of pathology by hospital records.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Child Health & Human Development funds n.a.

2.1018,

EVALUATE RISK OF SERIOUS COMPLICATIONS IN IUD WEARERS

G.R. Huggins, University of Pennsylvania, School of Medicine, Dept. of Obstetrics & Gynecology, *36th & Hamilton Walk, Philadelphia, Pennsylvania* 19174

No summary has been provided to the Smithsonian Science Information Exchange.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Child Health & Human Development funds n.a.

2.1019,

INITIATION OF HUMAN LABOR - PREVENTION OF PREMATURITY

P.C. MacDonald, University of Texas, Health Science Center at Dallas, Southwestern Medical School, Dept. of Obstetrics & Gynecology, *5323 Harry Hines Blvd., Dallas, Texas* 75230 (P50 HD 11149-03)

The objectives of this research are to define in the human fetus, amniotic fluid, fetal membranes, and uterine decidua the events that constitute a metabolic communication system, and to identify those fetal maturational events which initiate human parturition. We propose that the initiation of parturition is a consequence of fetal brain maturation, pituitary-fetal adrenal secretory processes and altered progesterone metabolism in fetal membranes; that lysosomal phospholipase A2, in fetal membranes and uterine decidua catalyzes release of arachidonic acid from glycerophospholipids in these tissues; and that free arachidonic acid is converted by the prostaglandin synthetase complex to prostaglandins and related compounds which facilitate myometrial contraction. We propose to investigate the ontogenesis of the human hypothalamic-pituitary vasculature, the ontogenesis of the subcellular compartmentalization of hypothalamic hormones, and the control of secretion of pituitary hormones; to identify the factors controlling growth and steroidogenesis of the fetal adrenal; to elucidate steroid hormone synthesis and metabolism in the placenta, fetal membranes, and uterine decidua; to characterize the subcellular localization of phospholipase A2 in fetal membranes and uterine decidua; to eluciate the biogenesis and regulation of prostaglandin and prostaglandin-related substances in the initiation of labor; to characterize the distribution of progesterone in fetal membranes throughout gestation; and to determine the role of fetal progesterone binding protein in the intracellular distribution of progesterone and in the metabolism of lysosomes. We will assess the epidemiologic factors of prematurity and develop a regional perinatal program for identification of gravidas at risk of prematurity. We will evaluate the impact of uteroplacental perfusion of therapeutic regimens used in preventing or arresting premature labor, and attempt to define the metabolic aberrations that cause premature labor.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Child Health & Human Development $830,587

2.1020,

PERINATAL INFECTIONS, IMMUNITY AND MALDEVELOPMENT

C.A. Alford, University of Alabama in Birmingham, School of Medicine, Dept. of Pediatrics, *1919 7th Ave. S., Birmingham, Alabama* 35233 (P01 HD 10699-03)

The major objective of the program is to study the natural history of perinatal cytomegalovirus (CMV) and group B Streptococcal infections in mothers, infants and children by large scale, prospective and longitudinal investigations. The CMV studies include in the mothers: 1) the role of recurrent versus primary infection in intrauterine and intrapartal transmission; 2) mechanisms of fetal transmission with recurrent maternal infection; and 3) effect of pregnancy hormones on growth of CMV. In infants and children they include studies on: 1) long term developmental outcome, 2) assessment of immunologic assays for detection of silent infection in the newborn, 3) pathogenetic studies of severe disease, and 4) nature of immune complex formation in congenital CMV. In addition, longitudinal studies of the humoral and cellular immune response in the maternal, congenital and natal infections are to be determined and related to virologic and clinical parameters over time and human strains are to be genetically analyzed and related to the disease state in man to search for microbial virulence factors.

The group B Streptococcal studies include prospective and longitudinal epidemiologic studies of strain specific colonization of mothers and infants and the role of the bacteria in both infectious and non-infectious complications of pregnancy. Modes of transmission from mother to baby and hospital spread will be sought. Serologic assays for detection of antibody will be developed and along with current assays compared for utility in investigating pathogenesis. In sick infected infants, bacteriologic and immunologic studies will be performed to better understand the early and late onset forms of group B infections to better define the pathogenesis of the two disease states in hopes of developing better therapeutic or preventive approaches in the future.

Both the CMW and streptococcal studies are to be integrated for correlative analyses in situations where deemed pertinent.

BIBLIOGRAPHIC REFERENCES: Knox, G.E., Pass, R.F., Reynolds, D.W., Stagno, S. and Alford, C.A.: Comparative prevalence of subclinical cytomegalovirus and herpes simplex virus infections in the genital and urinary tracts of low income, urban females. J. Infect. Dis., 1979 in press. Reynolds, D.W., Dean, P.H., Pass, R.F. and Alford, C.A.: Specific cell mediated immunity in children with congenital and neonatal cytomegaiovirus infection and their mothers. J. Infect. Dis., 1979 in press.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Child Health & Human Development $440,340

2.1021,

CORE PROGRAM FOR MENTAL RETARDATION RESEARCH

P. Dignan, Childrens Hospital Medical Center, *3245 Burnet Ave., Cincinnati, Ohio* 45229 (P30 HD 05221-10)

The Institute for Developmental Research (IDR) is devoted to research related to human development which may assist in finding causes and means of prevention of mental retardation or in finding means of ameliorating the effects of mental retardation. The IDR is a part of the Children's Hospital Research Foundation. By its close affiliation with many of the Children's Hospital Medical Center's Research Divisions, University Affiliated Facilities, and other hospitals and clinics the IDR, in addition to its own research program, enhances and stimulates mental retardation research in the entire Children's Hospital Medical Center and in other Departments of the University of Cincinnati College of Medicine.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Child Health & Human Development $532,395

2.1022,

PROGRAM FOR THE DEVELOPMENT OF THE MENTALLY RETARDED

R.K. Eyman, University of California, Los Angeles Campus, Neuropsychiatric Inst., Dept. of Psychiatry, *760 Westwood Plaza, Los Angeles, California* 90024 (P01 HD 05540-08)

The proposed research will investigate the effects of residential and educational environments on four sets of outcome variables as they relate to the mentally retarded: (a) mortality and the development of adaptive behavior, (b) personal-social development, (c) cognitive development, and (d) school and home adaptation. The research is based on rigorous investigation of the impact of two powerful and pervasive forces in the provision of services for mentally retarded persons - the principles of normalization and mainstreaming. In addition, the longitudinal study of mortality and changes in adaptive behavior for a five- to ten-year period is suggested to discern developmental trends on a large population of mentally retarded individuals from a number of states.

Four interrelated projects are proposed, each of which has its own specific aims, methods of procedure, and significance. All of them relate to the basic model, and all have as their ultimate objective the discovery of ways to improve retarded individuals' adaptation to their environments.

BIBLIOGRAPHIC REFERENCES: Eyman, R. K., Demaine, G. C., & Lei, T. J. The relationship between communit; environments and resident changes in adaptive behavior: A path model. American Journal of Mental Deficiency, 1979, 83(4). Eyman, R. K., & Miller, C. A demographic overview of severe and profound mental retardation. In C. E. Meyers (Ed.), Monograph of the American Association on Mental Deficiency, 1978, 3.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Child Health & Human Development $516,251

2.1023,

MENTAL RETARDATION RESEARCH PROGRAM

C.F. Barlow, Childrens Hospital Medical Center, *300 Longwood Ave., Boston, Massachusetts* 02115 (P30 HD 06276-08)

This program-project requests CORE and implementation support for broadly based program for the study of mental retardation and related aspects of human development. The scientific base for the pro-

gram rests upon investigation in three major areas: (a) Genetics and Metabolism; (b) Neuroscience; (c) Behavioral Science; all converging on a fourth area, (d) Clinical Studies of the Human Subject. The methodological and philosophical approaches include the clinical disciplines of pediatrics, neurology, neurosurgery, radiology, psychiatry, psychology, ophthalmology, otology and the basic science disciplines of pathology, physiology, pharmacology and biochemistry. The program is housed in five floors of the Pediatric Sciences Building.

The objective of the program is to provide a scientific and clinical base for the better understanding of the factors leading to mental retardation and to apply this information to prevention of the disorder, and management of the mentally handicapped individual.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Child Health & Human Development $442,719

2.1024,

A PROGRAM OF RESEARCH IN POPULATION CYTOGENETICS

P.A. Jacobs, University of Hawaii System, Manoa Campus, John A. Burns School of Medicine, Dept. of Anatomy & Reproductive Biology, *2444 Dole St., Pacific Biomedical Res. Ctr., Honolulu, Hawaii* 96822 (R01 HD 07879-06)

Utilizing material from spontaneous and inevitable abortions and their parents and from mentally retarded males we will determine: (1) the origin of the additional chromosome in trisomics, the additional haploid set in triploids and the mutation in structural aberrations by the use of chromosome heteromorphisms; (2) whether age-related somatic non-disjunction is correlated with meiotic non-disjunction as measured by the production of trisomic conceptuses; (3) the contribution of chromosome aberrations and ABO blood group incompatibility to fetal wastage and the practicality of using spontaneously aborted fetuses for population surveillance for mutagens and teratogens; (4) the cytogenetic status of trophoblast disease; (5) the relationship of race and social class to the epidemiology of trophoblast disease; (6) whether the source of the X-chromosome is related to its activation or inactivation and whether an active paternally derived X-chromosome in trophoblast plays any part in the genesis of trophoblast disease; (7) a method for enhancing the appearance of the abnormal X-chromosome in Renpenning's syndrome and the formal genetics and effect on retardation of the abnormal chromosome and its frequency among mentally retarded males.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Child Health & Human Development $292,131

2.1025,

STUDIES IN HUMAN GENETICS

B. Childs, Johns Hopkins University, School of Medicine, Dept. of Pediatrics, *725 N. Wolfe St., Baltimore, Maryland* 21205 (R01 HD 00486-25)

Three behavioral phenotypes are to be studied using a genetic-epidemiologic approach. 1) Phenotypic variations of specific reading disability will be characterized in subjects attending schools for learning disabled children, their sibs, parents and collateral relatives, and the hypothesis of phenotypic and genetic heterogeneity will be tested. The impact of reading disability on development and occupational choice will also be studied. 2) The hypothesis of genetic heterogeneity in schizophrenia will be tested by contrasting the phenotypic properties of patients with preadolescent and early adult onset with those of later onset. 3) The psychiatric symptoms in patients with Huntington's disease and their 'at risk' children will be characterized.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Child Health & Human Development $99,775

2.1026,

MENTAL RETARDATION RESEARCH CENTER

G. Tarjan, University of California, Los Angeles Campus, Neuropsychiatric Inst., *760 Westwood Plaza, Los Angeles, California* 90024 (P30 HD 04612-11)

This proposal provides central support for Research in Mental Retardation at UCLA. The Mental Retardation Research Center at UCLA is a multi-funded, interdisciplinary research and teaching program which has the following objectives: 1. Research into problems of mental retardation and related aspects of human development. 2. Research training, at the pre- and post-doctoral levels, of specialists in a variety of disciplines related to our goals.

Studies fall into the following categories: Developmental Biology, Neurophysiology, Neurobiochemistry and Socio-Behavioral Research. Most of our research efforts are carried out on the UCLA campus. Additionally, a large multi-disciplinary research program exists at the Pacific State Hospital (recently renamed Lanterman State Hospital) in Pomona, California.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Child Health & Human Development $627,975

2.1027,

PREGNANCY AND DES ASSOCIATED UPPER GENITAL ANOMALIES

R.H. Kaufman, Baylor College of Medicine, School of Medicine, Dept. of Obstetrics & Gynecology, *1200 Moursund Ave., Houston, Texas* 77025 (R01 HD 10989-03)

The investigators intend to assess the prevalence of upper genital tract anomalies in women exposed in utero to diethylstilbestrol. They will relate the changes found in the upper genital tract to those found in the lower genital tract. In addition, they will attempt to evaluate the incidence of pregnancy wastage in relation to upper genital tract anomalies found in these individuals.

In addition, they will attempt to evaluate the prevalence of urinary tract anomalies that may or may not co-exist with genital tract anomalies found in the DES exposed offspring.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Child Health & Human Development $42,030

2.1028,

DEVELOPMENTAL EFFECTS OF LOW LEVEL LEAD EXPOSURE

H.L. Needleman, Childrens Hospital Medical Center, *300 Longwood Ave., Boston, Massachusetts* 02115 (P01 HD 08945-04A1)

This Program Project Grant proposes to extend our studies of low level lead exposure in children and experimental animals to address the following questions: 1) Does prenatal exposure to lead affect outcome at birth and later in life? 2) Does lead exposure have long delayed effects related to aging or late neurologic disease? 3) Does chelation prevent demonstrated changes in synaptic maturity and dendritic complexity?

Epidemiologic studies of gravid women and their offspring in which lead is the risk factor will conducted, treating birth outcome and later development as outcome variables.

Animal models of controlled lead exposure will be employed to test the same hypotheses under experimental conditions. Animals will be given controlled amounts of lead at varied periods of gestation, and offspring studied for ultrastructural changes in brain, distribution of lead by radiosotopes, and behavioral change by quantitative techniques. The effects of chelation on outcome will also be studied.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Child Health & Human Development $430,176

2.1029,

NEONATAL GROUP B STREPTOCOCCAL INFECTIONS

S.P. Gotoff, Michael Reese Hospital & Medical Center, Dept. of Pediatrics, *2929 S. Ellis Ave., Chicago, Illinois* 60616 (R01 HD 09700-03)

We have developed a fluorescent antibody technique for rapid identification of group B streptococci in human specimens. The technique has a sensitivity of 52% for detection of maternal vaginal colonization within 6 hours of culture; 93% after overnight (greater than 18 hours) incubation. The FA technique is being used as a semiquantitative method of assessing the risk of vertical transmission of group B streptococci from parturient women to their newborn infants.

Using biologic characteristics of group B streptococci which permit specific identification of strains (serotype, antibiogram, neuramindase production, chick embryo virulence, and bacteriophage type we are studying nosocomial transmission in a high-risk nursery environment.

Using the risk factors of premature labor and prolonged rupture of maternal membranes as criteria for selection, we are conducting a controlled study of ampicillin prophylaxis of neonatal group B streptococcal infections in colonized women in labor.

BIBLIOGRAPHIC REFERENCES: Stewardson-Kreiger, P. and Gotoff, S.P.: Risk factors in early-onset neonatal group B streptococcal infections. Infection 2:50-53, 1978.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Child Health & Human Development $77,710

2.1030,

DIPLOCOCCUS PNEUMONIAE - INFECTION AND IMMUNITY

H.C. Dillon, University of Alabama in Birmingham, School of Medicine, Dept. of Pediatrics, *1919 7th Ave. S., Birmingham, Alabama* 35233 (R01 HD 09732-04)

The natural history of Str. pneumoniae infections is being studied in a group of infants now 3-4 years of age, who have been followed since birth. The relation between pneum coccal carriage, infection and immunity is being determined in prospective fashion. Pneumococci are serotyped with Danish reference antisera. Antibody is determined in this laboratory by NBT assay and by a newly developed ELISA method. Collaborative arrangements with Dr. Gerald Schiffman provide for antibody assay by the RIA technique. In addition to patients prospectively investigated, seroepidemiologic studies are being performed, utilizing sera for children and adolescents stored from prior investigations. Included in the latter are sera from patients with well-defined pneumococcal infections. including otitis media and bacteremia. Comparative epidemiology of pneumococcal infections in children and adults is investigated by examining collections of clinically relevant pneumococci from pediatric and adult infectious disease services. Host age range, clinical syndrome, serotype causing disease, serological response to infections and seasonal trends of pneumococcal disease are being determined.

BIBLIOGRAPHIC REFERENCES: Converse, George M., III and Dillon, Hugh C., Jr.: Epidemiologic studies of S. pneumoniae in infants. I: Methods of isolating pneumococci. J. Clin. Microbiol. 5: 293-296, 1977. Gray, B.M., Converse, G.M., and Dillon, H.C., Jr.: Further studies on the natural history of pneumococcal infections in children. Clin. Res. 26:79A, 1978.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Child Health & Human Development $70,380

2.1031,

CYTOMEGALOVIRUS - TRANSMISSION TO NEWBORNS BY BLOOD

A.S. Yeager, Stanford University, School of Medicine, Dept. of Pediatrics, *Stanford, California* 94305 (R01 HD 09872-04)

The purpose of the proposed investigation is to determine whether the risk of transfusion-acquired Cytomegalovirus (CMV) infections to premature infants can be decreased by the use of donors who have no measurable antibody to CMV as assessed by a modified hemagglutination inhibition (IHA) assay. A simplified method of performing the IHA test will be compared to indirect fluorescent antibody methods as regards sensitivity and evaluated for suitability for use in a blood bank. Assessment of host factors which may correlate with the severity of symptoms in infected babies and with the amount of virus excreted will include measurement of maternally derived antibody, evaluation of the onset of production of CMV IgM antibody, enumeration of T, B and monocyte cells, CMV and PHA lymphocyte stimulation assays and CMV and HSV interferon production. Pulmonary and hepatic function and platelet levels will be measured in infected babies. The influence of infection on the length of time of assisted ventilation and O2 administration, rate of weight gain and length of hospital stay will be evaluated. At 1, 2, and 3 years of age infected infants will have tests of hearing, vision, neurological and intellectual function. The results will be compared with uninfected controls. The transmission patterns in seronegative members of families of infected babies will be studied in an effort to evaluate the risk of transmission from infect-

ed babies to seronegative mothers during a subsequent pregnancy.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Child Health & Human Development $110,258

2.1032,

CLINICAL CORRELATIONS TO VITAMIN D STATUS IN INFANTS

L.S. Hillman, Washington University, School of Medicine, Dept. of Pediatrics, *660 S. Euclid Ave., St. Louis, Missouri* 63110 (R01 HD 09998-03S1)

The object of this grant is to study a number of problems in infants which may be related to 25-hydroxyvitamin D (25-OHD) deficiency: 1) early neonatal hypocalcemia, 2) late neonatal hypocalcemia, 3) rickets and severe osteopenia, 4) Sudden Infant Death Syndrome (S.I.D.S.) and 5) dental hypoplasia. Laboratory determinations and x-rays obtained during the first 3 months of life are to be further correlated with long term growth and development. 73 premature infants, 34 SGA infants, and 8 IDM infants have been enrolled in the study and been prospectively followed. Additional post-mortem samples have been obtained from 23 SIDS and 7 control infants. 8 near-missinfants and 6 infants with late neonatal hypocalcemia seizures have been studied. Analysis of 25-OHD concentrations has been completed in 59 cases and calcium, magnesium, phosphorous and copper have been completed in 100 cases. During the third year, we will concentrate on getting good follow-up of those infants enrolled and obtaining complete dental examinations. We hope to complete analyses of all samples early in the year and begin to correlate laboratory, x-ray and clinical data within the first 3 months. We will also set up a system for analysis of follow-up data related to these earlier findings.

BIBLIOGRAPHIC REFERENCES: Hillman, L.S., Rojanasathit, S., Slatopolsky, E., and Haddad, J.G.: Serial measurements of serum calcium, magnesium, parathyroid hormone, calcitonin, and 25-hydroxy-vitamin D in premature and term infants during the first week of life. Pediat. Res. 11: 739-744, 1977.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Child Health & Human Development $20,291

2.1033,

SEX CHROMOSOMAL ABNORMALITIES - A PROSPECTIVE STUDY

A. Robinson, University of Colorado, Medical Center, National Jewish Hospital & Research Center, *3800 E. Colfax Ave., Denver, Colorado* 80206 (R01 HD 10032-04)

The purpose of this research is to continue our study of a group of children with abnormalities of the sex chromosomes who were identified in a cytogenetic survey of 40,000 consecutive births from 1964-1974. This patient group offers the opportunity for study of genetic, developmental, physical and psychological factors in these complex conditions.

Our long-term objective is to define the ultimate prognosis for each of these conditions--47,XXX; 47,XXY; 47,XYY; 45,X and mosaicisms of these. Some, but not all, individuals with these karyotypes will have intellectual, emotional or social problems in later life. The data will be analyzed by comparisons between subgroups and by using normal siblings as controls. Previous study of this group of children makes it possible to focus the investigation during childhood on particular facets of vulnerability, and during adolescence on relative changes from previous growth, endocrine and behavioral status. By following the development and by therapeutic intervention, including endocrine where indicated later irreversible pathology may be prevented or ameliorated.

BIBLIOGRAPHIC REFERENCES: Tennes, K., Puck, M., Orfanakis, D. and Robinson, D.: The Early Childhood Development of 17 Boys with Sex Chromosome Anomalies. A Prospective Study. Pediatrics, 59:574-583, 1977. Robinson, A., Goad, W.B. and Puck, T.T.: Some Epidemiologic Aspects of Chromosomal Aneuploidy. In: Genetic Issues in Public Health and Medicine, B.H. Cohen, A.M. Lilienfeld and P.C. Huang (eds.). Charles C. Thomas, Springfield, 1978. pp. 206-214.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Child Health & Human Development $141,473

2.1034,

ETIOLOGIC ASPECTS OF SUDDEN INFANT DEATH SYNDROME

P.L. Ogra, Childrens Hospital of Buffalo, Dept. of Pediatrics/Microbiology, *219 Bryant St., Buffalo, New York* 14222 (R01 HD 10088-04)

The long range objectives of this proposal are to examine the microbiologic and immunologic aspects of host defense in sudden infant death syndrome (SIDS). The specific aims of this investigation conducted during the current budget period were 1) to examine the functional aspects of immunologic reactivity in the mucosal surfaces of the respiratory tract in SIDS and in normal healthy living neonates, 2) to determine the prevalence and nature of respiratory viral infections in this community relative to the occurrence of SIDS, and 3) to examine the immunologic and microbiologic status of infants with episodes of apnea.

BIBLIOGRAPHIC REFERENCES: Kaul, A., Scott, R., Gallagher, M., Scott, M., Clement, J. and Ogra, P.L.: Respiratory syncytial virus infection. Amer. J. Dis. Child 132:1088-1090, 1978. Welliver, R.C., and Ogra P.L.: Importance of local immunity in enteric infection. J. Amer. Vet. Med. Assoc. 173:560-564, 1978.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Child Health & Human Development $96,946

2.1035,

SELECTED FACTORS INFLUENCING INCIDENCE OF ORAL CLEFTS

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A study to determine the feasibility of studying high-risk mothers (mothers who have given birth to cleft children previously) with respect to potential environmental and metabolic etiological factors affecting their children prenatally and resulting in oral clefts. The final target of such research would be to identify a large-scale high-risk group of mothers and to reduce the risk by modifying prenatal circumstances. The first step in the development of a preventive program for congenital cleft lip and palate will be to identify likely etiologic factors and explore a small population to determine the needs and objectives of a larger study.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Dental Research $0

2.1036,

A WORKSHOP CONFERENCE ON METHODS OF CARIES PREDICTION

B.G. Bibby, Eastman Dental Center, Caries Research, *800 Main St. E., Rochester, New York* 14603 (R13 DE 04743-01)

Because of the absence of any accepted method for predicting caries, it is proposed to examine the procedures previously used for that purpose, and seek new approaches to the problem. For the latter purpose the nature of the variables recently described in studies of bacteria, saliva, food, tooth structure and caries initiation will be sifted for use as caries predictors. Task Forces representing the various biologic and epidemiologic aspects of caries will select, in their field of responsibility, the most promising approaches to practical caries prediction and indicate how these can be brought to a stage of clinical reliability. The conference papers, summaries of the discussion and the Task Force reports will be edited and submitted to Information Retrieval, Inc., for publication. Copies will be sent to all members of the American Association for Dental Research.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Dental Research $0

2.1037,

CENTER FOR CLINICAL RESEARCH IN PERIODONTAL DISEASES

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To investigate the etiology of periodontal diseases, possible mechanisms of tissue destruction, and the effects of therapeutic measures, a series of clinical experiments have been designed in which the interrelationships between composition of the plaque microbiota, immunologic response and potential mediators of local tissue pathology are studied in a patient population with advanced destructive disease. Extensive clinical measurements will be carried out to verify that each patient is in an active state of disease at the time of investigation and to monitor the effectiveness of therapeutic regimens tested. Local levels of administered agent will be assessed by pharmacologic monitoring in order to verify that effective dosage has been achieved. Clinical disease activity will be correlated with parameters measured in the laboratory in order to seek possible laboratory aids to diagnosis.

The patient's immunologic response to his or her own microbial populations will be tested. By determining which organisms are eliminated or suppressed by different therapeutic regimens and monitoring disease activity, it is hoped that specific pathogens responsible for active periodontal disease can be identified. These findings should lay the basis of preventive therapy directed toward elimination of specific pathogens. By determining the nature of the host response to resident organisms, it is hoped that a more precise definition of pathogenic mechanisms will be obtained which will direct efforts seeking alternative therapeutic measures. By determining the clinical effect of various forms of periodontal therapy, it is hoped that more rational approaches for treating periodontal disease will be devised.

At this time, few definitive tests are known which can be used to guide therapy, or to assess its effect. By thoroughly investigating the multiplicity of interrelated facts which are associated with the periodontal disease process, it is hoped that bases for rational prevention and therapy will be established.

BIBLIOGRAPHIC REFERENCES: Goodson, J. M., Haffajee, A. and Socransky, S. S.: Local drug delivery using hollow fiber devices. I. Construction, release and side effects. J. Dent. Res. 57 (Special issue A) 266, 1978 Abs.# 766. Haffajee, A., Walker, C., Goodson, J.M. and Socransky, S. S.: Local drug delivery using hollow fiber devices. II. Effects on the microbiota. J. Dent. Res. 57 (Special issue A) 266, 1978 Abs.# 767.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Dental Research $348,884

2.1038,

PERIODONTAL DISEASE RESEARCH CENTER

R.J. Genco, State University of New York, Health Science Center at Buffalo, School of Dentistry, Dept. of Oral Biology, *3435 Main St., Buffalo, New York* 14214 (P50 DE 04898-02)

The studies propose to look at the microbiological and host response reactions occurring in human periodontal disease with a view of understanding the nature of host parasite interactions in periodontal disease so that the diseases may be managed more effectively. Specifically, neutrophil and lymphocyte functions of patients with various forms of periodontal diseas as well as the microfloral shifts of these subjects upon treatment will be studied.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Dental Research $287,239

2.1039,

NOCTURNAL MASSETER MUSCLE ACTIVITY AND JAW DYSFUNCTION

G.T. Clark, University of California, Los Angeles Campus, School of Dentistry, Section of Gnathology & Occlusion, *405 Hilgard Ave., Los Angeles, California* 90024 (R23 DE 05036-02)

The objective of this study is to investigate the specific relationship between nocturnal masseter muscle activity, and the signs and symptoms of abnormal jaw muscle function in normal subjects and subjects with myofascial pain.

The methods of this project include using a portable cummulative EMG device to establish the average level of masseter muscle activity over a two week period during normal sleep. A measure of the maximum bite force and a measure of the subject's fatigability and his kinesthetic sense will be performed. These measures will be performed on approximately 40 subjects with the absence of any subjective symptoms of jaw dysfunction and in 60 patients who complain of abnormal jaw muscle function but have no TMJ intracapsular dysfunction. An epidemiologic type index will be used to score and evaluate the symptoms of dysfunction along with the occlusal characteristics on all subjects. These subjects will be directed towards establishing levels of nocturnal muscle activity and measures of jaw muscle function in normal and symptomatic subjects. The symptomatic subjects will undergo 6 weeks of treatment

either with exercises or an occlusal splint and a followup post-treatment evaluation will be performed on all subjects.

In summary, it will be of interest to relate the amount of nocturnal masseter muscle activity to the signs and symptoms of jaw dysfunction. These measures of jaw muscle function will serve as pretreatment records so that any change may be examined for and compared after routine treatment for myofascial pain. This information will hopefully answer the following two questions: 1) 'Is there a constant relationship between nocturnal muscle activity, abnormal jaw muscle function and the symptoms of myofascial pain dysfunction, and 2) what effect does occlusal splint therapy vs. exercise-heat therapy have on this relationship, if any.

BIBLIOGRAPHIC REFERENCES: Clark, G.T., Beemsterboer, P.L., and Bell, G.: The effect of jaw muscle fatigue on mandibular kinesthetic ability. J. Dent. Res. AADR abstract #991, 1980. Clark, G.T., Beemsterboer, P.L., and Rugh, J.D.: Nocturnal masseter muscle activity and symptoms of masticatory dysfunction. J. Oral Rehab. (Accepted and in press. (1980).

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Dental Research $25,000

2.1040,
GENETIC CONTROL OF SUSCEPTIBILITY TO CLEFT PALATE

M.L. Tyan, University of California, Los Angeles Campus, School of Medicine, Dept. of Medicine, *2025 Zonal Ave., Los Angeles, California* 90024 (R01 DE 05165-01)

Evidence suggests that an increased incidence of cleft palate may be associated with HLA-A2, a major histocompatibility complex antigen. If this is true then HLA antigens can be used as genetic markers for increased susceptibility to cleft lip and/or palate. The proposed studies have been designed to confirm the HLA/cleft palate association. Cooperating institutions throughout the Los Angeles Metropolitan area will provide subjects to be HLA typed. About 1,100 patients will be available. All HLA typing of experimental and control populations will be done by the UCLA HLA typing facility directed by Dr. P.I. Terasaki. A sample of blood containing live cells and a sample of serum from each patient will be preserved in liquid nitrogen for future use. The identification of genetic markers for cleft lip and/or palate susceptibility will lead to the development of procedures to reduce the incidence of these craniofacial anomalies.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Dental Research $75,084

2.1041,
THE EFFECT OF SCHOOL WATER FLUORIDATION ON DENTAL CARIES

S.B. Heifetz, U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Dental Research, Community Programs Section, *9000 Rockville Pike, Bethesda, Maryland* 20205 (Z01 DE 00029-12 CPR)

Fluorides were added to the water supply of a school in Seagrove, North Carolina. The concentration of fluoride used was higher than the level considered optimal for community water fluoridation in the geographic area. Children attending the Seagrove school live in an area without a central water supply and where the various sources of well water contain negligible levels of fluoride. Children are exposed to the higher fluoride level only while at school in an attempt to approximate the total fluoride intake of children who drink optimally fluoridated water on a full-time basis. Baseline dental examinations for dental caries were made prior to the installation of fluoridation equipment. Follow-up examinations are conducted after four, eight, and twelve years to determine the extent of caries protection as increasingly larger segments of the study population become continuously exposed to fluoridated water at school since entering the first grade. Results of the four-year examinations showed appreciable decreases in caries prevalence compared with baseline findings. On the eight-year examinations, an assessment of the prevalence of dental fluorosis was made along with the regular examinations for dental caries. No children showed any definite signs of the condition. NIDR Classification: 10550.

BIBLIOGRAPHIC REFERENCES: Heifetz, S.B., Horowitz, H.S., and Driscoll, W.S.: Effect of school fluoridation on dental caries: results in Seagrove, N.C. after eight years. J. Amer. Dent. Assoc. 97:193-196, 1978.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Dental Research $2,571

2.1042,
NATIONAL CARIES PREVALENCE SURVEY

T.W. McKenna, Westat Inc., *11600 Nebel St., Rockville, Maryland* 20852

Plan and conduct the gathering of data for a survey of the prevlence of dental caries among school aged children in the continental United States. Develop and utilize a probability sample according to NIDR specifications of children in grades Kindergarten through twelve (K-12). Conduct examinations for dental caries, gingivitis, and need foz dental treatment on children in randomly selected classrooms; record ther residence history; obtain and record the fluoride content of their drinking water; and provide these data to the NIDR. Examinations will be conducted during the 1979-1980 school year.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Dental Research $1,257,142

2.1043,
PERIODONTAL DISEASE IN INDIVIDUALS WITH JUVENILE DIABETES AND DOWN'S SYNDROME

L. Cianciola, State University of New York, Health Science Center at Buffalo, School of Dentistry, Dept. of Oral Biology, *3435 Main St., Buffalo, New York* 14214 (P50 DE 04898-020009)

Juvenile periodontal disease involving alveolar bone loss seem to be rapidly destructive by nature. When this form of periodontal disease affects a compromised host, as the juvenile diabetic or the Down's patient, it seems to be even more aggressive. Localized juvenile periodontitis may progess into generalized juvenile periodontitis at a very rapid rate. The periodontal status of the juvenile diabetic has not been fully described, and the incidence of periodontal disease in the juvenile diabetic and the Down's patient has not been fully determined. The purpose of the present investigation is to cross sectionally and longitudinally study both the juvenile diabetic and Down's patient for the incidence, age of onset, and rate of progression of periodontal disease. The periodontal status of these patients is determined both clinically by a plaque, gingival and calculus indices and radiographically. Study patients are compared to randomly selected matched control subjects in whom similar measurements are made. Correlation of neutrophil functional analysis and severity of periodontal disease will be carried out in the patients with juvenile diabetes. In addition, periodontitis and other dental infections will be monitored in juvenile diabetics in ketoacidosis.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Dental Research $7,950

2.1044,
SUPPORT FOR ORAL BIOLOGY RESEARCH CENTER

R.C. Page, University of Washington, School of Medicine, Dept. of Pathology, *A-300 Health Sciences Ctr., SC-64, Seattle, Washington* 98195 (P50 DE 02600-13)

This proposal seeks continued support for the development and continuation of an interdisciplinary Center for Research in Oral Biology. The central goal or purpose of the Center is to assist in the national effort to reduce the toll of oral disease and to promote the general level of oral health. The Center is achieving this goal by developing and supporting meritorious and relevant research projects, by creating an intellectual and physical environment conducive to optimal research productivity, by providing opportunities for significant interaction between investigators with diverse backgrounds, by producing both basic and applied knowledge related to the oral region, and by encouraging the incorporation of relevant research findings into dental education, dental practice, and the surrounding community. The types of projects supported have been the subject of intensive discussion within the Center and by the Scientific Review Committee, and within the committee appointed by the Vice President for Health Affairs to study the future pattern of the Center. The emphasis in the past has been on high quality basic research programs. This emphasis continues, but we are increasing our percent effort directed toward application of basic research findings to problems of patient diagnosis and care and to measures which will lead to improvement of the oral and dental status of the population.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Dental Research $1,480,276

2.1045,
CENTER FOR ORAL HEALTH RESEARCH

H.M. Myers, University of Pennsylvania, School of Dental Medicine, Dept. of Microbiology, *4001 Spruce St., Philadelphia, Pennsylvania* 19104 (P50 DE 02623-11)

The principal aims of the Center are to gather and prepare research personnel to investigate and to determine fundamental information on the development, the structure and the function of human oral tissues and associated structures as well as the microbial parasites which are present on or in the tissues in health and disease. The Center will place particular emphasis on research workers who are interested in collaborative efforts with scientists in the University Community. It is to be expected that new investigators, both established and those with promise, will be attracted by the work in progress. In this manner, it is hoped that the 'work force' in oral health research will be increased and thus eventually provide improvements in the maintenance of oral health and in the measures for prevention of oral disease. The work in progress is concerned with the metabolic activities of specific oral microbes involved in dental caries; differentiation of oral streptococci by analysis of the structural components of the cells, analysis of the protein antigens of herpes simplex virus; an epidemiologic study of oral manifestations of herpes simplex infections; studies of the ultrastructure of periodontal tissues; and studies on the immunologic responses of oral tissues.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Dental Research $0

2.1046,
REGIONAL DENTAL RESEARCH CENTER

P.F. Hirsch, University of North Carolina, Chapel Hill Campus, School of Dentistry, Dept. of Pharmacology, *Chapel Hill, North Carolina* 27514 (P50 DE 02668-13)

The program of research is targeted to establish new approaches to oral health research through the development of an interrelated and cohesive research program, involving highly qualified personnel, trained in various basic sciences. The inclusion of non-dental scientists recruited from other research fields emphasizes an interdisciplinary approach for collaboration within specified areas of research interests. These include neural mechanisms, mechanisms of mineralization, immunological mechanisms, growth mechanisms, biomaterials research and problems of hemostasis, as well as applied clinical research in oral-facial pain control, restorative materials, and habilitation of patients with craniofacial anomalies. The overall objective of the program is to bring together scientists with diverse backgrounds in collaborative research efforts to relative to growth, development and function of the craniofacial region. Developing new manpower to broaden and strengthen the scientific base to improve oral health is achieved by our non-dental investigators and through an active research training program. Further objectives are to utilize effectively the scientific strengths of the entire University and neighboring regional resources and to involve an appreciable number of the Institute staff as active members of academic departments in the University.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Dental Research $1,400,600

2.1047,
STUDY OF CRANIOFACIAL ANOMALIES

S. Pruzansky, University of Illinois, Medical Center at Chicago, Abraham Lincoln School of Medicine, Dept. of Pediatrics, *1853 W. Polk St., Box 6998, Chicago, Illinois* 60680 (P01 DE 02872-10)

The Center for Craniofacial Anomalies of the A. Lincoln School of Medicine of the University of Illinois Medical Center at Chicago is a multidisciplinary organization that provides comprehensive care for patients with congenital, developmental and acquired malformations. The Center contributes to special training programs in the health sciences and conducts clinical and laboratory research. The major research thrust is a continuing longitudinal growth

study to study the natural history of various malformations. The data base includes case histories, photos, study casts, cephalometric and tomographic radiographs, audiometric and speech records on nearly 5000 subjects. Current projects focus on the epidemiology and genetics of congenital palatopharyngeal incompetence and hemifacial microsomia. Early treatment of serous otitis in children with cleft palate is being investigated under controlled conditions. Results of craniofacial surgery for orbital hypertelorism, Apert and Crouzon syndromes, hemifacial microsomia, and mandibulofacial dysostosis are evaluated in terms of subsequent growth and functional studies involving eye motility, vision, speech and hearing. Screening programs are underway to determine the frequency and type of cardiac anomalies; frequency of ophthalmopathy in patients at risk for retinal detachment (Robin and Stickler syndromes). Clues derived from clinical investigation have led to electronmicroscopic studies in ectodermal dysplasia and abnormalities of mucopolysaccharide metabolism in cleft palate and Apert syndrome in an effort to elucidate pathogenetic mechanisms.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Dental Research $361,677

2.1048,
MORTALITY AND ENVIRONMENTAL FACTORS (BERGER COUNTY)

B.S. Pasternack, New York University, School of Medicine, Dept. of Environmental Medicine, *550 1st Ave., New York, New York* 10016 (P30 ES 00260-170070)

This project is part of a broader program (ES 00260).

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Environmental Health Sciences funds n.a.

2.1049,
EPIDEMIOLOGY OF HEAT STRESS (NEW YORK)

B.S. Pasternack, New York University, School of Medicine, Dept. of Environmental Medicine, *550 1st Ave., New York, New York* 10016 (P30 ES 00260-170061)

This project is part of a broader program (ES 00260).

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Environmental Health Sciences funds n.a.

2.1050,
CLINICAL STUDIES OF OCCUPATIONAL BRONCHIAL ASTHMA (HUMAN)

S.M. Brooks, University of Cincinnati, School of Medicine, Dept. of Environmental Health, *Eden & Bethesda Aves., Cincinnati, Ohio* 45221 (P30 ES 00159-140026)

This project is part of a broader program (ES 00159).

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Environmental Health Sciences funds n.a.

2.1051,
CLINICAL EPIDEMIOLOGY SECTION (CHILDREN, ADULTS)

M.R. Krigman, University of North Carolina, Chapel Hill Campus, School of Medicine, Dept. of Pathology, *Manning Dr., Chapel Hill, North Carolina* 27514 (P01 ES 01104-050008)

This project is part of a broader program (ES 01104).

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Environmental Health Sciences funds n.a.

2.1052,
ENVIRONMENTAL FACTORS IN MORTALITY IN EASTERN MASSACHUSETTS

R.R. Monson, Harvard University, Boston Campus, School of Public Health, Dept. of Physiology, *55 Shattuck St., Boston, Massachusetts* 02115 (P30 ES 00002-170030)

This project is part of a broader program (ES 00002).

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Environmental Health Sciences funds n.a.

2.1053,
METAL INTERACTIONS (RATS, HUMAN)

J.C. Smith, University of Rochester, School of Medicine & Dentistry, Dept. of Radiation Biology & Biophysics, *601 Elmwood Ave., Rochester, New York* 14627 (P30 ES 01247-050007)

This project is part of a broader program (ES 01247).

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Environmental Health Sciences funds n.a.

2.1054,
IN VIVO ESTIMATION OF NUCLIDES IN SKELETONS (HUMAN)

N. Cohen, New York University, School of Medicine, Dept. of Environmental Medicine, *550 1st Ave., New York, New York* 10016 (P30 ES 00260-170014)

This project is part of a broader program (ES 00260).

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Environmental Health Sciences funds n.a.

2.1055,
MORTALITY STUDY OF OCCUPATIONAL EXPOSURE TO HALO ETHERS (HUMAN)

R.E. Albert, New York University, School of Medicine, Dept. of Environmental Medicine, *550 1st Ave., New York, New York* 10016 (P30 ES 00260-170022)

This project is part of a broader program (ES 00260).

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Environmental Health Sciences funds n.a.

2.1056,
US DEATH RATES COMPUTER PROGRAM

R.R. Monson, Harvard University, Boston Campus, School of Public Health, Dept. of Physiology, *55 Shattuck St., Boston, Massachusetts* 02115 (P30 ES 00002-170026)

This project is part of a broader program (ES 00002).

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Environmental Health Sciences funds n.a.

2.1057,
EPIDEMIOLOGICAL COMPONENT OF THE CENTRAL TUMOR REGISTRY

P.T. Cole, Harvard University, Boston Campus, School of Public Health, Dept. of Physiology, *55 Shattuck St., Boston, Massachusetts* 02115 (P30 ES 00002-170022)

This project is part of a broader program (ES 00002).

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Environmental Health Sciences funds n.a.

2.1058,
ANALYZE PCB'S AND DDE IN HUMAN FLUIDS AND TISSUE

R.K. Lynn, Oregon State Higher Education System, University of Oregon Health Sciences Center, School of Medicine, Dept. of Pharmacology, *3181 S.W. Sam Jackson Park Rd., Portland, Oregon* 97201

No summary has been provided to the Smithsonian Science Information Exchange.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Environmental Health Sciences funds n.a.

2.1059,
MORTALITY AMONG INDIVIDUALS TREATED WITH ARSENICALS

R.E. Albert, New York University, School of Medicine, Dept. of Environmental Medicine, *550 1st Ave., New York, New York* 10016 (P30 ES 00260-170030)

This project is part of a broader program (ES 00260).

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Environmental Health Sciences funds n.a.

2.1060,
PROPORTIONAL MORTALITY PILOT STUDIES

D. Wegman, Harvard University, Boston Campus, School of Public Health, Dept. of Physiology, *55 Shattuck St., Boston, Massachusetts* 02115 (P30 ES 00002-170029)

This project is part of a broader program (ES 00002).

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Environmental Health Sciences funds n.a.

2.1061,
SIGNIFICANCE OF POLONIUM IN TOBACCO (HUMAN)

N. Harley, New York University, School of Medicine, Dept. of Environmental Medicine, *550 1st Ave., New York, New York* 10016 (P30 ES 00260-170074)

This project is part of a broader program (ES 00260).

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Environmental Health Sciences funds n.a.

2.1062,
AIR POLLUTION IN NEW YORK CITY

T.K. Kneip, New York University, School of Medicine, Dept. of Environmental Medicine, *550 1st Ave., New York, New York* 10016 (P30 ES 00260-170072)

This project is part of a broader program (ES 00260).

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Environmental Health Sciences funds n.a.

2.1063,
FOSSIL FUELS, PROCESS STREAMS AND UTILIZATION (RODENTS, RABBITS, HUMAN)

E. Bingham, University of Cincinnati, School of Medicine, Dept. of Environmental Health, *Eden & Bethesda Aves., Cincinnati, Ohio* 45221 (P30 ES 00159-140034)

This project is part of a broader program (ES 00159).

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Environmental Health Sciences funds n.a.

2.1064,
A CASE-CONTROL STUDY OF PROSTATE CANCER WITHIN A COHORT OF RUBBER AND TIRE WORKERS

D.F. Goldsmith, University of North Carolina, Chapel Hill Campus, School of Public Health, Dept. of Epidemiology, *Rosenau Hall, 201H, Chapel Hill, North Carolina* 27514 (1-T32-ES070 36-01)

OBJECTIVE: To identify the specific occupational groups associated with prostate cancer excesses, and to estimate a latency period for the tumor among the cohort of rubber and tire workers.

APPROACH: A matched case-control study was conducted to test the hypothesis that prostate cancer is associated with employment in the compounding area of a rubber and tire manufacturing plant. A search of death certificates from the years 1964-75 led to the identification of 88 cases of prostate cancer. These were individually matched with 258 controls on the factors of age, race, and date of entry into the plant. To eliminate possible confounding by sociodemographic differences, several variables were assessed but none differed.

PROGRESS: The Batch Preparation work area showed statistically significant (P less than .025) risk ratios over three exposure periods longer than 1 month, longer than 24 months, and longer than 60 months. The Service to Batch Preparation and Shipping and Receiving work areas showed significant risks for blacks.

The data were used to assess a latent period or etiologic fraction for prostate cancer for those employed in Batch Preparation. Twenty-nine years was estimated to be the latent period while the period of greatest risk occurred during the years 1940-47.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Environmental Health Sciences funds n.a.

2.1065,

AIRWAY SECRETIONS, PATIENTS AND POLLUTANTS AT RISK (ADULTS, CHILDREN)

J.A. Kylstra, Duke University, School of Medicine, Dept. of Medicine, *Box 3711, Durham, North Carolina* 27710 (P01 ES 01581-020001)

This project is part of a broader program (ES 01581).

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Environmental Health Sciences funds n.a.

2.1066,

INORGANICS IN BRONCHIAL AND ALVEOLAR LAVAGE AND IN INDUSTRIAL DUST (HUMAN)

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This project is part of a broader program (ES 01581).

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Environmental Health Sciences funds n.a.

2.1067,

STUDY OF EFFECT OF ASBESTOS FIBERS ON TISSUES

T.R. Hamilton, University of Minnesota, Duluth Campus, School of Medicine, Dept. of Pathology, *2400 Oakland Ave., Duluth, Minnesota* 55812

Collect biologic samples, both human and non-human, which assure broad biologic sampling of the population exposed to Duluth's drinking water. Materials to be collected will include urine, feces, blood, placent (placental blood), surgi- cal biopsy tissues, and autopsy tissues as feasible. Preserve and store samples in ways which ensure future usefulness and which ensure compatibility with preservation and storage methodology currently being employed by Dr. Selikoff and his colleagues. Collect and analyze appropriate radiographic materials of long-term Duluth residents. Secure requisitedescriptive information including good residential and occupational histories of all individuals included in the survey.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Environmental Health Sciences $20,061

2.1068,

DEVELOPMENT OF IN VITRO MODELS FOR ASSESSING REPRODUCTIVE TOXICITY

J.L. Hall, U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Environmental Health Sciences, Germ Cell Toxicity Group, *P.O. Box 12233, Research Triangle Park, North Carolina* 27709 (Z01 ES 70085-02 LET)

Heterologous (human sperm/hamster egg) in vitro fertilization was used to assess fertilizing capacity of human males. These studies identified certain individuals as subfertile who have routinely determined normal sperm number, motility and morphology. This approach demonstrated that the usual parameters for semen analyses are unsure predictors of male subfertility; only the most extreme semen abnormalities reliably indicate subfertility. Thus, the in vitro penetration of laboratory animal ova by human sperm appears to be an improved technique to assess human fertilization potential. The epidemiologic application of this noninvasive, fast and relatively inexpensive technique is being explored.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Environmental Health Sciences funds n.a.

2.1069,

DEMOGRAPHIC INVESTIGATIONS OF POTENTIAL HUMAN HEALTH HAZARDS

M.D. Hogan, U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Environmental Health Sciences, Biometry Branch, *P.O. Box 12233, Research Triangle Park, North Carolina* 27709 (Z01 ES 43001-07 BB)

The overall objective of this project is to identify and/or confirm the presence of various potential health hazards in the general environment through the mechanism of demographic investigations. Current research activities are concerned with the development of quantitative estimates of both the extent of potential occupational exposure to asbestos since the World War II era and of its impact on current and future overall cancer mortality in the United States.

BIBLIOGRAPHIC REFERENCES: Hogan, M.D., Chi, P-Y, Mitchell, T.J., and Hoel, D.G.: Association between chloroform levels in finished drinking water supplies and various site-specific cancer mortality rates. Journal of Environmental Pathology and Toxicology. 2: 873-887, 1979.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Environmental Health Sciences funds n.a.

2.1070,

STUDIES IN PEDIATRIC LEAD EXPOSURE

W.J. Rogan, U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Environmental Health Sciences, Biometry Branch, *P.O. Box 12233, Research Triangle Park, North Carolina* 27709 (Z01 ES 43003-1 BB)

Lead exposure and undue absorption occurs not only in inner city children exposed to paint but also in children around smelters and those whose parents work with lead. Although the encephalopathy and renal disease of acute lead intoxication are well described, other toxicities of lead as well as factors that alter susceptibility need further research. We have completed a pilot study on lead levels and blood pressure in children, and have begun investigation into genetic differences in susceptibility.

BIBLIOGRAPHIC REFERENCES: Rogan, W.J., Hogan, M.D., and Chi, P-Y.: Blood pressure and lead levels in children. Journal of Environmental Pathology and Toxicology: 2: 517-519, 1978.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Environmental Health Sciences funds n.a.

2.1071,

FETAL WASTAGE AND CHEMICAL EXPOSURE

S.M. Brown, U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Environmental Health Sciences, Biometry Branch, *P.O. Box 12233, Research Triangle Park, North Carolina* 27709 (Z01 ES 44003-02 BB)

The objective is to examine the variations in response of pregnant women who are exposed to any of a number of defined environmental mutagens and clastogens. At the current time a survey instrument is being prepared under contract for interviewing mothers and fathers of spontaneous abortuses and controls in order to assess exposure in occupation, household, personal habits, or other vehicles. The disease outcomes of interest are spontaneous abortion, anatomic, or cytogenetic abnormality of fetal tissues.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Environmental Health Sciences funds n.a.

2.1072,

NEUROTOXICOLOGICAL EFFECTS OF POLYBROMINATED BIPHENYLS IN RATS AND MICE

H.A. Tilson, U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Environmental Health Sciences, Behavioral Toxicology Group Section, *P.O. Box 12233, Research Triangle Park, North Carolina* 27709 (Z01 ES 70805-02 LBNT)

This is a completion report of work that was in progress at the time of the last reporting. Polybrominated biphenyls (PBB) have been recognized as an environmental hazard following the inadvertent mixture of PBB to animal feed. Rats and mice were tested after 30 days of dosing by gavage with Firemaster FF-1 (0.03-30 mg/kg), the major PBB component, or with corn oil vehicle, and 30 days after dosing ceased. Effects observed included decreases in body weights, open-field activity, forelimb grip strength, and muscular reflexes. Loss of visual placement and hypothermia were seen in some animals. FF-1 was generally more potent than HBB. Rats were more affected than mice. Rats did not recover as well (or worsened) relative to mice during post-dosing. The results suggest neurobehavioral deficits may be produced by PBB at levels lower than those which produce clinical signs of toxicity.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Environmental Health Sciences funds n.a.

2.1073,

SKIN CANCER AND TRACE ELEMENTS

L. Clark, U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Environmental Health Sciences, Biometry Branch, *P.O. Box 12233, Research Triangle Park, North Carolina* 27709 (Z01 ES 43004-1 BB)

The objective of this work is two-fold: first, to examine the hypothesis that there is a relationship between the etiology of skin cancer and the levels of certain trace elements in blood or hair. The elements of interest include selenium, arsenic, cadmium, zinc, copper, and lead. The issue relating to selenium is of the greatest interest. Second, the hypothesis that occupational exposure to herbicides, pesticides, or fungicides, including those containing arsenic as well as other groups of aromatic or aliphatic hydrocarbons, is a significant risk factor in the development of skin cancer, will be examined. A case-control study in which subjects from a specific dermatologic clinic practice in the eastern part of North Carolina is anticipated. Four groups of skin cancer patients of different types will be compared with a group of dermatologic controls (persons with skin disease other than, and unrelated to, skin cancer). The disease outcome of interest is skin cancer, and the risk factors of interest are selenium level, other trace element levels, and occupational exposure.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Environmental Health Sciences funds n.a.

2.1074,

REPRODUCTIVE EXPERIENCE OF DRYCLEANING WORKERS AND THEIR CONJUGAL/MARITAL PARTNERS

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The objective is to complete a feasibility study on the possibility of contacting a suitable number of female drycleaning workers who are members of a labor union in St. Louis, Missouri. This union has been under study for cancer mortality by the Environmental Epidemiology Branch at the National Cancer Institute. The effort of the feasibility study is to determine whether or not a sufficient sample of female workers is available and willing to cooperate in an interview survey of their reproductive experience. The major study of interest would focus on the current rate of spontaneous abortion and other reproductive outcomes including birth defects. A second issue under consideration is whether or not tissue samples of parents of fetuses should be studied for cytogenetic damage.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Environmental Health Sciences funds n.a.

2.1075,

GENETIC EFFECTS, REPRODUCTIVE OUTCOMES, AND BIRTH DEFECTS AND OCCUPATIONAL EXPOSURE TO PLUTONIUM

S.M. Brown, U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Environmental Health Sciences, Biometry Branch, *P.O. Box 12233, Research Triangle Park, North Carolina* 27709 (Z01 ES 43006-01 BB)

The principal objective is to examine the reproductive outcomes principally of spontaneous abortion but also congenital defects and perhaps childhood cancer among a cohort of females associated with five federal facilities in which there was significant occupational exposure to plutonium. The work will be performed in two stages. In the first stage, a cohort study of female workers at the five facilities is entertained. The protocol of that study is currently being planned. The second stage would study the same outcomes in the wives or conjugal partners of exposed male workers at these same facilities. An attempt will be made to ascertain the existence of a dose-response relationship, at least for the most common outcome (spontaneous abortion).

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Environmental Health Sciences funds n.a.

2.1076,

EPIDEMIOLOGY AND BIOSTATISTICS

C.S. Clark, University of Cincinnati, School of Medicine, Dept. of Environmental Health, *Eden & Bethesda Aves., Cincinnati, Ohio* 45221 (P30 ES 00159-140039)

This project is part of a broader program (ES 00159).

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Environmental Health Sciences funds n.a.

2.1077,

RADIATION FROM NUCLEAR FUEL CYCLE (HUMAN)

N. Harley, New York University, School of Medicine, Dept. of Environmental Medicine, *550 1st Ave., New York, New York* 10016 (P30 ES 00260-170093)

This project is part of a broader program (ES 00260).

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Environmental Health Sciences funds n.a.

2.1078,

OCCUPATIONAL LUNG DISEASE (HUMAN)

J.M. Peters, Harvard University, Boston Campus, School of Public Health, Dept. of Physiology, *55 Shattuck St., Boston, Massachusetts* 02115 (P30 ES 00002-170034)

This project is part of a broader program (ES 00002).

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Environmental Health Sciences funds n.a.

2.1079,

EPIDEMIOLOGY OF MINIMUM BREAST CANCER (HUMAN)

B.S. Pasternack, New York University, School of Medicine, Dept. of Environmental Medicine, *550 1st Ave., New York, New York* 10016 (P30 ES 00260-170096)

This project is part of a broader program (ES 00260).

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Environmental Health Sciences funds n.a.

2.1080,

HAIR DYE USE AND BREAST CANCER (HUMAN)

R.E. Albert, New York University, School of Medicine, Dept. of Environmental Medicine, *550 1st Ave., New York, New York* 10016 (P30 ES 00260-170095)

This project is part of a broader program (ES 00260).

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Environmental Health Sciences funds n.a.

2.1081,

HEART DISEASE AND ENVIRONMENTAL TOXINS (HUMAN)

L.J. Fine, Harvard University, Boston Campus, School of Public Health, Dept. of Physiology, *55 Shattuck St., Boston, Massachusetts* 02115 (P30 ES 00002-170035)

This project is part of a broader program (ES 00002).

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Environmental Health Sciences funds n.a.

2.1082,

BEHAVIORAL TOXICOLOGY AND NEUROTOXINS (HUMAN)

L.J. Fine, Harvard University, Boston Campus, School of Public Health, Dept. of Physiology, *55 Shattuck St., Boston, Massachusetts* 02115 (P30 ES 00002-170036)

This project is part of a broader program (ES 00002).

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Environmental Health Sciences funds n.a.

2.1083,

STATISTICAL METHODS IN EPIDEMIOLOGY

B.C. Gladen, U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Environmental Health Sciences, Biometry Branch, *P.O. Box 12233, Research Triangle Park, North Carolina* 27709 (Z01 ES 40004-02 BB)

The purpose of this project is to conduct research on statistical methodology problems related to the Branch's activities in the field of epidemiology. The objectives are both to broaden understanding of the uses and limitations of currently employed study designs and corresponding analyses; and to develop new techniques for statistical analyses of epidemiological studies.

BIBLIOGRAPHIC REFERENCES: Gladen, B. and Rogan, W.J.: Misclassification and the design of environmental studies. American Journal of Epidemiolgy. 109(5): 607-616, 1979. Rogan, W.J. and Brown, S.M.: Some fundamental aspects of epidemiology: a guide for laboratory scientists. Federation Proceedings. 38: 1875-1879, 1979.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Environmental Health Sciences funds n.a.

2.1084,

OCCUPATIONAL AND ENVIRONMENTAL HEALTH

J.L. Whittenberger, Harvard University, Cambridge Campus, School of Public Health, Dept. of Physiology, *Cambridge, Massachusetts* 02138 (P30 ES 00002-17)

This research and research training program emphasizes a variety of laboratory studies and epidemiologic approaches to the study of the effects of environmental and occupational factors on the health of man. Specific examples include the following: morphology and cytochemistry of lysosome formation in alveolar macrophages; effect of breathing pattern and lung volume on the distribution of inhaled radioactive particles; effect of inhibition or alteration of biotransformation; development and exploitation of differentiated mammalian cell culture systems to detect and examine the mechanisms of action, and develop means for prevention or reversal of certain environmental chemical toxic agents; development of new chemical and immunologic assay methods for certain classes of environmental chemicals; development and use of affinity probes to identify the sites and molecular mechanisms of action of specific toxic agents; experimental lung cancer; malignant transformation in vitro; cancer morbidity among rubber workers; mortality among Boston firefighters 1915-1975.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Environmental Health Sciences $838,980

2.1085,

RESEARCH IN THE ENVIRONMENTAL HEALTH SCIENCES

N. Nelson, New York University, School of Medicine, Dept. of Environmental Medicine, *550 1st Ave., New York, New York* 10016 (P30 ES 00260-17)

This grant provides core support for a broad program in the Environmental Health Sciences. The research under way and proposed is broadly relevant to adverse health effects from Environmental factors. The general objectives of the research are to define the nature and extent of such effects with the aim of instituting appropriate preventive or control procedures where required. Interests range from acute to chronic health effects including, in the latter, cancer and the degenerative diseases.

The research encompasses laboratory studies on the biochemical mode of action of environmental toxicants, exploratory studies aimed at improving the reliability and efficiency of predictive toxicological tests, improvement of diagnostic procedures for diseases possibly related to environmental factors, epidemiological investigations and field studies on the distribution of pollutants.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Environmental Health Sciences $1,878,594

2.1086,

SURVEILLANCE OF POTENTIAL ENVIRONMENTAL HEALTH HAZARDS

T. Damstra, U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Environmental Health Sciences, *P.O. Box 12233, Research Triangle Park, North Carolina* 27709 (Z01 ES 20004-05 OHHA)

The objectives of this long-term project are: (1) to compile an index of associations between organ system diseases and symptoms in human and exposure to environmental and occupational chemicals; and (2) to assess the practicality and validity of using neurological and behavioral tests as early indicators of toxicity and as surveillance 'tools'.

BIBLIOGRAPHIC REFERENCES: Damstra, Terri. Neurochemistry and Toxicology: Overview. Environ. Hlth. Perspec. 26: 121-124, 1978. Damstra, Terri: Environmental chemicals and nervous system dysfunction. Yale J. Biol. Med. 51: 457-468, 1978.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Environmental Health Sciences funds n.a.

2.1087,

TOXICOLOGY OF ENVIRONMENTAL CHEMICALS

V.H. Freed, Oregon State Higher Education System, Oregon State University, School of Agriculture, Dept. of Agricultural Chemistry, *35th & Jefferson Sts., Corvallis, Oregon* 97331 (P01 ES 00040-15)

The research of this program grant involves long-term interdisciplinary studies of the toxicological effects of environmental chemicals. Fourteen investigators representing different disciplines direct projects on biochemical mechanisms of toxicity, oncogenesis, and effect on oncogenic viruses, pharmacodynamics, modeling, statistical methods for toxicology, biochemical effects, and physico-chemical relationships of routes and rates of exposure. Examples of the type of work conducted include investigation of effects of halogenated phenols on membranes, oncogenicity of halogenated hydrocarbons and interactions with other carcinogenic agents, covalent binding of toxicants and immunological effects of environmental chemicals. Other studies are directed toward elucidating the photochemistry of environmental toxicants, physico-chemical properties in relation to biological effects and behavior, and mathematical and statistical modeling of the dynamics and toxicological behavior of compounds. Among the compounds under investigation include halogenated phenols containing one to three aromatic rings heavy metals, ethyl nitrosourea, halogenated hydrocarbons, carcinogenic alkaloids, and several industrial and agricultural chemicals of environmental significance.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Environmental Health Sciences $641,536

2.1088,

MECHANISMS OF PESTICIDE TOXICITY

E. Hodgson, University of North Carolina, North Carolina State University, School of Agriculture & Life Sciences, Dept. of Entomology, *Raleigh, North Carolina* 27607 (P01 ES 00044-15)

This project has a two-fold component concerning studies directed to biochemical and environmental toxicological research. The biochemical aspects are primarily involved with proteins, specially involved with molecular interactions. Dauterman's project is devoted to a study of pathways of metabolism effected by transferases and includes partial purification of these enzymes. Hodgson's project is an attempt to characterize the several components of P-450 mediated activities, including ligand interaction. Main's effort concerns purification of cholinesterase and kinetic properties of purified enzymes. Moreland's project concerns the effect of herbicides on the sequence of phosphorylative activities in mammals. Guthrie's project is directed to comparative penetration of dermal and oral applications of pesticides and their distribution by blood proteins.

The environmental aspects are divided between studies of the possible genetic effects of a number of xenobiotics and the possible effects on health of agricultural workers who enter fields previously treated with OP insecticides.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Environmental Health Sciences $342,829

2.1089,

ENVIRONMENTAL HEALTH SCIENCES CENTER GRANT

R.R. Suskind, University of Cincinnati, School of Medicine, Dept. of Environmental Health, *Eden & Bethesda Aves., Cincinnati, Ohio* 45221 (P30 ES 00159-14)

Environmental Health Sciences Center Grant at the University of Cincinnati provides core support for interdisciplinary, in-depth research on environmental health problems of public health significance. The objective is to enhance understanding of environmental hazards affecting human health and components of man's ecosystem so that detrimental affects may be prevented and controlled. The scope of the research effort for which Center resources are used covers a wide range of interests: from molecular aspects of biological effects. To the study of populations at risk, as well as identification and quantitation of hazard factors in the environment.

The problem areas for which multilevel approaches are used include: 1) The role of essential trace metals in health and disease as influenced by environmental factors. 2) Health problems of non-essential toxic metals. 3) The behavioral parameters of environmental hazards. 4) The health aspects of energy sources, particularly fossil fuels. 5) The toxicology of plastics and their combustion products. 6) The carcinogenic, mutagenic, and teratogenic aspects of environmental hazards. 7) The toxicologic and health aspects of drinking water contaminants and wastewater factors. 8) Pulmonary metabolism and toxicology of environmental agents. 9) The clinical and epidemiologic study of occupational and community hazards. 10) The identification, measurement and control of environmental contaminants in air, water, wastes, industry, agriculture, consumer products, etc.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Environmental Health Sciences $1,052,135

2.1090,

TOXICITY OF ORGANIC MERCURY FOR THE FETUS AND NEWBORN

M.D. Maines, University of Illinois, Medical Center at Chicago, School of Basic Medical Sciences, Dept. of Pharmacology, *1853 W. Polk St., Chicago, Illinois* 60680 (R01 ES 00820-07)

Numerous infants born to women consuming foods contaminated with organic mercury during pregnancy have exhibited severe neurologic sequelae after birth. Because of similarity to the human with respect to reproductive parameters, fetal maturation and placental transport, monkeys (Macaca mulatta and M. arctoides) will be used for the following studies. 1) Localization of methylmercury and sites of damage in the macaque brain are being compared in the fetal and adult monkey. 2) The teratogenic potential of methylmercury in the embryonic macaque will be evaluated. 3) Potential therapeutic measures will be examined where a differentiating organism is involved. 4) Women of child-bearing age also exposed to phenylmercury and mercury vapor. Thus, measurements of placental transfer and fetal toxicity following maternal administration of these substances are to be carried out.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Environmental Health Sciences $60,925

2.1091,

ENVIRONMENTAL HEALTH SCIENCES CENTER GRANT

I.J. Selikoff, City University of New York, Mount Sinai School of Medicine, School of Medicine, Dept. of Community Medicine, *5th Ave. at E. 100th St., New York, New York* 10029 (P30 ES 00928-06S1)

The research program will be focused in seven program areas: effects of low-level, long-term exposure to environmental agents, multiple-factor interactions, environmental cancer, asbestos-associated disease, biological properties of inorganic microparticles, halogenated aromatic hydrocarbon and related chemicals and evaluation of disease potential new suspect environmental agents. In this we are primarily concerned with human health effects and utilize population studies as an essential methodolgical approach, with interdigitation of epidemiological, clinical, biological and physical sciences. Because of the recognized need to evaluate the magnitude of the problems studied environmental evaluation is regularly added to provide quantitative information concerning dose-disease response relationships, to facilitate evaluation of proposals for regulations and control, and prevention of disease. Cooperative studies with occupational groups and identified populations in the general community subject to specific exposures, provide an effective approach to such research aims and serve further to build the application of information into the process of seeking the data. Too, such investigations serve to identify groups of people which have been exposed to these agents, i.e., high risk groups. Preventive surveillance becomes feasible, in addition to modification of adverse exposure.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Environmental Health Sciences $223,128

2.1092,

STUDIES IN ENVIRONMENTAL PHARMACOLOGY

A. Kappas, Rockefeller University, Lab. of Metabolism Pharmacology, *66th & York Ave., New York, New York* 10021 (R01 ES 01055-06)

The present proposal is a renewal application for USPHS grant ES-0-1005 which was awarded during 1974-1979. This application extends the work on toxicology in ES-0-1055 by examining in detail using various tissue culture systems, animal models, and man the interacting effects of environmental chemicals, drugs, hormones, nutrition and genes on the biology and function of the heme-cytochrome P-450 systems. We will extend our earlier work on developing micro-assays for enzymes and components of the heme pathway since heme, serving as the prosthetic group of cytochrome P-450, plays a key role in the detoxification (and sometimes activation) of endogenous and exogenous chemicals. Tissue model systems are used extensively to study the biological impacts of environmental chemicals and newly developed techniques which include isolated nervous system cultures, alveolar macrophage cultures, erythroid differentiation (Friend-virus infected cells) and mitogen-stimulated lymphocytes show considerable promise in helping to elucidate the actions of organic pollutants and toxic metals, on cellular differentiation and metabolism. Study of the toxicity of organometals for heme-P-450 systems are newly planned and already reveal major deleterious effects of these substances on heme mediated functions. Biological protective mechanisms against certain toxic metals are examined and studies of the role of nutritional factors in modifying (enhancing/increasing) the biological impacts of chemicals in man are proposed. Humans receive the bulk of their exposure to exogenous chemicals through their diet - and since the proteins, carbohydrates and fats themselves contain chemicals which affect the heme-P-450 systems nutritional/toxicological interactions of clinical importance can be anticipated. Finally, extensive studies of the metabolism of steroid hormones and of the heme-P-450 systems in various worker populations exposed to specific environmental chemicals at work sites are planned in order to determine the nature and extent of derangements of these systems which our preliminary studies (lead, PCB workers) have already shown may characterize such high-risk populations.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Environmental Health Sciences $242,572

2.1093,

NEUROBIOLOGY OF ENVIRONMENTAL POLLUTANTS

M.R. Krigman, University of North Carolina, Chapel Hill Campus, School of Medicine, Dept. of Pathology, *Manning Dr., Chapel Hill, North Carolina* 27514 (P01 ES 01104-05)

The main objective of this Program is to elucidate the effects of environmental pollutants on the development and function of the central nervous system. Basically the Program represents a multidisciplinary approach for studying the sometimes subtle morphological, biochemical and functional (physiological/behavioral) effects of various toxic agents which are of growing concern to our society by bringing to bear variety of existing biomedical techniques. Once such adverse effects have been characterized in well-defined animal models in controlled experimental situations, they can then be specifically searched out in the more complex human clinical population. In addition, the development of new approaches and techniques for discerning adverse effects is a major objective of the Program. By meeting these objectives, a better understanding of animal models, the development of 'evocative' or 'provocative' diagnostic tests, and screening of potential therapeutic agents are expected to be gained and thereby provide a more rational basis for recognizing and dealing with pollutant-induced syndromes.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Environmental Health Sciences $637,042

2.1094,

EFFECTS OF SO2 AND RESPIRABLE PARTICULATES ON HEALTH

B.G. Ferris, Harvard University, Boston Campus, School of Public Health, Dept. of Physiology, *55 Shattuck St., Boston, Massachusetts* 02115 (R01 ES 01108-06)

The objective of this study is to evaluate the effects of low levels of SO2 and respirable particulates on the health of human beings and to identify whether there is a degree of interaction between these pollutants at these levels. Sulfates and sulfites and nitrates and nitrites as well as ozone and nitrogen dioxide will also be monitored. Six communities have been selected that have different levels of SO2 and respirable particulates, two high, two intermediate and two low. Random samples of the adult population (25-74) have been selected and studied by means of a standard respiratory questionnaire and simple tests of pulmonary function. Occupational and residential histories have been obtained as well as smoking habits. A cohort of children from each community has been selected and studied annually. Both of these population groups are being followed prospectively. Historical data on the levels of air pollution helped us to select the communities. We have continued monitoring in each area by means of Central stations where continuous monitors are used and we have established 10 or more satellite stations in each community where we measure 24-hour samples for SO2, NO2 and mass respirable particulates (MRP) both indoors and outdoors. We have done some preliminary studies with personal samplers for MRP. We need to do more of this type of sampling in order to have better estimate of the individual's actual exposure as he moves about during the day. We expect from all this air monitoring to have a better estimate of the exposure of the population rather than use only the data from a Central site. Neutron activation has been used to try to identify the source of the particulates and to determine whether the composition indoors is similar to that out-of-doors or not.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Environmental Health Sciences $1,309,677

2.1095,

HUMAN RADIOACTIVITY DOSE STUDY

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The aim of our studies is to evaluate the health effects on local or global populations from the nuclear power industry. The nuclides which are under most vigorous attack are the long lived alpha-emitting isotopes of plutonium, americium and curium. Also, the gaseous beta-emitting fission product Kr-85 is entirely released during fuel reprocessing and is globally dispersed. For all nuclides, the most important dose estimates are to cells in bronchial epithelium and cells on bone surfaces.

The long lived alpha emitters will almost certainly be dispersed during fuel reprocessing. However, their effort is local not global and at worst a single community could be affected. The most important pathway for exposure to the actinides is through inhalation following resuspension of contaminated soil particles. Additional exposure is through absorption after material is cleared from the lung and swallowed. However, absorption from the G.I. tract is small (approximately 5 x 10 to the minus 4th power) and the primary dose is to the lung. The cell doses will be estimated for a reference contamination level of soil for each nuclide.

Fortunately, we have a history of exposure to the naturally occurring actinide Th-232 so that we are in a position to predict the behavior of plutonium, americium and curium after inhalation and ingestion. These cell dose estimates from waste dispersal may then be compared in a meaningful way to those which occur naturally from Th-232.

A comparison of these cell dose values with the dose delivered to individuals near to conventional coal- or oil-fired plants is also performed. The data on release of natural activities from these plants are scanty. However, we will attempt to measure at least one contributor to dose Rn-222, to provide some basic data for dose estimation.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Environmental Health Sciences $39,112

2.1096,

TRACE CONTAMINANTS:

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This grant provides core support for a program on trace contaminants with special emphasis on heavy metals. Several interrelated research programs in environmental toxicology have grown to the point at which consolidation into a center offers clear scientific and administrative advantages. The center will provide core facilities in terms of analytical and histopathological laboratories and services in data processing, pharmacokinetics modeling and biomathematics. It will provide resources to develop embryonic research ideas to the point at which independent support may be obtained. The core faculty will provide long-term continuity of professional expertise and experience in the general field of environmental health science, will provide a national resource to respond to urgent needs in its field, and will provide training for new professionals in the field.

The research in the center will be restricted to those trace contaminants most likely to affect human health. In the immediate future, the center will concentrate on the toxic heavy metals (Cd, Hg and Pb), in continuation of well-established projects at Rochester. Since multiple exposures (e.g., dietary methylmercury and selenium from pelagic fish) also occur, the interaction of heavy metals with other substances will be studied as well.

The center will pursue a coordinated program of studies on exposed human populations, on volunteers, and laboratory animals. This program has drawn support in the past, and will continue to draw support from virtually all the classical disciplines available in the medical center.

BIBLIOGRAPHIC REFERENCES: Al-Abbasi, A.E., Kostyniak, P.J. and Clarkson, T.W. An extra-corporeal regional complexing hemodialysis system for the treatment of methylmercury poisoning. III. Clinical applications. J Pharmacol Exp Ther 207: 249-254, 1978. Amin-Zaki, L., Majeed, M.A., Elhassani, S., Clarkson, T.W., Greenwood, M. and Doherty, R.A. Prenatal methylmercury poisoning. Clinical observations over five years. Am J Dis Child 133: 172-177, 1979.

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2.1097,

HEAVY METALS AS ENVIRONMENTAL HAZARDS TO MAN

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Quantitative estimates of the human health hazards posed by toxic metals in the environment play the key role in setting realistic exposure standards and in devising efficient preventive measures. Three recognized heavy metals provide the focus for this program project: mercury (both as methylmercury and as metallic mercury vapor), cadmium and lead. Since toxicity is typically both defined and determined by multiple factors, the research plan is also multidimensional. It encompasses investigations of the physical and chemical properties of metals and metal compounds that determine how they enter the body; of how they are handled (distributed, metabolized) by the body and its organ systems; of their capacity to impair the processes of reproduction and development; of their action on behavior and the nervous system; of their potential for tissue pathology; of their impact on the health of selected human populations.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Environmental Health Sciences $775,450

2.1098,

AUDITORY EFFECTS OF LONG EXPOSURE TO LOW LEVELS OF NOISE

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The major objective is the specification of the qualitative and quantitative facts of noise-induced hearing loss, particularly asymptotic threshold shifts in human observers. A second objective is to specify the audiometric correlates of asymptotic threshold shifts, particularly temporal integration, psychophysical tuning curves, and physiological response assumed to arise from the brain stem and auditory cortex. Groups of human subjects are exposed to noise for durations as long as 48 hours. Measurements are made before, and after the noise exposure as well as during quiet periods interspersed within an exposure. The exposures are selected in order to evaluate the Equivalent Power Model and/or to noise produce a given temporary hearing loss which can be evaluated with current psychophysical and physiological tests of hearing. Results are expected to have a significant impact on the topic of noise-induced hearing loss and in establishing criteria for the development of the acoustic environment. In addition, many of the methods developed here have immediate application to the diagnosis and treatment of hearing loss and deafness, particularly in infants and young children.

BIBLIOGRAPHIC REFERENCES: Mills, J. H., Adkins, W. Y., and Gilbert, R. M. (1978). High Frequency Hearing Losses Caused by low Frequency Noise, Otolaryngology. 86, 821-823. Mills, J. H. (1978). Effects of Noise on Young and Old People, in Noise and Audiology, D. Lipscomb, Ed. (University Park Press: Baltimore 229-241.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Environmental Health Sciences $96,242

2.1099,

EFFECT OF ATMOSPHERIC POLLUTANTS ON PULMONARY DEFENSES

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The proposed research will deal with the role of metallothionein in cadmium metablism as well as toxicity. A radioimmunoassay procedure will be developed to measure metallothionein. Using this procedure, plasma and urine samples from animals experimentally exposed to cadmium and from occupationally exposed humans will be assayed for metallothionein and its level will be correlated with renal tubular dysfunction. The human samples will be made available through collaboration with other investigators.

Genetic predisposition for sensitivity to cadmium-induced testicular damage and hypertension has been suggested. This will be evaluated with respect to metallothionein levels in tissues. Inbred strains of mice will be used to study the relationship of metallothionein and testicular damage. Tissues from rats made hypertensive in response to chronic cadmium feeding will be obtained through a collaborative arrangement with another laboratory.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Environmental Health Sciences $49,279

2.1100,

EPIDEMIOLOGIC STUDY OF CORD IN COHORTS

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This is a proposal to complete retesting of lung function in two of four demographically matched cohorts and to complete analysis of results in all four cohorts. The 15,164 cohort members live in four areas of Los Angeles which have been historically and concurrently exposed to 1) moderate levels of photochemical oxidants, 2) high levels of secondary pollutants including photochemical oxidants, 3) SO2/particulates, and 4) minimal levels of pollutants. Pollutant levels are continuously measured by monitoring stations of the Southern California Air Quality Management District located within or adjacent to the study areas. Lung function tests administered at the mobile laboratory include spirometry, single breath nitrogen washout curve and plethysmography. Tests are readministered to a 4% sample at the UCLA Pulmonary Function Laboratory to determine reliability and identify fixed errors which may arise at the mobile laboratory.

Baseline testing in all four areas and retesting in two areas will have been completed by 1980. Results of baseline testing were worse in the three areas exposed to pollutants. The two cohorts still to be retested were those with the poorest lung function results at baseline and which have been exposed to pollutant mixes distinctly different from the first two areas retested.

The major objectives are to determine 1) if long-term exposure to photochemical oxidants and other pollutants is associated with the initiation and/or promotion of respiratory impairment and/or chronic respiratory disease, 2) which of the lung function tests administered (questionnaire, spirometry-air and He/O2, single breath nitrogen washout curve and body plethysmography) are specific and/or sensitive early indicators of impaired lung function and which are most suitable for use in field surveys.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Environmental Health Sciences $194,770

2.1101,

INHALED AEROSOLS - BEHAVIOR, EFFECTS, AND CLEARANCE

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Studies are underway to determine the degree to which hygroscopic growth of particles as they are inhaled affects their deposition in the respiratory system. This is being studied several ways -- through the use of models, animals and human subjects. This approach is expected to provide data which are realistic in the sense of applicability to human studies. The model and animals studies will provide regional scale detail of particle deposition.

We are also measuring the extent of neutralization of inhaled acid sulfate aerosols by respiratory NH3 prior to deposition. The production of NH3 in the mouth is being related to specific bacterial organisms. The final part of this objective is to identify populations which, because of low levels of NH3 in the upper airways, may be at increased risk if exposed to acid sulfates.

The third objective is the study of the functional responses of allergic adolescents to acid aerosols present in community air. The response to these aerosols is being studied both at rest and during exercise.

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2.1102,

RESPIRATORY ANAPHYLAXIS TO INDUSTRIAL CHEMICALS

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An animal model of respiratory hypersensitivity to industrial chemicals has been developed using guinea pigs. Repeated exposure of animals to antigen aerosols, containing hapten-protein conjugates, results in pulmonary sensitization and antibody production to the haptenic portion of the antigens. Using this procedure, sensitivity to both aliphatic and aromatic chemicals has been achieved.

Proposed research will be directed toward inducing pulmonary sensitization in guinea pigs by repeated exposure to vapors of industrial chemicals, i.e., the haptens alone. Sensitization will be assessed by: increased respiratory rate, bronchial constriction, specific antibody formation. If successful, chemicals known to have allergenic abilities in man will be used for animal sensitization. In this way the allergenic potencies of various industrial chemicals can be evaluated in the guinea pig and compared to their reported potencies in man. Such comparisons will enable assessment of the value of the guinea pig as an animal model for pulmonary sensitization of man.

Research will also focus on use of hapten-protein conjugates to detect hapten-specific IgE antibodies in sensitized industrial workers. To date, antigens formed by reaction of p-tolyl isocyanate with human serum albumin have been very effective in detecting antibodies to TDI. Evaluation of sera from additional

workers will indicate the potential applicability of such serologic tests for pre-employment screening of industrial workers.

BIBLIOGRAPHIC REFERENCES: Karol, M.H., Ioset, H.H. and Alarie, Y.C. 1978. Tolyl-specific IgE antibodies in workers with hypersensitivity to toluene diisocyanate. Am. Ind. Hyg. Assoc. J. 39: 454-458. Karol, M.J., Ioset, H.H., Riley, E.J. and Alarie, Y.C. 1978. Hapten-specific respiratory hypersensitivity in guinea pigs. Am. Ind. Hyg. Assoc. J. 39: 546-556.

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2.1103,

BEHAVIORAL EFFECTS OF LEAD EXPOSURE IN CHILDREN

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This is a prospective study of the effects of lead exposure on the physical and mental health of children. It is composed of both human and animal studies. The study of children is to be conducted in the natural environmental setting where elevated lead exposure is common. We hope to establish whether and under what environmental circumstances lead causes adverse health effects. Prospective mothers will be recruited into the study during the first or second trimester of pregnancy. Their offspring will be followed for five years. Since many factors are known to influence the behavioral and intellectual development of a child, a multivariate design will be used rather than design which employs a control versus experimental group comparison. Data to be collected on each child include; prenatal and delivery records; physical growth, behavioral and intellectual profiles beginning at 3 days of age and repeated at 9 month intervals; blood lead, FEP, and iron status at 3 month intervals; evaluation of the home environment with respect to quality of child care and sources of lead exposure. The animal studies will use rats exposed perinatally to low levels of lead. Tissue and blood will be monitored for lead and trace metal content. Other measures will include neurotransmitter metabolism, electrophysiological assessment and behavioral evaluation. The animal studies will explore critical periods, persistence and reversibility of toxicity and the utility of hematopoietic indices for identifying individuals at risk for subsequent behavioral impairment. Both human and animal studies will examine the role of age, duration and levels of lead exposure as determinants of effect as well as exploring leads interaction with numerous environmental variables as a determinant of toxicity. The ultimate purpose of all research on neurobehavioral effects of lead is to establish the minimal level of exposure at which effects may occur, as reflected in biological indices e.g. blood lead. A prospective study of the type proposed is necessary to answer crucial questions pertaining to the maximal safe level of exposure at any time in the child's life. Only with such a study can regulatory agencies institute proper control of exposure.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Environmental Health Sciences $529,567

2.1104,

SILICATE, PULMONARY SECRETIONS AND LUNG DISEASE

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Characterization and quantitation of foreign substances, secretions and cells which accumulate in airways and interstitium of persons exposed to foreign inhalants and who develop impaired pulmonary function is in progress. Identification of the environmental source of these inhaled inflammagens is being investigated. The toxic effect of these accumulated materials, which are largely silicious, on isolated alveolar macrophages, cultured Type II cells and pulmonary fibroblasts are in progress.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Environmental Health Sciences $249,737

2.1105,

LONGITUDINAL STUDY OF AIR POLLUTION ON MORTALITY

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This study examines whether reductions in air pollution are associated with reductions in the prevailing mortality rates. The areas considered are census tracts that have 'high' residential stability; this restriction reduces the effect of migration into and out of the area. Analysis of data from Buffalo will be completed by the end of the first year of the project. Next year, data from Detroit, Seattle, and the major cities of Ohio will be analyzed. Results to date from Buffalo support the hypothesis of an association between reduced air pollution levels and a reduction in the prevailing mortality rate; however, these results are not statistically significant. Consideration of the larger data sets will clarify this point. In addition to time trend analyses, the study is examining whether there are any unusual geographical clusterings of mortality rate changes and performing other exploratory analyses. The deaths are analyzed by cause of death to specify the nature of the putative air pollution and mortality association. Primary attention, of course, is given to lung and chronic heart disease.

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2.1106,

CARCINOGENIC IMPACT OF RADON IN WATER SUPPLIES

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The goal of this project is to evaluate the feasibility of an eventual epidemiological test of the linear, non-threshold model of radiation carcinogenesis using health effects data from communities with populations exposed to varying levels of Radon-222 in the water supplies. To accomplish this goal, two subprojects must be carried out concurrently: 1. The establishment of a data base consisting of radon levels in selected community water supplies; 2. The development of an algorithm which produces a reasonable estimate of the community population dose increment as a function of practical variables such as radon content of the water supply, meteorological data, and local demographic and architectural factors.

Data for the first sub-project is being collected by a large-scale systematic sampling program which makes use of mail-out sampling kits and a simplified analysis technique developed in this Department. It is projected that by the end of the project, the water supplies of communities containing up to 15 million inhabitants can be characterized.

Laboratory and field experiments are being conducted to determine radon levels, radon progeny equilibrium status, unattached fraction, and other dose modifying factors in the indoor enivronment. Other experiments seek to document the relationship of indoor radon levels to water consumption and radon content of the water.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Environmental Health Sciences $19,082

2.1107,

CHILDHOOD LEAD, PYRIMIDINES AND METABOLIC DEBRIS

C.R. Angle, University of Nebraska, Medical Center, School of Medicine, Dept. of Pediatrics, *42nd & Dewey Aves., Omaha, Nebraska* 68105 (R01 ES 01857-02)

Our current studies in children and in the rat confirm observations on lead workers that the red cell of both man and the rat contains a monophosphoesterase specific for pyrimidines, pyrimidine 5' nucleotidase (E.C. 3.1.3.4, P5N) that dephosphorylates cytidine monophosphate (CMP) and uridine monophosphate (UMP). P5N is inhibited at low levels of blood lead with a negative linear correlation of blood lead and P5N. Pyrimidine phosphates (CMP, CDP, CTP, UMP, UDP and UTP) are present at very low levels in the red cell but accumulate with depression of P5N. Studies of the red cell nucleotide profile of lead exposed children and adults are underway. A primary deficiency of P5N as well as a high blood lead results in a basophilic stippling of the red cells, representing incompletely degraded RNA. We are investigating the hypothesis that an increased blood lead results in basophilic stippling by the feedback inhibition of ribonuclease and phosphodiesterase by the accumulation of pyrimidine nucleotides as well as by direct enzymatic inhibition by lead.

BIBLIOGRAPHIC REFERENCES: Angle, C.R. and McIntire, M.S.: Low Level Lead and Inhibition of Erythrocyte Pyrimidine Nucleotidase. Environmental Research 17 (2): 296-302, 1978.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Environmental Health Sciences $46,333

2.1108,

ABESTOS AND CANCER

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Our previous studies have failed to demonstrate a relation between numbers of pulmonary asbestos bodies and the presence of carcinoma of the lung or gastrointestinal tract in workers with very low asbestos exposure. Asbestos bodies, however, represent only a part, and perhaps only a small part, of the total lung asbestos burden, which is composed of coated bodies as well as uncoated fibers. It is possible that a relation exists between numbers of uncoated asbestos fibers and the presence of bronchogenic carcinoma. This study will attempt to quantify and type the uncoated asbestos fibers as well as asbestos bodies at various sites in the lung. A new preparative method has already been developed and used for examining and identifying the nature of the cores of asbestos bodies by electron diffraction. The same method will be used to identify further these same bodies by electron microprobe analysis. An additional preparative method has been devised for recovering uncoated asbestos fibers. Relations between numbers of coated and uncoated asbestos fibers, as well as their relative locations within the lung, will be tabulated, and an attempt will be made to correlate numbers of types of fibers with the presence or absence of carcinomas. We have previously shown that numbers of asbestos bodies are related to occupation; an attempt will be made to establish whether a similar situation exists for uncoated fibers or whether they are derived from the environment.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Environmental Health Sciences $53,017

2.1109,

DRINKING WATER QUALITY AND COLON CANCER

C.M. Shy, University of North Carolina, Chapel Hill Campus, School of Public Health, Dept. of Epidemiology, *Rosenau Hall, 201H, Chapel Hill, North Carolina* 27514 (R01 ES 02232-01)

The proposed study will investigate the relationship of drinking water quality to cancer of the colon in North Carolina using the case-control approach. A matched series of living colon cancer cases and hospital controls will be compared with regard to differences in quality of their drinking water and other environmental factors. A substudy will determine whether past diet is a confounding factor. Sample size and methodology have been chosen so as to detect small differences in risk, and water quality indices have been constructed for periods 20 and 30 years in the past to account for the issue of latency. These indices, which are based on source, treatment and prior use characteristics, provide a basis for establishing a gradient of carcinogenic exposure. With this information, estimates of risk for each exposure level will be obtained and comparisons between these will be made. Using this rigorous approach, it will be possible to provide meaningful data on the importance of water-borne carcinogens in the etiology of a leading cancer site.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Environmental Health Sciences $41,643

2.1110,

SEQUELAE TO CHILDHOOD LEAD EXPOSURE - A TWIN STUDY

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The purposes of this research are to determine if there are long-term consequences of increased lead absorption in children and to evaluate the current criteria for treatment of lead overexposed children. Existing studies of neuropsychologic sequelae to low-level lead overexposures have yielded inconsistent results. The present research will utilize a twin methodology to control for exposures to environmental risk factors other than lead and to control for genetic and cultural factors which might otherwise lead to confounding in outcome measures such as intelligence quotients. Members of twin pairs with a historyof increased lead absorption will be compared with less-exposed twin siblings on a number of neuropsychological measures and school performance. The population of twins will be obtained from the records of the New York City Bureau of Lead Poisoning Control. Premorbid conditions will be determined from birth records, hospital/doctors records, and from parental interviews.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Environmental Health Sciences $40,929

2.1111,

EPIDEMIOLOGICAL RISK MODELING AND ESTIMATION

H.D. Tolley, Battelle Memorial Inst., Pacific Northwest Laboratories, *P.O. Box 999, Richland, Washington* 99352 (R23 ES 02493-01)

The research project proposes to implement and investigate stochastic compartment model methodology as a tool in modeling and estimating epidemiological risk due to environmental stresses. Although not all modeling of risk factors can be accomplished using a compartment model formulation, most epidemiological models of assessing risk currently in use can be quite simply put into this framework. In this setting, both an empirical and a theoretical investigation will be made of the current methods of risk estimation including bias, robustness and statistical power of the tests. Which kinds of hypotheses can and cannot be examined using the various methods will particularly be studied.

The model proposed is easily generalized to represent more complex survival-death processes. This generalization lends itself to the estimation of risk when more specific mechanisms regarding possible environmental hypotheses are proposed. Once such example is the estimation of latency in cancer studies. A second example is in extending the definition of risk to multiple cause mortality data incorporating intermediate as well as underlying causes of death in assessing disease linkage (correlations and causal sequencing). Thus, the second aim is to develop a methodology which will expand the family of risk estimable models from epidemiological data. As in all compartment formulations, however, problems of parameter identifiability are present. Which parameters of these more complex models can be practically identified and the robustness of these estimates under model fluctuations is also to be examined.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Environmental Health Sciences $26,779

2.1112,

ENDOMETRIAL CANCER AND CONJUGATED ESTROGENS IN OLMSTED COUNTY, MINNESOTA

J.F. Annegers, Mayo Foundation, Dept. of Medical Statistics & Epidemiology, *200 1st St. S.W., Rochester, Minnesota* 55901 (P01 GM 14231-140054)

This project is part of a broader program (GM 14231).

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of General Medical Sciences funds n.a.

2.1113,

OVARIAN CARCINOMA IN ROCHESTER, MINNESOTA, 1935 - 1974

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SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of General Medical Sciences funds n.a.

2.1114,

UPDATE ON BRONCHOGENIC CARCINOMA IN OLMSTED COUNTY, MINNESOTA, 1935-1974

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2.1115,

INCIDENCE OF PANCREATIC CANCER IN OLMSTED COUNTY, MINNESOTA, 1935-1971

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2.1116,

HEPATOCELLULAR ADENOMA AND ORAL CONTRACEPTIVES

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2.1117,

EPIDEMIOLOGY OF BREAST CANCER IN OLMSTED COUNTY, MINNESOTA, 1935-1974

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This project is part of a broader program (GM 14231).

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2.1118,

GYNECOLOGIC CANCER IN PRENATALLY EXPOSED DES MOTHERS IN OLMSTED COUNTY, MINNESOTA

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2.1119,

GUILLAIN-BARRE SYNDROME IN OLMSTED COUNTY, MINNESOTA

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2.1120,

BIRTH COHORT FAMILY FILE FOR ROCHESTER, MINNESOTA

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2.1121,

EPILEPSY IN OLMSTED COUNTY, MINNESOTA, 1967 - 1977

J.F. Annegers, Mayo Foundation, Dept. of Medical Statistics & Epidemiology, *200 1st St. S.W., Rochester, Minnesota* 55901 (P01 GM 14231-140058)

This project is part of a broader program (GM 14231).

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of General Medical Sciences funds n.a.

2.1122,

THYROID CANCER IN ROCHESTER, MINNESOTA, 1935 - 1974

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2.1123,

RESERPINE AND BREAST CANCER

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2.1124,

RHEUMATOID ARTHRITIS - A CASE-CONTROL STUDY (HUMAN)

A. Lions, Mayo Foundation, *200 1st St. S.W., Rochester, Minnesota* 55901 (P01 GM 14231-140070)

This project is part of a broader program (GM 14231).

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of General Medical Sciences funds n.a.

2.1125,

CARPAL TUNNEL SYNDROME IN ROCHESTER, MN

S. Sun, Mayo Foundation, *200 1st St. S.W., Rochester, Minnesota* 55901 (P01 GM 14231-140110)

This project is part of a broader program (GM 14231).

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of General Medical Sciences funds n.a.

2.1126,

MALIGNANT LYMPHOMA - AN INCIDENCE STUDY (HUMAN)

A. Lions, Mayo Foundation, *200 1st St. S.W., Rochester, Minnesota* 55901 (P01 GM 14231-140073)

This project is part of a broader program (GM 14231).

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of General Medical Sciences funds n.a.

2.1127,

ORAL, PHARYNGEAL, LARYNGEAL AND NASAL MALIGNANCY IN OLMSTED COUNTY, 1935-74

J.E. Bouquot, Mayo Foundation, *200 1st St. S.W., Rochester, Minnesota* 55901 (P01 GM 14231-140109)

This project is part of a broader program (GM 14231).

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of General Medical Sciences funds n.a.

2.1128,

MULTIPLE MYELOMA - AN INCIDENCE STUDY (HUMAN)

A. Lions, Mayo Foundation, *200 1st St. S.W., Rochester, Minnesota* 55901 (P01 GM 14231-140072)

This project is part of a broader program (GM 14231).

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of General Medical Sciences funds n.a.

2.1129,

LEUKEMIA AND OCCUPATION - CASE-CONTROL STUDY (HUMAN)

A. Lions, Mayo Foundation, *200 1st St. S.W., Rochester, Minnesota* 55901 (P01 GM 14231-140066)

This project is part of a broader program (GM 14231).

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of General Medical Sciences funds n.a.

2.1130,

RHEUMATOID ARTHRITIS INCIDENCE

A. Lions, Mayo Foundation, *200 1st St. S.W., Rochester, Minnesota* 55901 (P01 GM 14231-140067)

This project is part of a broader program (GM 14231).

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of General Medical Sciences funds n.a.

2.1131,

LEUKEMIA IN OLMSTEAD COUNTY, 1965-1974

A. Lions, Mayo Foundation, *200 1st St. S.W., Rochester, Minnesota* 55901 (P01 GM 14231-140065)

This project is part of a broader program (GM 14231).

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of General Medical Sciences funds n.a.

2.1132,

CHOLECYSTITIS AND CHOLELITHIASIS IN ROCHESTER, MN, 1950-1970

E.S. Maram, Mayo Foundation, *200 1st St. S.W., Rochester, Minnesota* 55901 (P01 GM 14231-140111)

This project is part of a broader program (GM 14231).

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of General Medical Sciences funds n.a.

2.1133,

COLORECTAL POLYPS IN RELATIONSHIP TO COLORECTAL CANCER IN ROCHESTER

L.J. Melton, Mayo Foundation, *200 1st St. S.W., Rochester, Minnesota* 55901 (P01 GM 14231-140062)

This project is part of a broader program (GM 14231).

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of General Medical Sciences funds n.a.

2.1134,

EPIDEMIOLOGY CORE

B. McPeek, Harvard University, Boston Campus, School of Medicine, Dept. of Anesthesia, *25 Shattuck St., Boston, Massachusetts* 02115 (P50 GM 15904-129002)

This project is part of a broader program (GM 15904).

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of General Medical Sciences funds n.a.

2.1135,

RELATION BETWEEN SMOKING AND AGE OF MENOPAUSE

H. Jick, Boston University, School of Medicine, Dept. of Medicine, *80 E. Concord St., Boston, Massachusetts* 02215 (R01 GM 23430-030013)

This project is part of a broader program (GM 23430).

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of General Medical Sciences funds n.a.

2.1136,

MONOGENIC HYPERLIPIDEMIAS IN THE NORMAL POPULATION

A.G. Motulsky, University of Washington, School of Medicine, Dept. of Medicine, *A-300 Health Sciences Ctr., SC-64, Seattle, Washington* 98195 (P50 GM 15253-130004)

This project is part of a broader program (GM 15253).

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of General Medical Sciences funds n.a.

2.1137,

DIABETES MELLITUS

P.J. Palumbo, Mayo Foundation, Dept. of Medical Statistics & Epidemiology, *200 1st St. S.W., Rochester, Minnesota* 55901 (P01 GM 14231-140022)

This project is part of a broader program (GM 14231).

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of General Medical Sciences funds n.a.

2.1138,

UROLITHIASIS

C. Johnson, Mayo Foundation, Dept. of Medical Statistics & Epidemiology, *200 1st St. S.W., Rochester, Minnesota* 55901 (P01 GM 14231-140047)

This project is part of a broader program (GM 14231).

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of General Medical Sciences funds n.a.

2.1139,

ENVIRONMENTAL TERATOGENS, INFANT GROWTH (HUMAN)

D.W. Smith, University of Washington, School of Medicine, Dept. of Pediatrics, *A-300 Health Sciences Ctr., SC-64, Seattle, Washington* 98195 (P50 GM 15253-130063)

This project is part of a broader program (GM 15253).

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of General Medical Sciences funds n.a.

2.1140,

THE ROCHESTER, MINNESOTA EPIDEMIOLOGY PROGRAM PROJECT

L.T. Kurland, University of Minnesota, Mayo Graduate School of Medicine, School of Medicine, Dept. of Epidemiology & Med Statistics, *200 1st St. S.W., Rochester, Minnesota* 55901 (P01 GM 14231-13)

The central data bank of the Rochester Program Project (RPP) consists of a file of medical diagnoses and surgical procedures covering the population of Rochester and Olmsted Counties, MN, for a period of more than 40 years. These data have been assembled from records at Mayo Clinic and other medical care centers and are considered a national resource for epidemiological studies. The medical records upon which this resource depends cover essentially all local physician-patient contacts and include records for home, outpatient and hospital visits, and autopsy data. This resource is maintained at the Mayo Clinic, but is available to visiting scientists, students from other universities, and health agencies.

More than 115 epidemiological studies using this data bank have been completed. These include studies of incidence and outcome as well as case-control comparisons and prospective studies. Underway at the present time are several descriptive epidemiologic studies on diabetes, stroke, ischemic heart disease, head trauma, rheumatoid arthritis, fractures of the extremities, pituitary adenomas and various malignant neoplasms; case-control studies have been developed on leukemia, ovarian cancer and breast cancer; prospective-type studies are underway on the long-term effects of Flagyl and DES; and cost-effectiveness studies have been developed on the CAT (brain) scan and the total body scanner, and manpower needs are being measured for the surgical subspecialties.

The BCFF is to be discontinued unless support is forthcoming from another source. In that event, the program will be extended to study many other topics, such as mental retardation, childhood schizophrenia, and other psychiatric and behavioral problems.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of General Medical Sciences $494,369

2.1141,

SUPPORT FOR STUDY OF INHERITED DISEASES

A.G. Motulsky, University of Washington, School of Medicine, Dept. of Medicine/Genetics, *A-300 Health Sciences Ctr., SC-64, Seattle, Washington* 98195 (P50 GM 15253-13)

This application relates to an interdisciplinary center in medical genetics and inherited diseases. The principal objective is to obtain more fundamental understanding of gene action in man at the level of molecules, cells, individuals and population, and to elucidate the role of genes in the causation of human disease. The Center aims to apply new knowledge to disease prevention and management. Areas to be investigated include: a) biochemical human genetics (proteins and enzymes of formed elements of blood and serum, hemoglobins, pharmacogenetics, developmental genetics); b) genetics of common disorders (coronary atherosclerosis, hypertension); c) genetics of tumor origin; d) somatic cell genetics (X-inactivation, hybridization, complementation, cell cycle mutants); e) cytogenetics (including gametic and early embryonal cytogenetics); f) clinical genetics; and g) statistical genetics.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of General Medical Sciences $1,173,242

2.1142,

ANESTHESIOLOGY CENTER FOR RESEARCH AND TEACHING

R.J. Kitz, Harvard University, Boston Campus, School of Medicine, Dept. of Anesthesia, *25 Shattuck St., Boston, Massachusetts* 02115 (P50 GM 15904-12)

The object is to strengthen and continue the development of the Harvard Anesthesia Center established by grant from the National Institute of General Medical Sciences. This research is based in the facilities of Harvard University and its associated teaching hospitals. Our primary aim is to conduct research oriented either directly or ultimately toward improved scientific patient care in anesthesia and toward making such care available to all patients. We conduct a multidisciplinary collaborative research program involving scholars from 16 disciplines and 10 departments in the several faculties of Harvard University. This effort emphasizes studies of relevance to anesthesia and the basic sciences which are its foundation and attempts to make the fullest use of interdisciplinary co peration and advanced technology.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of General Medical Sciences $906,867

2.1143,

GENETIC ANALYSIS OF MULTIFACTORIAL TRAITS

R.C. Elston, University of North Carolina, Chapel Hill Campus, School of Public Health, Dept. of Biostatistics, *Rosenau Hall, 201H, Chapel Hill, North Carolina* 27514 (R01 GM 16697-11)

Human variability in selected large pedigrees will be studied and analyzed with a view to determining how much of it is due to genetic influences, and where possible the mode of genetic action determined. New statistical techniques will be devised for this purpose, allowing for both qualitative and quantiative multifactorial traits, multiple-generation data. Appropriate computer programs will be written, and applied both to data that have already been collected and to data that will be collected with the special purpose of identifying major genes for such traits. The possible existence of such major genes will be demonstrated by segregation analysis and by searching for linkage relationships between such genes and marker genes in blood. This will lead to a more complete understanding of the determinants involved in such diseases as hyperlipidemia, hypertension and cancer.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of General Medical Sciences $17,730

2.1144,

A RESEARCH PROGRAM IN GENETIC EPIDEMIOLOGY

N.E. Morton, University of Hawaii System, Manoa Campus, Population Genetics Lab., *Bachman Hall, Honolulu, Hawaii* 96822 (R01 GM 17173-11)

The five aims of this project are to extend segregation analysis for quantitative traits and attributes underlying such diseases as diabetes, gout, and atherosclerosis, to derive recurrence risks for computer-assisted genetic counseling, to test causal hypotheses relating to unfavorable pregnancy outcomes, to detect new linkages and integrate physical, genetic, and chiasma data into a chromosme map, and to extend path analysis with respect to assortative mating, qualitative data, and various measures of association relevant to common diseases.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of General Medical Sciences $146,723

2.1145,

PROGRAM PROJECT IN CLINICAL GENETICS

J.M. Opitz, University of Wisconsin, Madison Campus, Medical School, Dept. of Medical Genetics, *307 N. Charles St., Madison, Wisconsin* 53706 (P01 HD 12994-06)

Work in the Wisconsin Clinical Genetics Center (WCGC) includes: 1) Delineation of new birth defect syndromes, their cause, natural history, prognosis and treatment; 2) study of 'known' birth defects to better delineate their phenotypic spectrum, pathogenesis and cause, and the means to detect carriers, and to detect affected individuals prenatally; 3) cytogenetic studies of new and known aneuploidy syndromes; 4) studies of genetic pleiotropy in man; 5) investigations of the nature of gene expression in tissues, organs and cells of individuals (expressivity), in individuals vis-a-vis their genotype (penetrance), and in generations vs. their genotypes (phenotrance), in skeletal dysplasias (achondroplasia, hypochondroplasia), malformation syndromes (Wiedemann-Beckwith syndrome, prune belly syndrome, etc.), and cancers (retinoblastoma, Wilms' tumor, carotid body tumors, multiple glomus tumors and multiple cutaneous leiomyomata; 6) studies of methods of numerical taxonomy in clinical studies and genetic nosology; 7) studies of prenatal diagnosis, the incidence of Down's syndrome and neural tube defects in Wisconsin; 8) studies of the prevalence of developmental disabilities in Burnett Co. and Dane Co. Wis.; 9) health and genealogical surveys of all of the Old Order Amish in Wis., Illinois, Iowa, Missouri and Minnesota; 10) total dissections of fetuses and infants with known (genetic) syndromes and experimental studies of pathogenesis of congenital malformations in aneuploid mice; 11) causal, nosological and empiric recurrence risk studies in severe MR - especially that associated with primary CNS malformations; 12) mutational and genetic analysis of the experimentally (EMS) induced phenomenon of unstable premutation in Drosophila; '3) interdisciplinary studies of phenotype, pathogenesis, cause, nosology and recurrence risk in skeletal dysplasias and human intersexuality; 14) studies of the effects on offspring of parental consanguinity in Wis. rural Catholics; 15) studies on the pathology, anatomy and genetic defects of aborted fetuses and stillborn infants; 16) studies of mucopolysaccharide metabolism and of lysosomal hydrolases in human mucopolysaccharidoses, mucolipidoses, and lipidoses; 17) biochemical, EM, and histochemical studies of many pigment mutations in mouse, mink, and man.

BIBLIOGRAPHIC REFERENCES: Marcallo, F.A., Werneck, L.C., Pilotto, R.F., Opitz, J.M. Hemihypotrophy in a girl with a transiocation t(13q;7p). Europ. J. Pediat. 124:167-171, 1977. Neuhauser, G., ZuRhein, G.M., Kaveggia, E.G., Opitz, J.M. Fatal CNS dysgenesis with severe microencephaly, mental retardation, seizures and paucity of myelin; autosomal recessive trait. Europ. J. Pediat. 124:185-198, 1977.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of General Medical Sciences $351,515

2.1146,

GONOSOMAL ANEUPLOIDY IN CITY HOSPTIAL POPULATIONS

P.V. Tishler, Harvard University, Boston Campus, Peter Bent Brigham Hospital, *721 Huntington Ave., Boston, Massachusetts* 02115 (R01 GM 26373-03)

Screening methods for the rapid determination of Y chromosomal ploidy (peripheral blood leukocyte fluorescence analysis) are being applied to male participants in the national Health and Nutrition Examination Survey (HANES). Analyses are thus far completed on 4642 males in this population, with the finding of five individuals who may have a 47, XYY chromosome constitution. Further studies by different cytologic methods are being applied to these five suspect slides in order to ascertain those with a high degree of probability for the YY karyotype. The physical and psychosocial characteristics of individuals with the YY karyotype will be studied, by means of the other data accumulated on these subjects by the HANES. The present study will thus both determine the prevalence of YY aneuploidy in a general, ambulatory population of adult males and point out any medical or other concomitants that may be causally related to this karyotype.

A further 2000 individuals will be screened for Y chromosomal ploidy in the coming year.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of General Medical Sciences $28,416

2.1147,

ACUTE AND LONG-TERM CLINICAL TOXICITY OF DRUGS

H. Jick, Boston University, School of Medicine, Dept. of Medicine, *80 E. Concord St., Boston, Massachusetts* 02215 (R01 GM 23430-03)

The proposed research will utilize clinical data to quantitate the acute and long-term toxicity of all drugs commonly used in medicine. The procedures for data collection have been used and found to be effective for ten years. Monitors stationed on hospital wards collect information in a standardized fashion on patient characteristics, drug exposures, the development of clinical complications and final diagnoses. These data are computerized and retrievable in different formats. For patients with medical illnesses, data on 50,000 hospitalized patients are already on hand and available for analysis. Additional data on patients with surgical illnesses are being collected utilizing a system of data collection similar to that used for medical patients. The data allow for the quantitation of the relationships of outpatient drug use to diseases such as cancer, coronary heart disease, renal failure and bone marrow depression. In addition, rates of acute toxicity together with details of type, severity and populations at greatest risk for all commonly used drugs can be estimated. The ultimate goal is to provide practicing physicians with reasonably precise quantitative data on the toxicity of all commonly used drugs so that they may practice therapeutics on a more rational basis.

BIBLIOGRAPHIC REFERENCES: Jick H, Vessey M.P. Case-control studies in the evaluation of drug-induced illness. Am. J. Epidemiol. 107:1-7, 1978. Jick H, Dinan B, Rothman, K.J.: Oral contraceptives and nonfatal myocardial infarction. J.A.M.A. 239-1403-1406, 1978.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of General Medical Sciences $336,256

2.1148,

STATISTICAL METHODS FOR CASE-CONTROL STUDIES

R.L. Prentice, Fred Hutchinson Cancer Research Center, *1124 Columbia St., Seattle, Washington* 98104 (R01 GM 24472-03)

The aim of this continuing project is the development and evaluation of improved statistical methods for the analysis of case-control data. The case-control study is a primary tool for epidemiological research into the relationship between 'exposure' variables or other risk factors and disease incidence. The methods under development promise more precise and comprehensive evaluation of the effect of such exposure variables and may lead to liberalization of case-control study design.

The main focus of this project is the adaptation of prospective disease incidence models to case-control sampling. Models considered include the proportional hazards regression model, in which exposure and other factors are presumed to affect the (instantaneous) disease incidence rate in multiplicative manner, and the associated logistic regression model in which such factors affect the odds-ratio multiplicatively.

We have developed a conditional likelihood procedure for adapting the proportional hazards model to 'time-stratified' case-control data. Numerical aspects and estimation properties based on this likelihood will be studied under this proposal. A central aim of the proposal is the adaptation of the same model in a form that utilizes the whole time-exposure history of individual study subjects and need not require time-stratified sampling. In addition we expect to complete, under this proposal, ongoing work showing the duality of representation and estimation from prospective and retrospective logistic models. Some non-iterative methods for logistic estimation will also be further studied.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of General Medical Sciences $32,295

2.1149,

INTENSIVE DRUG SURVEILLANCE IN HOSPITALIZED CHILDREN

A.A. Mitchell, Childrens Hospital Medical Center, Dept. of Medicine, *300 Longwood Ave., Boston, Massachusetts* 02115 (R01 GM 24781-03)

The Pediatric Drug Surveillance ('PeDS') Program is an epidemiologic study of the clinical effects of drugs in hospitalized children. The objectives of this research project are to study the acute and long-term clinical effects of drugs in the pediatric population; in particular, we intend to identify previously unsuspected acute effects of drugs and previously unsuspected relationships between specific diseases and drugs used on an out-patient basis. In addition, the project seeks to evaluate patient factors that may influence the outcome of drug therapy. Given the relative lack of information about drug effects in the newborn, this project intends to study the effects of

drugs in the newborn with particular emphasis. This project also seeks to address certain methodologic issues related to intensive drug surveillance; for example, we intend to evaluate both the feasibility and utility of conducting drug surveillance in community hospitals. Finally, to increase the efficiency of in-hospital intensive drug surveillance, the project will develop methods that utilize existing hospital computer files to obtain information currently obtained through other means.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of General Medical Sciences $214,107

2.1150,

PATH ANALYSIS OF FAMILY RESEMBLANCE

D.C. Rao, University of Hawaii System, Manoa Campus, Population Genetics Lab., *Bachman Hall, Honolulu, Hawaii* 96822 (R01 GM 24941-02)

The proposed research develops appropriate methods for path analysis of quantitative traits in nuclear families, incorporating specific maternal effects with extensions to cover pedigree structures. This would enable tests for maternal effects, assortative mating and basic hypotheses on genetic and environmental effects. These methods will be applied to lipoprotein concentrations, IgE levels and periodontal disease and blood pressure. We also propose to develop a separate theory of path analysis for prevalence data on semi-continuous traits with applications to schizophrenia, cleft lip and palate; this will be developed through conditional probabilities and polychoric functions.

BIBLIOGRAPHIC REFERENCES: Gerrard, J., Rao, D.C., Morton, N.E.: genetic study of immunoglobulin E. Am. J. Hum. Genet. 30:46-58, 1978. Rao, D.C., Morton, N.E., Gulbrandsen, C.L., Rhoads, G.C., Kagan, A., Yee, S.: Cultural and biological determinants of lipoprotein concentrations. Ann. Hum. Genet. 42:467-477, 1979.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of General Medical Sciences $46,793

2.1151,

ANTECEDENTS AND CONSEQUENCES OF CHILD BURN INJURIES

M.S. Knudson, University of Texas, Medical Branch at Galveston, School of Medicine, Dept. of Psychiatry & Behavioral Sciences, *300 University Blvd., Galveston, Texas* 77550 (R01 GM 25016-02)

The purpose of this study is to analyze pre-existing data on psychosocial background characteristics of a population of 330 severely burned children and to assess the feasibility for a longitudinal, prospective study of the adjustment of severly burned children and their families. Specifically, this study will develop a profile of the burned child and his/her family in terms of age, sex, socioeconomic status, family stability, family stress and the child's pre-burn characteristics. These background variables will in turn be related to the child's role in the burn accident and the severity of the burn injury. A pilot follow-up of 50 of the subjects will be carried out in order to assess the feasibility of a long-term follow-up study. In addition to the analysis of existing data, this project will develop a research design and data collection package for a 3-year prospective study, which will include specific hypotheses relating background characteristics and the severity of the burn to long-term adjustment and a control population of unburned children.

BIBLIOGRAPHIC REFERENCES: Knudson, Mary S. Ph.D. Where burn care also eases inner hurt. Patient Care, Vol. 13, #7, March, 1979. Ewin, D., M.S. Knudson, et al Behavioral approaches to patient care: Experienced opinions in behavioral medicine. Patient Care, Vol. 13, #8, April, 1979.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of General Medical Sciences $27,900

2.1152,

EPIDEMIC PROCESSES, ESTIMATION AND SEQUENTIAL ANALYSIS

L. Billard, State University System of Florida, Florida State University, School of Arts & Sciences, Dept. of Statistics, *205 Wildwood Dr., Tallahassee, Florida* 32306 (R01 GM 26651-01)

This proposal addresses itself to three distinct areas of research: (1) modelling as it pertains to epidemic processes; (2) estimation within the content of analysing epidemic data, as well as estimation of Markov chains in general; and (3) sequential analysis with emphasis on the development of optimum tests for two-sided alternative hypotheses. While the immediate concern in (1) is with epidemic models, the mathematics to be developed will also be widely applicable to many other stochastic processes. The work on estimation procedures will be concerned largely with maximum likelihood, empirical Bayes and time series methods. The applicability of this work will venture well beyond the area of epidemics which originally motivated the research. Finally, the sequential tests to be developed will attempt to combine the essential features of Wald's sequential probability ratio tests and diffusion processes.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of General Medical Sciences $14,989

2.1153,

COMPUTER RESOURCE FOR GENETIC EPIDEMIOLOGY

T.A. Pryor, Utah Higher Education System, University of Utah, School of Medicine, Dept. of Medical Biophysics & Computing, *1400 E. 2nd S., Salt Lake City, Utah* 84112 (R01 GM 27192-01)

No summary has been provided to the Smithsonian Science Information Exchange.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of General Medical Sciences $341,754

2.1154,

OCULOCUTANEOUS PIGMENT DEFECTS

C.J. Witkop, University of Minnesota, Minneapolis Campus, School of Dentistry, Dept. of Human & Oral Genetics, *6 Morrill Hall, Minneapolis, Minnesota* 55455 (R01 GM 24558-08)

Ocular and oculocutaneous pigment defects in man and animal homologues are investigated for their clinical, ophthalmologic, biochemical, ultrastructural, genetic, epidemiologic and pleiotropic features to determine the biochemical or morphologic basis of these defects with the final objective of seeking therapeutic or other means of ameliorating, treating or preventing these disorders. Among the pleiotropic effects common to the oculocutaneous disorders to be studied are the abnormal routings of the optic and possibly optic neuronal tracts that are associated with a lack of pigment in fundus and inner ear respectively. Mechanisms which may be defective in some forms of albinism will be investigated by testing the cells for B adrenergic and hormone receptor sites, the influence of calcium flux on tyrosinase and melanin, and the protein and lipid content of melanosomes in pigmented and various mutant strains of mice. Studies to identify the abnormal inclusions in YM and HPS cells are presented. Linkage studies for YM, HPS, and various African albino types will be done to determine genetic homology. The pathogenesis of skin cancer and the corresponding development of chromosomal abnormalities will be studied in Africa. Heterozygote detection tests will be developed.

BIBLIOGRAPHIC REFERENCES: Witkop, C.J., Jr., White, J.G., King, R.A., Young, W.G., and Sauk, J.J., Jr.: Hereditary mucoepithelial dysplasia. A disease apparently of desmosome and gap-junction formation. Am. J. Hum. Genet. 31: 414-427, 1979. Cervenka, J., Witkop, C.J., Jr., Okoro, A.N., and King, R.A.: Chromosome breaks and sister chromatid exchanges in albinos in Nigeria. Clin. Genet. 15:17-21, 1979.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of General Medical Sciences $103,464

2.1155,

CONTRIBUTIONS TO NEUROLOGY FROM RECORD LINKAGE (HUMAN)

D. Brian, Mayo Foundation, *200 1st St. S.W., Rochester, Minnesota* 55901 (P01 GM 14231-140078)

This project is part of a broader program (GM 14231).

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of General Medical Sciences funds n.a.

2.1156,

ISCHEMIC HEART DISEASE IN ROCHESTER

D.C. Connolly, Mayo Foundation, *200 1st St. S.W., Rochester, Minnesota* 55901 (P01 GM 14231-140088)

This project is part of a broader program (GM 14231).

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of General Medical Sciences funds n.a.

2.1157,

LIVER CIRRHOSIS IN ROCHESTER, MINNESOTA

A. Lions, Mayo Foundation, *200 1st St. S.W., Rochester, Minnesota* 55901 (P01 GM 14231-140075)

This project is part of a broader program (GM 14231).

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of General Medical Sciences funds n.a.

2.1158,

REPORTED INCIDENCE OF PRIMARY BRAIN TUMORS (HUMAN)

B. Schoenberg, Mayo Foundation, *200 1st St. S.W., Rochester, Minnesota* 55901 (P01 GM 14231-140089)

This project is part of a broader program (GM 14231).

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of General Medical Sciences funds n.a.

2.1159,

PRIMARY AMYLOIDOSIS - AN INCIDENCE STUDY (HUMAN)

A. Lions, Mayo Foundation, *200 1st St. S.W., Rochester, Minnesota* 55901 (P01 GM 14231-140074)

This project is part of a broader program (GM 14231).

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of General Medical Sciences funds n.a.

2.1160,

INCIDENCE AND SPECTRUM OF HPT IN ROCHESTER, MN, 1965-1976

H. Heath, Mayo Foundation, *200 1st St. S.W., Rochester, Minnesota* 55901 (P01 GM 14231-140105)

This project is part of a broader program (GM 14231).

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of General Medical Sciences funds n.a.

2.1161,

RETINAL DETACHMENT IN ROCHESTER, MN, 1935-74

S. Wilkes, Mayo Foundation, *200 1st St. S.W., Rochester, Minnesota* 55901 (P01 GM 14231-140100)

This project is part of a broader program (GM 14231).

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of General Medical Sciences funds n.a.

2.1162,

INCIDENCE, PREVALENCE AND OUTCOME OF SARCOIDOSIS IN OLMSTED COUNTY, 1946-75

G. Henke, Mayo Foundation, *200 1st St. S.W., Rochester, Minnesota* 55901 (P01 GM 14231-140098)

This project is part of a broader program (GM 14231).

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of General Medical Sciences funds n.a.

2.1163,

EPIDEMIOLOGY OF ANKYLOSING SPONDYLITIS IN ROCHESTER, MN, 1935-73

D. Brian, Mayo Foundation, *200 1st St. S.W., Rochester, Minnesota* 55901 (P01 GM 14231-140076)

This project is part of a broader program (GM 14231).

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of General Medical Sciences funds n.a.

2.1164,

MALIGNANT POTENTIAL OF THE CRYPTORCHID TESTIS (HUMAN)

C.M. Beard, Mayo Foundation, *200 1st St. S.W., Rochester, Minnesota* 55901 (P01 GM 14231-140086)

This project is part of a broader program (GM 14231).

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of General Medical Sciences funds n.a.

2.1165,

THE DECLINING INCIDENCE OF STROKE (HUMAN)

M. Garraway, Mayo Foundation, *200 1st St. S.W., Rochester, Minnesota* 55901 (P01 GM 14231-140080)

This project is part of a broader program (GM 14231).

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of General Medical Sciences funds n.a.

2.1166,

LIMB FRACTURE IN A DEFINED POPULATION-FREQUENCY AND DISTRIBUTION (HUMAN)

M. Garraway, Mayo Foundation, *200 1st St. S.W., Rochester, Minnesota* 55901 (P01 GM 14231-140081)

This project is part of a broader program (GM 14231).

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of General Medical Sciences funds n.a.

2.1167,

BREAST CANCER - CASE-CONTROL STUDY (HUMAN)

D. Brian, Mayo Foundation, *200 1st St. S.W., Rochester, Minnesota* 55901 (P01 GM 14231-140077)

This project is part of a broader program (GM 14231).

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of General Medical Sciences funds n.a.

2.1168,

RISK FACTORS IN THE DEVELOPMENT OF TESTICULAR NEOPLASMS

C.M. Beard, Mayo Foundation, *200 1st St. S.W., Rochester, Minnesota* 55901 (P01 GM 14231-140087)

This project is part of a broader program (GM 14231).

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of General Medical Sciences funds n.a.

2.1169,

SPONTANEOUS PNEUMOTHORAX IN OLMSTEAD COUNTY

L.J. Melton, Mayo Foundation, *200 1st St. S.W., Rochester, Minnesota* 55901 (P01 GM 14231-140061)

This project is part of a broader program (GM 14231).

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of General Medical Sciences funds n.a.

2.1170,

INTRACEREBRAL HEMORRHAGE IN ROCHESTER

J. Whisnant, Mayo Foundation, *200 1st St. S.W., Rochester, Minnesota* 55901 (P01 GM 14231-140091)

This project is part of a broader program (GM 14231).

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of General Medical Sciences funds n.a.

2.1171,

SUBARACHNOID HEMORRHAGE (HUMAN)

J. Whisnant, Mayo Foundation, *200 1st St. S.W., Rochester, Minnesota* 55901 (P01 GM 14231-140092)

This project is part of a broader program (GM 14231).

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of General Medical Sciences funds n.a.

2.1172,

EPIDEMIOLOGY OF NEOPLASMS OF SALIVARY GLANDS IN ROCHESTER

J.E. Bouquot, Mayo Foundation, *200 1st St. S.W., Rochester, Minnesota* 55901 (P01 GM 14231-140108)

This project is part of a broader program (GM 14231).

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of General Medical Sciences funds n.a.

2.1173,

ALOPECIA AREATA IN THE ROCHESTER POPULATION

W.Z. Haughan, Mayo Foundation, *200 1st St. S.W., Rochester, Minnesota* 55901 (P01 GM 14231-140106)

This project is part of a broader program (GM 14231).

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of General Medical Sciences funds n.a.

2.1174,

CANCER OF PROSTATE IN ROCHESTER, MN, 1935-69

J.R. Beahrs, Mayo Foundation, *200 1st St. S.W., Rochester, Minnesota* 55901 (P01 GM 14231-140107)

This project is part of a broader program (GM 14231).

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of General Medical Sciences funds n.a.

2.1175,

REGIONAL ENTERITIS IN OLMSTED COUNTY, MN, 1965-74

J. Whisnant, Mayo Foundation, *200 1st St. S.W., Rochester, Minnesota* 55901 (P01 GM 14231-140097)

This project is part of a broader program (GM 14231).

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of General Medical Sciences funds n.a.

2.1176,

INCIDENCE OF UVEAL MALIGNANT MELANOMA IN MINNESOTA

S. Wilkes, Mayo Foundation, *200 1st St. S.W., Rochester, Minnesota* 55901 (P01 GM 14231-140101)

This project is part of a broader program (GM 14231).

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of General Medical Sciences funds n.a.

2.1177,

CASE-CONTROL STUDY OF FRACTURE RISK IN DIABETES

H. Heath, Mayo Foundation, *200 1st St. S.W., Rochester, Minnesota* 55901 (P01 GM 14231-140104)

This project is part of a broader program (GM 14231).

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of General Medical Sciences funds n.a.

2.1178,

ALS IN ROCHESTER, MINNESOTA 1925-1977

S. Juergens, Mayo Foundation, *200 1st St. S.W., Rochester, Minnesota* 55901 (P01 GM 14231-140099)

This project is part of a broader program (GM 14231).

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of General Medical Sciences funds n.a.

2.1179,

COMPREHENSIVE DISEASE STATISTICS SURVEY

A.G. Schroeder, Westat Inc., *11600 Nebel St., Rockville, Maryland* 20852

Plan and conduct a feasibility study to investigate alternative methodologies for adapting the design of the Hospital Discharge Survey and conduct a pilot to collect data from hospital records in order to determine the incidence and prevalence of a number of neurological and other disorders in short-term general hospitals in the continental United States. Design and develop the methods, procedures, algorithms, questionnaires, and abstraction forms for a feasibility study, undertake the study, and then design and conduct a pilot study for the collection of pertinent data, and analyze the data to determine the hospital incidence and prevalence of a number of neurological and other disorders and produce a final report in a form ready for publication.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Neurological & Communicative Dis. & Stroke $324,291

2.1180,

MORTALITY FROM NEUROLOGIC DISORDERS - NATIONAL AND INTERNATIONAL COMPARISONS

B.S. Schoenberg, U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Neurological & Communicative Dis. & Stroke, Section on Neuroepidemiology, *9000 Rockville Pike, Bethesda, Maryland* 20205 (Z01 NS 02297-03 ODIR)

Although death certificate data are limited by possible misdiagnosis, incomplete case ascertainment, errors in coding, etc., detailed morbidity information on neurologic diseases for the entire U. S. and for other countries is not available. The Section has analyzed mortality data for selected neurologic disorders by country and by county in the U. S. The overall patterns which emerge may be useful in evaluating trends over time and in formulating etiologic hypotheses.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Neurological & Communicative Dis. & Stroke funds n.a.

2.1181,

COMPREHENSIVE ANALYSIS OF THE NCPP DATA ON CONGENITAL MALFORMATIONS

N.C. Myrianthopoulos, U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Neurological & Communicative Dis. & Stroke, Birth Defects & Genetic Disorders Section, *9000 Rockville Pike, Bethesda, Maryland* 20205 (Z01 NS 02109-06 DNB)

This is a long-term project to study the epidemiologic characteristics of congenital malformations in singletons and twins; to assess and interpret the influence of maternal, socioeconomic, neonatal, medical and other environmental factors on the occurrence of congenital malformations; to determine the risk of familial occurrence and to elucidate the role of genetic factors and the mode of inheritance of certain

malformations; to determine the severity and clinical significance of congenital malformations and their associations with neurological, physiological and sensory handicaps; and to assess the long-range effects of malformations on survival, growth and development.

BIBLIOGRAPHIC REFERENCES: Myrianthopoulos, N.C., (Ed.): Recent Advances in the Developmental Biology of Central Nervous System Malformations. New York, Alan R. Liss, 1979. Myrianthopoulos, N.C.: Our load of central nervous system malformations. In, N.C. Myrianthopoulos (Ed.): Recent Advances in the Developmental Biology of Central Nervous System Malformations, New York, Alan R. Liss, 1979, pp. 1-18.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Neurological & Communicative Dis. & Stroke funds n.a.

2.1182,

MULTIPLE SCLEROSIS, PARKINSONS, AND OTHER MULTIFACTORIAL NEUROLOGICAL DISORDERS (ABBREV)

R. Eldridge, U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Neurological & Communicative Dis. & Stroke, Neurogenetics Section, *9000 Rockville Pike, Bethesda, Maryland* 20205 (Z01 NS 02167-04 ID)

In this project we are coupling genetic study of selected families and twin pairs, epidemiologic, immunologic, serologic and neurochemical studies. Disorders due to multiple factors include multiple sclerosis and Parkinsonism. This approach should clarify the etiology of these diseases, indicate individuals or populations at high risk and suggest mechanisms of prevention and treatment.

To date, 14 presumptive 'Multiple Sclerosis' families have been studied and 93 twin pairs with this condition have been ascertained and partially evaluated. A total of 48 Twin pairs with Parkinsonism have been ascertained and multidisciplinary evaluation instituted.

BIBLIOGRAPHIC REFERENCES: Eldridge, R., McFarland, H., Sever, J., et al.: Familial multiple sclerosis: clinical, histocompatibility, and viral serological studies. Ann. Neurol. 3: 72-80, 1978.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Neurological & Communicative Dis. & Stroke funds n.a.

2.1183,

CONFERENCE ON NEUROLOGICAL EPIDEMIOLOGY

B.S. Schoenberg, U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Neurological & Communicative Dis. & Stroke, Epidemiology Section, *9000 Rockville Pike, Bethesda, Maryland* 20205 (Z01 NS 02307-02 OBE)

An international two-day conference on neurological epidemiology was held in Washington, D.C., on May 15-17, 1977. Approximately 50 representatives from Asia, Africa, Europe, Latin America, and the U.S. attended. The various speakers and discussants discussed current knowledge in neuroepidemiology and stressed the applicability of this information to the practice of neurology and neurosurgery. A national one-day course on the principles of neurological epidemiology was offered. The papers and discussions for this conference have been edited and will be published in the near future.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Neurological & Communicative Dis. & Stroke funds n.a.

2.1184,

PILOT STUDY FOR A NATIONAL SURVEY OF EPILEPSY

B.S. Harris, Research Triangle Inst., *P.O. Box 12194, Research Triangle Park, North Carolina* 27709

No summary has been provided to the Smithsonian Science Information Exchange.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Neurological & Communicative Dis. & Stroke funds n.a.

2.1185,

INCIDENCE, PREVALENCE AND COSTS OF MULTIPLE SCLEROSIS

B.E. Rothschild, National Analysts Inc., *400 Market St., Philadelphia, Pennsylvania* 19106

Develop methods, procedures, definitions, criteria for diagnosis, questionnaires, and abstraction forms for a survey of multiple sclerosis and to pretest that which is developed. Design, conduct, and analyze national survey to provide estimates of the incidence and prevalence of multiple sclerosis by geographic and demographic subgroups of the U.S. population. Obtain estimates of the medical and other costs of multiple sclerosis.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Neurological & Communicative Dis. & Stroke $95,961

2.1186,

INCIDENCE, PREVALENCE, AND COSTS OF STROKE

M. Robins, Westat Inc., *11600 Nebel St., Rockville, Maryland* 20852

Conduct a national survey to obtain estimates of the incidence and prevalence of stroke and of the medical and other economic costs of that disease, by demographic subgroups of the U.S. population.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Neurological & Communicative Dis. & Stroke $7,677

2.1187,

EPIDEMIOLOGY OF LEARNING HANDICAPS IN SCHOOL CHILDREN

A. Leviton, Childrens Hospital Medical Center, *300 Longwood Ave., Boston, Massachusetts* 02115

Conduct analyses of antecedents of school behavior and school achievement at age nine in an identified sample of children in the Boston component of the NINCDS Collaborative Perinatal Project (NCPP) for the purpose of identifying risk factors for learning handicaps. The findings will be presented in a monograph suitable for publication.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Neurological & Communicative Dis. & Stroke $97,627

2.1188,

EPIDEMIOLOGY OF PROLAPSED LUMBAR AND CERVICAL DISCS

J.L. Kelsey, Yale University, School of Medicine, Dept. of Epidemiology & Public Health, *333 Cedar St., New Haven, Connecticut* 06510 (R01 NS 15230-02)

This is a case-control study of the epidemiology of prolapsed lumbar intervertebral disc and prolapsed cervical intervertebral disc. Demographic characteristics and exposure to possible risk factors in surgical, probable, and possible cases of each of these conditions in the age range 20-64 years will be compared to demographic characteristics and exposure to possible risk factors in two control groups in the same age range. All cases and controls are people who have sought medical care at hospitals and at physicians' offices. One control group is composed of people without known spinal disorders and the second comprises people with back and neck problems other than prolapsed discs. Persons with previous prolapsed discs or other previous significant back or neck problems are excluded from the case and control groups. Information on demographic variables and exposure to possible risk factors is obtained by means of a structured questionnaire administered by trained interviewers. The possible risk factors of particular interest are driving motor vehicles and using other modes of transportation, occupational characteristics such as prolonged sitting and frequent twisting motions, pregnancies, participation in certain sports, respiratory symptoms, height, and weight. Data collection for this study is now taking place.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Neurological & Communicative Dis. & Stroke $160,649

2.1189,

AMINOGLYCOSIDE OTOTOXICITY DETERMINANTS

W.E. Fee, Stanford University, School of Medicine, Dept. of Surgery, *Stanford, California* 94305 (R01 NS 14596-02)

Considering that one million patients per year are at risk, human aminoglycoside ototoxicity is not as well understood as it ought to be. This project seeks to develop rapid screening criteria to predict and prevent ototoxicity. In addition, it will determine how radioenzymatic serum aminoglycoside levels best correlate with development of toxicity, what clinical factors predispose to ototoxicity, to determine the incidence of ototoxicity in the various clinical infectious situations reflecting the use of this drug group, and to identify comparable patient groups by computer analysis in an effort to make comparative evaluation of the toxicities of the different aminoglycosides under similar clinical conditions.

Human subjects will undergo a detailed history and prospective determination of vestibular and cochlear function by electronystagmography and audiometry respectively. Renal function will be assessed utilizing creatinine clearances and serum BUN. Follow-up evaluation will be performmd in three months to determine development of delayed ototoxicity or recovery from ototoxicity.

Data analysis will be performed via the Stanford Center for Information Processing IBM 370/168 computer utilizing program language SPSS, version 7.0.

BIBLIOGRAPHIC REFERENCES: Fee, W., Vierra, V. and Lathrop, G.: Clinical evaluation of aminoglycoside toxicity: tobramycin versus gentamicin, a preliminary report. J. Antimicrobial Chemotherapy. 4(Suppl. A):31-36, 1978.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Neurological & Communicative Dis. & Stroke $57,579

2.1190,

PERIPHERAL NEUROPATHY CLINICAL RESEARCH CENTER SUPPORT

P.J. Dyck, Mayo Foundation, *200 1st St. S.W., Rochester, Minnesota* 55901 (P01 NS 14304-03)

Controlled clinical trials to test the efficacy of hyperglycemia control in diabetes mellitus, of prednisone versus prednisone and azathioprine in chronic inflammatory demyelinating neuropathies, and of various cytotoxic agents in dysproteinemic neuropathy will be continued. Extensive morphometric, pathologic and lipid compositional studies are being conducted on postmortem and biopsied sural nerve tissue in human diabetic and inherited neuropathies. Studies attempting to induce neuropathy by modification of membrane lipids, studies of structure, turnover, and function of membrane phospholipids and nuclear magnetic resonance studies are being continued as outlined in the grant application. Studies of the role of endoneurial fluid pressure, blood nerve barrier, and role of these in neuropathy production are being pursued. The cellular and molecular mechanisms of lead neuropathy production is being pursued by study of endoneurial lead content related to pathologic abnormality and to rate of cell division after crush. The natural history, pathologic and lipid biochemical abnormalities of a new syndrome with arachidonate deficiency is being investigated. Seroepidemiologic studies of possible viral induced neuropathies are being pursued. Neurophysiologic and pathologic studies of several models of experimental autonomic neuropathy to bowel and bladder will be completed. The prototypes of systems to evalute human joint position and motion and just-subnoxious heat will be developed.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Neurological & Communicative Dis. & Stroke $521,817

2.1191,

DETECTION OF TIA IN AN ELDERLY COMMUNITY

A. Heyman, Duke University, School of Medicine, Dept. of Medicine, *Box 3711, Durham, North Carolina* 27710 (R01 NS 13643-04)

The purpose of the present study is to carry out a three year surveillance of the morbidity and mortality from cerebrovascular disease among the residents of the Leisure World retirement community in Laguna Hills, California. The information obtained from this survey will be related to data on precursors of stroke available from questionnaires completed in 1976 by

approximately 11,000 persons or 65% of this population. Analyses of these two data files should provide valuable insights into the natural history of transient cerebral ischemic disease (TIA) as well as other risk factors of stroke. Useful information will also be obtained from this survey in regard to the value of such community-wide screening programs for the prevention of stroke.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Neurological & Communicative Dis. & Stroke $88,808

2.1192,

ETIOLOGY AND PATHOGENESIS OF MULTIPLE SCLEROSIS

D.H. Silberberg, University of Pennsylvania, School of Medicine, Dept. of Neurology, *36th & Hamilton Walk, Philadelphia, Pennsylvania* 19174 (P50 NS 11037-07)

We will attempt to establish the Etiology and pathogenesis of multiple sclerosis using several interdependent approaches. This ojective is divided into four areas: 1) the isolation of mammalian oligodendrocytes; 2) analysis of glial cell plasma membranes; 3) virus infection and demyelinating diseases; and 4) immunologic mechanisms of demyelinative CNS disease.

We will use immunologic techniques in an effort to determine the target antigen(s) in oligodendrocyte membrane which interacts with serum from patients with MS. We will characterize other circulating immunologic factors, including antibodies to lipid haptens and alterations in circulating immunocompetent cells. We will carry out similar studies in cells derived from cerebrospinal fluid of patients with MS as one approach to studies of the compartmentalization of the immune response in patients with MS. We will study the biosynthetc processes occurring in isolated oligodendrocytes and in glial cells and the factors which influence those processes.

We will attempt to repeat the successful induction of CNS disease in subhuman primates inoculated with material from patients with CNS disease and study viruses isolated from these primates. We will study the mechanisms of resistance and susceptibility to latent virus infections in the CNS. Mechanisms of humoral and cell-mediated immunological reactions in patients and in animal models will continue to be explored. Viruses isolated in the course of these experiments will be characterized by immunological and biochemical techniques.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Neurological & Communicative Dis. & Stroke $825,430

2.1193,

ETIOLOGY AND PATHOGENESIS OF MULTIPLE SCLEROSIS

H. Koprowski, Wistar Inst. of Anatomy & Biology, *36th & Spruce Sts., Philadelphia, Pennsylvania* 19104 (P50 NS 11036-07)

Multiple sclerosis is one of the most common chronic neurologic diseases in the United States today. More than 100,000 patients are severely crippled by this disorder. The cause of the disease is not known and there is no effective long-term treatment. Since Charcot originally described multiple sclerosis more than 100 years ago, neurologists and neuropathologists have noted an expanded spectrum of clinical and pathologic variation from individual to individual afflicted with multiple sclerosis. In the 1950's, epidemiologic studies indicated both high and low-risk prevalence areas for multiple sclerosis. Further studies on migrant populations suggested that multiple sclerosis was acquired in childhood although clinical disease is not manifested until adult life. While these data were accumulating, the concept of the 'slow-virus' neurologic disease was developing, with apparent incubation periods of many months or years. The concept that multiple sclerosis might possibly be a viral disease with a long incubation period was an attractive hypothesis born by the blending of fruitful multiple sclerosis epidemiologic studies with the knowledge that the spongiform encephalopathies (including human Jakob-Creutzfeldt) were transmissable and also that other chronic neurologic diseases of man such as subacute sclerosing panencephalitis (SSPE) and progressive focal leukocephalopathy (PML) were directly associated with virus infections.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Neurological & Communicative Dis. & Stroke $1,004,103

2.1194,

EPIDEMIOLOGIC STUDIES OF IMMUNE FACTORS IN MS

R. Detels, University of California, Los Angeles Campus, School of Public Health, Dept. of Epidemiology, *405 Hilgard Ave., Los Angeles, California* 90024 (R01 NS 10186-08)

The objective of this grant was to investigate the pathopoiesis of multiple sclerosis (MS) by conducting five studies using two populations of MS patients, one in a high prevalence area and one in a lower prevalence area. These studies include a cohort study of the natural history of MS in the two areas; an immunologic study of changes in immune status, clinical course and environmental exposures; a genetic study of families with multiple cases of MS; and a case-control study of patients and susceptibility matched siblings. Studies completed to date have suggested the existence of a multiple sclerosis susceptibility gene located on the sixth chromosome and a relationship between haplotype and mean measles titers in MS patients and their normal siblings. Data from the immunologic study suggest that patients have higher mean antibody titers and impaired cell-mediated immunity to measles.

The relationship of immune differences to changes in clinical status and the relationship between immune responses and genetic types will be further studied; the rate of progression to disability, mortality and other factors will be compared between the two cohorts; and analysis of the case-control study will determine factors which are associated with disease.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Neurological & Communicative Dis. & Stroke $295,319

2.1195,

SLOW INFECTION BY CONVENTIONAL/UNCONVENTIONAL VIRUSES

R.F. Marsh, University of Wisconsin, Madison Campus, School of Agriculture & Life Sciences, Dept. of Veterinary Science, *Agriculture Hall, Madison, Wisconsin* 53706 (R01 NS 14822-07)

OBJECTIVES: (a) To isolate and characterize the etiologic agents causing transmissible spongiform encephalopathies in animals (scrapie and transmissible mink encephalopathy) and humans (Creutzfeldt-Jakob Disease) using hamster-adapted models of disease and techniques such as polyacrylamide gel electrophoresis, linear log sucrose gradients, filtration, ion exchange chromatography, and selective degradation procedures; (b) Study the pathogenesis of the spongiform encephalopathies in suitable hosts; (c) Study the etiologic and epidemiologic interrelationships between the animal and human encephalopathies, and (d) To study mechanisms by which conventional viruses produce slow infections using Newcastle disease virus to infect chickens.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Neurological & Communicative Dis. & Stroke $123,990

2.1196,

HUNTINGTON'S CHOREA TWIN STUDY

N.C. Myrianthopoulos, U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Neurological & Communicative Dis. & Stroke, Birth Defects & Genetics Disorders Section, *9000 Rockville Pike, Bethesda, Maryland* 20205 (Z01 NS 02390-01 DNB)

Using the twin method, this study will investigate genetic and environmental factors which may be responsible for the considerable epidemiologic and clinical variability in Huntington's chorea, and determine the nature of gene-environment interaction in this disease.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Neurological & Communicative Dis. & Stroke funds n.a.

2.1197,

RACIAL DIFFERENTIALS IN THE PREVALENCE OF MAJOR NEUROLOGIC DISORDERS

B.S. Schoenberg, U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Neurological & Communicative Dis. & Stroke, Section on Neuroepidemiology, *9000 Rockville Pike, Bethesda, Maryland* 20205 (Z01 NS 02370-01 ODIR)

The purpose of this study is to accurately document possible racial differentials in the prevalence of major neurologic disorders by surveying an entire county, with a biracial population of approximately 25,000. The disorders investigated include cerebral palsy, dementia, psychomotor delay, epilepsy, Parkinson's disease, and cerebrovascular disease.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Neurological & Communicative Dis. & Stroke funds n.a.

2.1198,

ASSESSMENT OF STRATEGIES FOR ANALYZING DATA FROM SMALL AREA MORTALITY SURVEYS

D.W. Anderson, U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Neurological & Communicative Dis. & Stroke, Section on Surveys & Demographic Studies, *9000 Rockville Pike, Bethesda, Maryland* 20205 (Z01 NS 02405-01 OBE)

Studies of small areas, such as communities or counties, are an important tool of epidemiologists, who are interested in studying the distribution of particular diseases in populations. Many studies of this type have been reported in the scientific literature. An assessment of techniques of analysis frequently used in these studies was initiated to determine their adequacy for use in the NINCDS survey of major neurological disorders in Copiah County, Mississippi (YO1-NS-70031, NO1-NS-7-2357).

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Neurological & Communicative Dis. & Stroke funds n.a.

2.1199,

REGISTRY FOR CRUETZFELDT-JAKOB DISEASE

B.S. Schoenberg, U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Neurological & Communicative Dis. & Stroke, Epidemiology Section, *9000 Rockville Pike, Bethesda, Maryland* 20205 (Z01 NS 02296-03 ODIR)

Development of a protocol for the implementation of a registry for Cruetzfeldt-Jakob disease to include epidemiologic, pathologic, and clinical information. This project has been terminated.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Neurological & Communicative Dis. & Stroke funds n.a.

2.1200,

STROKE MORTALITY STUDY

F.D. Weinfeld, U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Neurological & Communicative Dis. & Stroke, Disease Statistics Surveys Section, *9000 Rockville Pike, Bethesda, Maryland* 20205 (Z01 NS 02341-01 OBE)

This is a demographic study of stroke mortality. It undertakes to explore the potential biases associated with the assessment of age-specific death rate trends based on stroke deaths during the period 1950 to the present. Trends by sex, race, and specific ICDA categories of stroke for these age-specific groupings will be produced and assessed. The limitations of the data, the underlying assumptions of the analysis, and the implications of the findings will be considered available on multiple causes of death, an analysis will be undertaken to compare these more complete data with the primary cause of death data which have been used heretofore.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Neurological & Communicative Dis. & Stroke funds n.a.

2.1201,

OTITIS MEDIA AND DEVELOPMENTAL DELAY - EPIDEMIOLOGIC FACTORS IN RESEARCH DESIGN

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This research was presented at a NINCDS-sponsored Workshop on Otitis Media and Child Development held in March 1978. It consists of critical assessment of available literature on the epidemiology

of otitis media, discussion of critical factors in the design of research to investigate the possible association of otitis media with developmental disability, and a proposal for a retrospective study of this association in a defined population. This project has been completed.

BIBLIOGRAPHIC REFERENCES: Kudrjavcev, T. and Schoenberg, B. S.: Otitis Media and Developmental Disability: Epidemiologic Considerations. The Annals of Otology, Rhinology & Laryngology, Supplement 60 -- Vol. 88, September - October 1979, No. 5, Part 2, pp. 88-98.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Neurological & Communicative Dis. & Stroke funds n.a.

2.1202,

AN EXAMINATION OF SPEECH AND HEARING PROBLEMS AS DETECTED IN HANES II

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The Communicative Disorders Program anticipates conducting a survey of speech disorders among 2-6 year olds. Current work is focusing on constructing a valid test instrument. Concurrently, our Office is assisting in examining similar work done by the HANES II. We intend to use the experience and results from the Hanes to determine the feasibility of the survey and what problems should be avoided. We are also exploring the possibility of conducting the survey as part of a future phase of the HANES.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Neurological & Communicative Dis. & Stroke funds n.a.

2.1203,

COLLABORATIVE STUDIES OF LESS COMMON OR LESS DEBILITATING NEUROLOGIC DISORDERS

B.S. Schoenberg, U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Neurological & Communicative Dis. & Stroke, Section on Neuroepidemiology, *9000 Rockville Pike, Bethesda, Maryland* 20205 (Z01 NS 02301-03 ODIR)

A number of collaborative efforts involve the investigation of the characteristics of unusual or less debilitating (e.g., headache) neurologic disease phenomena. Unusual associations or space/time clusters of neurologic disorders may provide leads to etiology or therapy. These may be tested through more formal approaches.

BIBLIOGRAPHIC REFERENCES: Baumann, R.J. and Markesbery, W.R.: Juvenile Amaurotic Idiocy (Neuronal Ceroid-Lipofuscinosis) and Lymphocyte Fingerprint Profiles. Annals of Neurology 4: 531-536, 1978. Hogg, J.E., Kobrin, D.E., and Schoenberg, B.S.: The Guillain Barre Syndrome; Epidemiologic and Clinical Features. J. Chronic Dis. 32: 227-231, 1979.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Neurological & Communicative Dis. & Stroke funds n.a.

2.1204,

CLINICAL AND VIRAL STUDIES OF SUDDEN HEARING LOSS

W.R. Wilson, Harvard University, Boston Campus, Massachusetts Eye & Ear Infirmary, Dept. of Otolaryngology, *243 Charles St., Boston, Massachusetts* 02114 (R01 NS 15629-01)

The goal of this proposal is to achieve an increased understanding by means of a detailed clinical study of sudden hearing loss (SHL), a relatively common disorder with an attack rate of about 15/100,000 population per year. This syndrome affects all ages and sexes, and its principle causes probably include viral infections, cochlear membrane rupture, and vascular occlusion.

Our objectives will include a continuation of an ongoing prospective clinical study at Massachusetts Eye and Ear infirmary which currently attracts 30-35 new patients annually. However, we would extend our patient sample through collaboration with Dr. Frederick Byl at the Kaiser-Permanent Group referral center in Oakland, CA and Dr. Phillip Sprinkle, West Virginia Univeristy, Morgantown. The prospective clinical study planned in this proposal will assess the relationship of idiopathic (I)SHL to seasonal, genetic, environmental as well as occupational factors by use of a thorough patient history obtained on standardized questionnaire. By means of medical examination to include an otologic evaluation, audiogram, ENG, x-ray, routine laboratory studies, and when possible, electrocochleography; we hope to assess the role of underlying medical conditions such as viral infections, diabetes and previous ear disease in ISHL. Also, these procedures will aid in our further classification of the causes of ISHL. Another objective is the serological evaluation of paired sera obtained from 45 patients is banked at -70 degrees C in preparation for analysis. Finally, we will continue an ongoing double-blind clinical study of a potentially beneficial treatment that includes steroids and placebo. Currently 65 patients are enrolled in Oakland and Boston. All data generated from the above studies is entered on a standardized data form for statistical analysis at the Health Sciences Computing Facility, School of Public Health, Harvard University. The result of such an inter-institutional collaborative clinical and laboratory study will be a better understanding of the etiology, classification, and treatment of ISHL.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Neurological & Communicative Dis. & Stroke $64,475

2.1205,

CEREBROVASCULAR CLINICAL RESEARCH CENTER

J.P. Whisnant, Mayo Foundation, *200 1st St. S.W., Rochester, Minnesota* 55901 (P50 NS 06663-13S1)

Studies of stroke in the population of Rochester, Minnesota, have included a study of subarachnoid hemorrhage (SAH) in which it was determined that the average annual incidence rate for SAH increases with age to the oldest age group. There has been no change in the average annual incidence rate over the 30 years of the study. A study of primary intracerebral hemorrhage showed a decreasing average annual incidence rate over the 32 years of the study and showed that 89% of the patients with primary intracerebral hemorrhage had prehemorrhage hypertension. For one portion of the study, it was shown that anticoagulant therapy contributed to an increased incidence rate of intracerebral hemorrhage.

A prospective study of asymptomatic carotid bruit continues. Among 284 patients enrolled in the study, 4 have had cerebral infarcts, 3 have had definite TIA's and 4 possible TIA's. Two have died from myocardial infarction. Twenty-five have undergone a major surgical procedure without complication. A study of the outcome of patients who have had carotid transient ischemic attacks and who have had endarterectomy continues. We are also conducting a study of the results of treatment of subarachnoid hemorrhage and comparing the surgical management with the natural history of the disease.

Computerized tomography study of stroke includes a statistical analysis of EMI head scan data, a computerized tomographic and radionuclide study of stroke, an analysis of the basal ganglia region by computer techniques and a correlation of EEG exam with CT scan.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Neurological & Communicative Dis. & Stroke $55,220

2.1206,

A CENTER FOR ACUTE SPINAL CORD INJURY

W.F. Collins, Yale University, School of Medicine, Dept. of Surgery, *333 Cedar St., New Haven, Connecticut* 06510 (P50 NS 10174-08)

This program is a multidisciplinary approach to the problems of spinal cord injury (SCI). Included are: An epidemiological study of spinal cord injury in Connecticut with delineation of incidence, cause, evaluation of treatment, cost comparison of treatment in an organized SCI center and community hospitals in Connecticut, and determination of when stability of neurological function occurs; studies of animal models of spinal cord injury, evaluating various treatment modalities, effects of trauma on spinal cord blood flow and metabolism, determination of spinal column stability including computer models of primate spinal column; post-traumatic alteration in blood-spinal cord barrier; the effect of biogenic amines on the resulting neurological dysfunction and ultrastructural analysis of the effect of impact trauma, the development and study of a model system in the Larvil Lamprey (Petromyzon Marinus) for study of regeneration in the central nervous system, a study of the formation of peripheral neuroma and the factors controlling its size, and study of the olfactory bulb re-establishment of central synaptic connection following injury.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Neurological & Communicative Dis. & Stroke $998,260

2.1207,

AN INTERNATIONAL SYMPOSIUM ON STATUS EPILEPTICUS

A.V. Delgado Escueta, University of California, Irvine Campus, California College of Medicine, Continuing Medical Education Program, *Irvine, California* 92664 (R13 NS 16171-01)

Clinical and Basic Neurosciences have developed new information on the clinical and molecular-membrane consequences of repeated seizures and status epilepticus. The effects of convulsive and non-convulsive status epilepticus on the phospholipid and protein arrangements of the synaptic membrane, on protein synthesis, second messengers, protein phosphorylation, ion transport, energy metabolism and brain ontogeny are presently under investigation by neuroscientists from various continents. This proposal requests support for a workshop to be held in March 1980 to provide a forum for interaction between these basic scientists and neurologists concerned with the treatment of status epilepticus. Approximately 45-50 participants will be invited and the manuscripts presented will be published. The objective of the workshop is to encourage translation of basic cellular and membrane information to the bedside setting and to stimulate research on the epidemiology, neuropathology and new treatment of convulsive and non-convulsive status epilepticus.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Neurological & Communicative Dis. & Stroke $54,400

2.1208,

HEREDITARY ASPECTS OF THE EPILEPSIES

M.L. Rivas, Oregon State Higher Education System, University of Oregon Health Sciences Center, Good Samaritan Hospital Medical Center, Division of Medical Genetics, *1015 N.W. 22nd Ave., Portland, Oregon* 97210 (R01 NS 15820-01)

The objective of this study is to facilitate investigations into the genetic etiology of the epilepsies with emphasis on the spike-wave epilepsies and, in particular, petit mal absence. We propose to study the genetic transmission of these disorders through intensive studies of kindreds ascertained through a proband with a verified epileptic condition.

The study utilizes two unique resources namely, (1) clinical records on 4,000 patients with a seizure disorder who were evaluated at the principal (and for a long time, only) neurological referral center in the Northwest during the period 1938 to 1963 and (2) EEG records on 8,000 individuals tested in the same period of time. Availability of these records permits the record linkage of clinical, laboratory (EEG) and genetic information.

Probands will be selected from individuals evaluated in the Child Neurology Clinic (Epilepsy Center of Oregon), the Genetics Clinic (UOHSC) or in private practice and from individuals evaluated in the Neurological Clinic between the years 1938 and 1963. Systematic collection of clinical, genetic and laboratory (EEG) data will be extended to first, second and third degree relatives of probands. Special emphasis will be placed on record linkage of families to insure completeness and accuracy of pedigree and clinical information. The body of data thus generated will be the basis of more extensive family/genetic studies and be subjected to rigorous genetic analyses and tests of goodness of fit to various genetic models (hypotheses) using recently developed, statistically powerful, computer-adaptable methods.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Neurological & Communicative Dis. & Stroke $121,094

2.1209,

ENVIRONMENTAL IMPACT ON THE ELDERLY

C.H. Patrick, U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. on Aging, Epidemiology Demography & Biometry Program, *9000 Rockville Pike, Bethesda, Maryland* 20205 (Z01 AG 01190-01 EDBP)

An analysis of the environmental impact of pollutants generated in electric energy production was under-

taken using county level data on type of facility and mortality rates of the elderly. No significant impact was found in the preliminary analysis of data from coal, oil, gas, and nuclear counties.
SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. on Aging funds n.a.

2.1210,

RISKS AND BENEFITS OF THE DECLINE IN ESTROGEN USE BY POSTMENOPAUSAL WOMEN

Y.Y. Palesch, U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. on Aging, Epidemiology Demography & Biometry Program, *9000 Rockville Pike, Bethesda, Maryland* 20205 (Z01 AG 03000 EDBP)
OBJECTIVES/ISSUES ADDRESSED: Review the trends in estrogen use in the past decade by peri- and postmenopausal women. Discuss the current status of risks and benefits of estrogen use.
APPROACH/METHODOLOGY: Abstract data on estrogen drug appearance from National Disease and Therapeutic Index volumes (1970-1978). Mortality and incidence data of endometrial cancer for the U.S. is also collected. Review current literature on estrogen as risk or beneficial factor.
MAJOR FINDINGS: A drastic decline in estrogen drug appearances is observed during 1975-76 following the publication of several case-control studies linking estrogen use with endometrial cancer.
SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. on Aging funds n.a.

2.1211,

EPIDEMIOLOGICAL AND GENETIC STUDIES OF AMYOTROPHIC LATERAL SCLEROSIS/ PARKINSONISM DEMENTIA (ALS/PD) COMPLEX OF GUAM

C.C. Plato, U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. on Aging, Human Performance Section, *Baltimore, Maryland* 21224 (Z01 AG 00028-03 CPB)
The purpose of this study is: 1) to investigate the genetic and epidemiological factors contributing to the very high incidence of Amyotrophic Lateral Sclerosis and Parkinsonism Dementia (ALS/PD) on Guam, 2) to evaluate the distribution of the various established genetic and anthropological markers among the normal Guamanian population and compare them with those of the ALS/PD patients, and 3) to ascertain the effects of immobilization due to paralysis on bone density.
SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. on Aging funds n.a.

2.1212,

EFFECT OF ENVIRONMENT ON THE AGING PROCESS (HUMAN)

B.A. Gilchrest, Beth Israel Hospital, *330 Brookline Ave., Boston, Massachusetts* 02215 (P01 AG 00599-030004)
This project is part of a broader program (AG 00599).
SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. on Aging funds n.a.

2.1213,

MARITAL, SEXUAL AND SOCIAL FACTORS IN AGING

C. Martin, U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. on Aging, Human Performance Section, *Baltimore, Maryland* 21224 (Z01 AG 00018-13 CPB)
Systematic data concerning sexual, marital and social experience were obtained by structured interviews with males taking part in the Baltimore Longitudinal Study of Aging. During the year it was found, in collaboration with Dr. S.M. Harman, that frequency of sexual expression in 60-79 year-old respondents showed a small but significant relationship to level of serum testosterone and that levels of basal sex steroids remained largely unaffected by age. At present, an analysis is underway in which respondents with and without a history of coronary heart disease are being compared in relation to a variety of personal and behavioral experiential attributes, as revealed by interview, for evidence of etiologic processes.
BIBLIOGRAPHIC REFERENCES: Giambra, L.M. and Martin, C.E.: Sexual daydreams and quantitative aspects of sexual activity: some relations for males across adulthood. Archives of Sexual Behavior, 6:497-505, 1977.
SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. on Aging funds n.a.

2.1214,

INVESTIGATIONS OF OSTEOARTHRITIS AND BONE LOSS

C.C. Plato, U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. on Aging, Human Performance Section, *Baltimore, Maryland* 21224 (Z01 AG 00022-03 CPB)
Osteoarthritis and bone loss are the two principal age related changes of the human skeleton. Even though these changes are considered inherent to aging, they may result in incapacitating ailments. The advanced cases of osteoarthritis (degenerative joint disease) produce severe restriction of movement associated with pain. Advanced bone loss may result in osteoporosis and frequent bone fractures. Most prominent are vertebral compression fractures and fractures of the femoral neck.
This project deals with the epidemiological, genetic and longitudinal aspect of osteoarthritis and bone loss among (1) the participants of the Baltimore Longitudinal Study, (2) in a sample of normal Guamanians (Chamorros), and (3) among patients afflicted with Amyotrophic Lateral Sclerosis/Parkinsonism Dementia Complex of Guam.
BIBLIOGRAPHIC REFERENCES: Plato, C.C. and Norris, A.H.: Osteoarthritis of the hand: Age specific joint-digit prevalence rates. Am. J. Epidemiol. 109:169-180, 1979.
SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. on Aging funds n.a.

2.1215,

PROGRAM PROJECT IN BIOMEDICAL ASPECTS OF AGING

J.W. Rowe, Harvard University, Boston Campus, Beth Israel Hospital, Dept. of Medicine, *330 Brookline Ave., Boston, Massachusetts* 02215 (P01 AG 00599-03)
Recent cross-sectional studies in man have identified two important alterations in the secretion of AVP with advancing age. These are: (1) augmented AVP secretion in response to osmotic stimulation and (2) escape from the inhibitory influence of intravenous ethanol on AVP secretion. The studies outlined in this proposal will determine the influence of age, volume status and plasma AVP concentration on the volume of distribution and metabolic clearance rate of exogenous vasopressin.
Several aspects of the influence of age on AVP secretion will be studied. These include clarification of the influence of volume expansion and depletion on the previously documented increased osmoreceptor sensitivity with age, the impact of aging on response to hypoosmolar inhibition of AVP release, and the impact of age on the response to several non-osmolar stimuli of AVP secretion. Non-osmolar stimuli to be employed are: (1) upright posture and (2) pharmacologic stimuli (apomorphine, luteinizing hormone releasing factor (LHRH) and thyrotropic releasing factor (TRH).
SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. on Aging $200,988

2.1216,

USE OF DEATH STATISTICS TO MEASURE MORTALITY OF AGED

I. Rosenwaike, University of Pennsylvania, School of Medicine, Dept. of Research Medicine, *36th & Hamilton Walk, Philadelphia, Pennsylvania* 19174 (R01 AG 01115-02)
This is a study that will consider the effect that inaccurate statement of age on the death certificate and in the census record has on the published death rates for the very elderly, and in turn, on the life table values for this population. Particular emphasis will be given to examining differentials in accuracy by race and sex. By using a procedure known as the 'method of extinct generations', a method that permits the reconstruction of 'extinct' population cohorts from the death statistics for a series of years, new estimates of the United States population 85 years of age and over will be prepared for the years 1951 through 1965 for single years of age by sex and race. The resulting estimates for the periods around the 1950, 1969 and 1970 censuses will be compared with decennial census statistics.
A series of age-specific death rates will be computed from the derived populations and these will be compared with official data for the United States. The new series of death rates will be utilized in the preparation of life tables for the elderly, and the values obtained will be compared with the official current United States life tables. Trends in mortality and survival among the extreme aged population will be analyzed.
BIBLIOGRAPHIC REFERENCES: Ira Rosenwaike: A New Evaluation of United States Census Data on the Extreme Aged, Demography, May 1979, in press.
SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. on Aging $23,072

2.1217,

SPECIAL INITIATIVES RELATED TO DEMENTIA

R. Katzmann, Yeshiva University, Bronx Campus, Albert Einstein School of Medicine, Dept. of Neurology, *1300 Morris Park Ave., Bronx, New York* 10461 (R21 AG 01184-02)
Senile dementia of the Alzheimer type (SDAT), the major cause of dementia among the elderly, is a growing health problem. Although much has been learned about the pathophysiology of this disease, little is known about etiological factors. We propose to seek information about specific genetic, environmental, and metabolic risk factors by carrying out a cross-cultural case control study of SDAT. We will utilize an epidemiological interview together with studies of serum haptoglobins as linked genetic markers; immunological changes manifested by lymphocyte responses and serum immunoglobulins; serum antibodies to choline acetyltransferase, and parathormone status. One aspect of the social impact of SDAT will be studied by investigating techniques adopted by families for coping with an afflicted family member.
SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. on Aging $100,544

2.1218,

CASE-CONTROL STUDY OF PRESENILE AND SENILE DEMENTIA

A. Heyman, Duke University, School of Medicine, Dept. of Medicine, *Box 3711, Durham, North Carolina* 27710 (R21 AG 01186-02)
The present proposal is a collaborative case-control study of a small cohort of patients diagnosed as having, on the basis of carefully established clinical criteria, presenile or senile dementia of the Alzheimer's type. Information will be obtained regarding factors possibly related to the development of this illness from these patients and from matched control subjects by means of a structured epidemiologic interview, by analyses of serum and cerebrospinal fluid for viral antibodies and for increased concentrations of aluminum and other metallic ions and by detailed family history searching for evidence of genetic defects. The natural history of the disorder and the correlation between the progressive mental changes, the electroencephalographic abnormalities and the changes in computer tomography of the brain will also be studied.
SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. on Aging $78,383

2.1219,

DEPRESSION, INFORMATION PROCESSING AND AGE

P.M. Lewinsohn, Oregon State Higher Education System, University of Oregon, School of Liberal Arts, Dept. of Psychology, *1472 Kincaid St., Eugene, Oregon* 97401 (R21 AG 01449-01)
Two separate projects are proposed. Project 1 ('Epidemiology of Depression in the Elderly') is a longitudinal prospective study of a representative sample of 900 elderly persons. Subjects are assessed on a wide range of measures at point of entry into the study. They will be followed for two years during which time their depression level will be monitored on a monthly basis. Clinical assessments will be done on subjects who become depressed. Four types of hypotheses will be tested: 1) What are the distinguishing characteristics of elderly persons who become depressed? 2) What are the distinguishing characteristics of elderly persons who are depressed? 3) What are the distinguishing characteristics of elderly persons who are depressed and who

recover? 4) What are the distinguishing characteristics of elderly persons who have a history of having been depressed earlier in life?

Project 2 has three objectives: 1) To adapt an existing conceptualization of the key ability factors underlying cognitive performance to the study of the aging. 2) To use the measurement devices constructed as per objective 1 to evaluate the effects of cardiovascular conditioning on the cognitive behavior of elderly depressed and elderly non-depressed Ss. 3) The measurement devices will be used to assess cognitive functioning as a function of age.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. on Aging $85,337

2.1220,

ACCURACY OF DEATH CERTIFICATE AGES FOR THE EXTREME AGED

I. Rosenwaike, University of Pennsylvania, School of Medicine, Dept. of Research Medicine, *36th & Hamilton Walk, Philadelphia, Pennsylvania* 19174 (R01 AG 01550-01)

Observers have repeatedly questioned the accuracy of age information for the extremely aged population of the United States. Inaccurate statement of age on the death certificate will have an effect on the published death rates for the very elderly.

The proposed research will attempt to verify the reporting of age on the death certificate among persons in the 'extreme aged' population. A sample of about four thousand decedents around 1970 who were reported to have been 85 years old or over will be selected from the death certificates filed in the cooperating states. Since record check with the birth certificate in most instances is not possible, the record linkage will be with the listing in the well - indexed 1900 census, conducted when the decendent presumably was a youth or young adult. The motive to exaggerate age attributed to the elderly would not have been present at this early period. Effort will be made to correct age on the death certificate on the basis of tho 1900 census records. The 'adjusted' distribution of deaths by age around 1970 so derived, will permit the computation of corrected death rates and life tables. These data may then furnish a basis for improving mortality statistics at older ages, and for evaluating the quality of census data. In addition, they may provide a better appreciation of the basic causes of the anomaly of the cross-over of nonwhite mortality to lower levels than white mortality at the upper age range.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. on Aging $60,437

2.1221,

THE U.S. MORTALITY DECLINE - EVIDENCE FROM CENSUS DATA

E.M. Crimmins Gardner, Rutgers the State University of New Jersey, Camden Campus, College of Arts & Sciences, Dept. of Sociology, *406 Penn St., Camden, New Jersey* 08102 (R01 AG 02089-01)

The purpose of the proposed research is to estimate levels and trends in U.S. mortality in the last half of the nineteenth century. In addition to estimating levels and trends at a national level the proposed project will estimate mortality differentials for regions of the country, rural and urban areas, and nativity groups. The project will also examine the determinants of mortality levels and change during this period. Data on nutritional levels and the provision of public health provisions will be related to mortality conditions. Mortality data available in the federal census will be used in this research. This research will add to current knowledge on the demographic transition by clarifying the American experiece and by testing a number of theories of causation of the decline in mortality in the now developed world.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. on Aging $26,972

2.1222,

MORTALITY OF OLDER MALES IN INTERNATIONAL PERSPECTIVE

M.H. Brenner, Johns Hopkins University, School of Hygiene & Public Health, Dept. of Health Services Administration, *615 N. Wolfe St., Baltimore, Maryland* 21205 (R01 AG 01833-01)

The objective of the proposed research is to explain the relatively poor mortality experience of older males in the United States as compared with males and females in other industrialized countries, and with U.S. females. In accomplishing this objectve it is necessary to account for international differences in mortality rates over age 45 among males, among females, and among the ratios of male to female mortality in industrialized countries.

The overall approach relies, first, on comparative time-series analyses of the effects of economic development and fluctuations in male and female mortality rates over age 45 for each of 25 industrialized countries during 1920-1976. These countries are located in Western Europe, North America, and Australasia. Additional analyses then attempt to interpret the findings on the differential impact among the industrialized countries of broad economic changes on mortality trends of older males and females. These multivariate analyses examine the extent to which factors cited in the literatures on aging, social demography, and psychological stress explain the differential impact of economic development on mortality trends for the older population. In this study, controls are used for the contributory effects of environmental and biological influences by including such influences in the general multivariate models of total and cause-specific mortality.

The principal variables which are hypothesized to explain differential international mortality rates by sex among the older populations are: income, employment status - especially retirement and unemployment, occupation, educational attainment, marital status, including widowhood and family composition, parity of women, ethnic heterogeneity, institutionalization and other isolation of the older populations, and availability of health care.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. on Aging $97,574

2.1223,

PROSPECTIVE STUDY OF NUTRITION IN THE ELDERLY

J.S. Goodwin, University of New Mexico, School of Medicine, Dept. of Medicine, *University Hill N.E., Albuquerque, New Mexico* 87131 (R01 AG 02049-01)

A substantial proportion of old people in this country have dietary intakes of protein, calories, vitamins, and iron that are below the recommended dietary allowances. It is not known, however, what effect this 'subclinical' malnutrition in old people has on their physical health and life expectancy. In this proposal we will follow 250 healthy old people over a five year period. The nutritional status of these subjects will be evaluated yearly by clinical exam, a three day dietary record, and biochemical analysis of blood samples for total protein, albumin, transferrin, serum iron and iron binding capacity, vitamins A, C, B12, riboflavin, thiamine, pyridoxine, folic acid, copper, zinc, cholesterol, and HDL-cholesterol. We will then examine whether deficiencies of these nutrients as measured by dietary records and by biochemical analysis predisposes subjects to increased morbidity and mortality during the five year follow-up period. These healthy old people will also be evaluated immunologically with skin tests, and in vitro mitogen responses. We will examine whether subclinical malnutrition results in depressed immune function.

The other major aspect of this study will be to prospectively study the impact of major life crises on the nutrition of our subjects. We will study the effects of hospitalization, change in living conditions, and bereavement on the dietary intakes of these subjects. We will determine which life crises cause a drop in dietary intake and how long dietary intake stays down. We will also psychologically test these subjects after the 'life crises' to determine the relationship between depression and nutritional status.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. on Aging $89,295

2.1224,

AGING AND HETEROGENEITY IN MORTALITY RISKS

K.M. Weiss, University of Texas, Health Science Center at Houston, Graduate School of Biomedical Sciences, *P.O. Box 20334, Houston, Texas* 77025 (R01 AG 01028-02)

This study will examine risk heterogeneity in age patterns of mortality by cause at various levels of population. Risk of death from major causes of mortality, by age, will be parametrically described, taking account of competing causes. This will be related to the theory of human biological aging. Risk-rate parameters will be characterized statistically, including their sample variances, their geographic and temporal clustering, and their inter-cause correlations. This will first be done on subdivisions of nations using data from Chile and Texas to look for more local effects and variatons. Finally, risk functions will be estimated for the Mexican-Americans of Laredo, Texas. Here risk assessment and studies of risk heterogeneity will be done on genealogical data so as to examine the genetics of longevity as they relate to specific causes of death and the age at which they occur, and cluster, in families.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. on Aging $37,002

2.1225,

DETERMINANTS OF AGING AMONG SEVENTH-DAY ADVENTISTS

J.W. Kuzma, Loma Linda University, School of Health, Dept. of Biostatistics & Epidemiology, *Loma Linda, California* 92354 (R01 AG 01582-01)

Seventh-day Adventists (SDAs) are members of a conservative Protestant denomination who neither drink nor smoke; 41 percent are vegetarians. Their age distribution shows a significant proportion of older persons. In 1958, a longitudinal study of California SDAs was mounted to investigate the association of life habits with mortality and life expectancy. The study demonstrated that SDAs had a longer life expectancy than the general population and for most cancer sites had significantly lower mortality rates. Since 1974, a larger group of SDAs has been studied in depth to determine morbidity from major disease and to ascertain which factors in their unique lifestyle associate with their apparent longevity and reduced disease risk. The two separate studies have some 20,000 common enrollees; however, thier records have never been linked.

Objectives of this research are five-fold: 1) to ascertain the living-dead status of persons originally enrolled and link their records with current enrollees, thus providing a 20-year mortality follow-up: 2) to analyze long-term longitudinal results in terms of the epidemiological correlates of aging; 3) to compare mortality statistics of the SDA population with a separate population from the general public which ahadbeen independently and concurrently studied; 4) to determine which life habits are most associated with a high quality of life in an aging population; and 5) to learn whether the SDA's favorable mortality is due to selective factors or results from the unique, if variable, practice of the group.

The methodology involves a computerized probability model to link data files of the two studies, along with trained field workers tracing church membership records. In a substudy, life quality will be measured in 350 SDAs over 74 and 400 appropriate controls. Investigation into the longevity and quality of life of the oldest members of a long-lived group seems to be appropriate at a time of steady increase in the number of elderly persons in the general population.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. on Aging $104,082

2.1226,

PERSONAL PATTERNS PREDICTIVE OF DISEASE OR DEATH

C.B. Thomas, Johns Hopkins University, School of Medicine, Dept. of Medicine, *725 N. Wolfe St., Baltimore, Maryland* 21205 (R01 AG 01760-01)

The Precursors Study is a long-term prospective investigation of the characteristics of a cohort of 1,337 Johns Hopkins medical students, in classes graduating in 1948 through 1964, to determine youthful predictors of premature disease or death. Now for the most part physicians aged 40 to 59, their health and that of their parents are being followed annually by mail. By 1977, over 200 subjects had been affected by one or more major disorders.

Studies to date, on data obtained from individuals while they were medical students, have identified a number of specific, separate characteristics which distinguish between subjects who remain healthy and those who have died prematurely or become diseased, and between subjects with one form of disorder and those with another.

These separate items represent four different categories of data: Biological (e.g., mother's age at subjects' birth); Physiological (e.g., resting diastolic pressure, resting heart rate); Metabolic (e.g., relative body weight, cholesterol level); and Psychological (e.g., depression, anxiety and anger under stress, closeness to parents, family demonstrativity, pathological unconscious psychic processes and content). The aim of future studies is to go beyond the present listing or aggregation of separate characteristics, and

to organize material in the data base in such a way as to portray the individual as a biological-cultural organism with a characteristic core, a long-range style in experiencing, shaping and adapting to his successive life events. The time span since the original data were collected is now 14 to 30 years, so much added data have accumulated on the life styles and life events of both healthy and unhealthy subjects.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. on Aging $59,574

2.1227,

EPIDEMIOLOGY OF FRACTURES IN AGING WOMEN

N.S. Weiss, Fred Hutchinson Cancer Research Center, Dept. of Epidemiology, *1124 Columbia St., Seattle, Washington* 98104 (R01 AG 01764-02)

A case-control study is being proposed to determine to what extent exogenous estrogens protect against fractures among menopausal women. All women who (a) sustained a fracture of a hip or forearm during the interval April 1977-March 1979, (b) were 50-74 years of age and residents of King County, Washington, and (c) were treated by one of several dozen orthopedic surgeons participating in the study will be identified. They will be interviewed concerning use of estrogen preparations and related matters, and their answers compared to those of a random sample of women in the community.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. on Aging $49,544

2.1228,

PREPARE BOOK ON BACTERIAL INFECTIONS OF HUMANS

A.S. Evans, Yale University, School of Medicine, Dept. of Epidemiology & Public Health, *333 Cedar St., New Haven, Connecticut* 06510 (R01 LM 03299-01)

The purpose or the request is to co-edit a book on 'Bacterial Infections of Humans. Epidemiology and Control' in conjunction with Dr. Harry A. Feldman, Professor and Chairman, Department of Preventive Medicine, College of Medicine, Upstate Medical Center, Syracuse, N.Y. This book would be a companion volume to Viral Infections of Humans. Epidemiology and Control, A.S. Evans, Editor, Plenum Publishing Corp., 1976.

Most texts on infectious diseases concentrate either on the basic aspects of the agent (i.e. microbiology) or on the host response (clinical infectious diseases). The proposed book would emphasize epidemiology and control and bring together those aspects of the agent, the pathogenesis of the infection, and the patterns of host response necessary to an understanding of the dynamics of the infection both in the community and in the individual. After 2 introductory chapters one on general epidemiological concepts and one on surveillance, all the major infectious agents in the genus 'Bacillus' of importance in the U.S. would be presented alphabetically in individual chapters by authorities in the field.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Library of Medicine $50,879

2.1229,

HUMAN POPULATION LABORATORY FOR EPIDEMIOLOGIC STUDIES

A.C. Hollister, State Dept. of Health, Occupational Health Section, *2151 Berkeley Way, Berkeley, California* 94704 (R01 HS 00368-15S1)

The long-term objective of the Human Population Laboratory is to articulate relationships between social, psychological and physical patterns of living and states of individual health. In pursuit of this broad objective, the staff of the HPL has conducted: (1) a 1965 Baseline Survey, in which almost 7,000 randomly selected adult residents of Alameda County, California, provided answers to a 23-page questionnaire concerning health status and health practices; (2) a continuous follow-up of the mortality of the original sample respondents; (3) a 1974 Longitudinal Follow-Up of the surviving respondents, to measure individual changes in health status and self-reported occurrence of life-crisis events in the intervening period; (4) a 1974 Survey of approximately 3,000 randomly selected current residents of the County, to provide community trend information as well as current information on the utilization of health care facilities, unmet needs and sources of satisfaction and dissatisfaction; (5) a 1975 special supplementary survey of residents in neighborhoods with high concentrations of Spanish American families.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Office of Health Research Statistics & Technology, National Center for Health Services Research $100,000

2.1230,

CLAIMS-FILE RESEARCH - PEDIATRIC HEALTH CARE QUALITY

W.A. Ray, Vanderbilt University, School of Medicine, Dept. of Preventive Medicine, *21st Ave. S. & Garland, Nashville, Tennessee* 37232 (R01 HS 03222-02)

The methodologies employed in health and health services research depend heavily upon the sample survey as a source of data. The expense, lack of precision, and time-consuming nature of this approach are accepted in lieu of alternatives. With the emergence of a computer technology that can manipulate very large data-bases, new sources of data are available. The massive investment for administrative data processing in the health care delivery programs (Medicare and Medicaid) can be exploited for health services research.

This proposal links large administrative data-files to investigate a specific topic: the descriptive epidemiology of psychotropic drug prescribing in large, heterogeneous, defined populations of children and prescribing physicians. The estimated 2 million prescriptions for the 200,000 children eligible for Tennessee Medicaid benefits over the 5-year period 1973-1978 will be reviewed. The analysis for children will encompass prescription incidence rates and utilization ratios, frequent use of psychotropic drugs, exposure to multiple agents, doctor shopping, and 5-year trends. Physician training and characteristics of current practice will be correlated with prescribing of psychotropic drugs. The association of the mal-prescribing of antiinfectives with increased prescribing of psychotropic drugs will be tested. This research will supply currently unavailable data for policy purposes. It has implications for improving quality and lowering cost of government-provided medical care for children, improving physician prescribing practices and the development of health services research technology.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Office of Health Research Statistics & Technology, National Center for Health Services Research $50,622

2.1231,

EVALUATION STUDY OF AN ALTERNATIVE BIRTHING CENTER

G. Baruffi, Johns Hopkins University, School of Hygiene & Public Health, Dept. of Maternal & Child Health, *615 N. Wolfe St., Baltimore, Maryland* 21205 (R01 HS 03762-01)

Over the past few years, increasing numbers of women have elected to deliver outside the hospital in maternity centers or at home. The objective of this study is to evaluate the physical safety of an 'out-of-hospital' maternity center. Two questions are addressed by this epidemiological prospective non-concurrent study: 1) Do maternal and neonatal outcomes of two populations comparable on sociodemographic and medical-obstetric risk differ in two institutions with different approaches to maternity care? 2) Does the process of transfer from one institution to another involve increases risk to sick pregnant women and newborns?

The study populations, selected from Booth Maternity Center and Thomas Jefferson University Hospital, both located in Philadelphia, Pennsylvania, will be matched by distribution for the investigation of the first question and by pair for the investigation of the second. Matching variables will be: race, maternal age, education, gravidity, and previous pregnancy loss. Pregnancy outcomes process of care, medical-obstetric risk and sociodemographic characteristics will be analyzed by univariate and multivariate statistical techniques.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Office of Health Research Statistics & Technology, National Center for Health Services Research $128,388

2.1232,

AN ANALYSIS OF DATA FROM THE LOUISVILLE CHILDHOOD LEAD POISONING CONTROL PROGRAM

Unknown, Louisville & Jefferson City Dept. of Public Health, *Louisville, Kentucky* (H-2550RG)

This is a continuation of a joint HUD/HEW demonstration project underway since 1976. In 1978 the tasks of establishing an operating model program were completed. The data from files of the 14,000 children screened since 1974 was coded and entered onto a computer data base. In this fiscal year an analysis of this data base will be continued to determine those characteristics (child, housing, air, plumbing) associated with higher lead-in-blood levels and whether long-range effects of these elevated levels are detectable.

SUPPORTED BY U.S. Dept. of Housing & Urban Development, Office of Policy Development & Research funds n.a.

2.1233,

INTERRELATIONSHIP BETWEEN LEAD IN THE DWELLING UNIT AND BODY LEAD BURDEN IN PRESCHOOL CHILDREN

Unknown, Ohio State University, Columbus Campus, Childrens Hospital, Research Center, *561 S. 17th St., Livingston Pike, Columbus, Ohio* 43205 (H-2897)

This project will compile, code, edit, and analyze health and housing data files from a local child screening program (Columbus, Ohio) to determine the relationships that exist between blood lead levels and housing, demographic and biochemical factors. Staff from Children's Hospital Research Foundation and Ohio State University will attempt to determine the nature and extent of the lead poisoning problem in Columbus, Ohio by a retrospective study of the existing data from HEW-sponsored screening program which has been underway since 1972.

SUPPORTED BY U.S. Dept. of Housing & Urban Development, Office of Policy Development & Research funds n.a.

2.1234,

ASBESTIFORM MINERALS

M. Ross, U.S. Dept. of the Interior, Geological Survey, Geologic Div., *12201 Sunrise Valley Dr., Reston, Virginia* 22092 (9710-01991)

OBJECTIVES: Assess the epidemiological, mineralogical, and petrological studies that have been made which can contribute to our knowledge of the role naturally occurring minerals play in the production of lung and intestinal cancer and mesothelioma in the U.S. population. Initiate mineralogic studies which may give an insight into the 'asbestos and health' problem.

SUPPORTED BY U.S. Dept. of the Interior, Geological Survey, Geologic Div. $79,630

2.1235,

ARE PUBLIC AND RECREATIONAL WATER SUPPLIES IN MONTANA SAFE FROM YERSINIA ENTEROCOLITICA GASTROENTERITIS

M.J. Nakamura, University of Montana, School of Arts & Sciences, Dept. of Microbiology, *770 Eddy St., Missoula, Montana* 59801 (A-104-MONT)

BACKGROUND: There is increasing evidence that Yersinia enterocolitica may cause water-borne gastroenteritis. An outbreak in Montana of unknown origin may have been caused by this organism. There is virtually no information on the prevalence of this pathogen in the public and recreational waters of Montana.

OBJECTIVES: To develop adequate bacteriological methods for the rapid and accurate identification of Y. enterocolitica. To establish routine laboratory procedures for quantification of this organism in water samples. Varied sampling stations will be established. They will in all probability include camp grounds, picnic grounds, and recreational areas. Initially, the sampling will be made from tap water, which is generally assumed by the public to be potable. Samples will be taken periodically during the winter months and extensively during summer months. If certain water sources appear to be contaminated and thus a potential health hazard to the water consumer, proper agency officials will be contacted so that corrective measures may be instituted. Other enteric pathogens will also be surveyed. Eventually this would lead to a continuous surveillance procedure to safeguard the health of visitors to recreational areas. If time permits serotyping of Y. en-

terocolitica isolated will be attempted to establish an epidemiological pattern of the different serotypes.
SUPPORTED BY U.S. Dept. of the Interior, Office of Water Research & Technology $9,700

2.1236,

THE INVESTIGATION OF NATURAL 222RN AND 225RA IN GROUNDWATER IN MAINE AND ADJACENT AREAS AND ASSESSMENT OF RELATED HEALTH EFFECTS

C.T. Hess, University of Maine, Orono Campus, School of Arts & Sciences, Dept. of Physics, *36 Winslow Hall, Orono, Maine* 04473 (A-045-ME)

The investigation will study the association of 222Rn and 226Ra with geology and hydrology in Maine areas which are suspected of having high levels of these elements. The assessment includes comparisons with water chemistry, as well as hydrology, recharge time, age of water, and develops a general understanding of geographical distribution and controlling parameters for 222Rn and 226Ra. The study tests for correlation of high concentrations in water with health effects (lung cancer, stomach cancer, bone cancer, etc.).

SUPPORTED BY U.S. Dept. of the Interior, Office of Water Research & Technology $5,720

2.1237,

TRAVEL AND ACCIDENT DATA

J.P. Mills, State Dept. of Highways & Transportation, *1221 E. Broad St., Richmond, Virginia* 23219

The purpose is to provide timely, consistent and complete nationwide data concerning the number of fatal and injury accidents as they relate to the highway system. The analysis and summary of these data will provide the sound traffic accident information needed for improved evaluation and guidance of the continuing state, local and national highway safety programs.

Fatal and injury accident rates on Federal-Aid and other highway systems study referred to as TA-1 report annually. This is a study done for the Federal Highway Administration; Department of Transportation. Completion date is June of each year.

SUPPORTED BY U.S. Dept. of Transportation, Federal Highway Admin. funds n.a.

2.1238,

CARBON MONOXIDE AND OTHER TOXIC GASES IN COMMERCIAL TRUCK CABS

R.A. Ziskind, Science Applications Inc., *101 Continental Blvd., Suite 310, El Segundo, California* 90245

Determine the concentrations of potentially harmful emission pollutants in the driver's compartment of a sample of heavy-duty diesel trucks and assess the effects of the concentrations of driver health and performance.

SUPPORTED BY U.S. Dept. of Transportation, Federal Highway Admin., Office of Research, Traffic Systems Div. funds n.a.

2.1239,

FATAL ACCIDENT REDUCTION SYSTEM-FORMERLY-FATALITY ANALYSIS FILE

P. Black, State Highway Safety Office, *2101 N. Lincoln St., Room G-80, Oklahoma City, Oklahoma* 73105

Using a 100% sample of fatal accidents, FARS will establish a national statistical file which will contain data needed to produce periodic reports describing the accident environment, to track the various accident countermeasure programs and to provide data for states to evaluate their problems with respect to the Region and the Nation as a whole.

SUPPORTED BY U.S. Dept. of Transportation, National Highway Traffic Safety Admin. funds n.a.

2.1240,

INCIDENCE OF DRUGS AMONG FATALLY INJURED DRIVERS

Unknown, Michigan State University, Graduate School, *13 Natural Resources Bldg., East Lansing, Michigan* 48824 (HS-8-02024)

An indication of the national incidence of drugs other than alcohol (e.g. marihuana) and drug groups (e.g. barbiturates) in highway fatalities shall be determined by studying a nationally representative sample of deceased drivers; urban, rural, and regional (geographic). Differences concerning drug presence among these fatalities will be identified; and if feasible and practical, the incidence and levels of drugs in living drivers involved in auto accidents will be determined.

SUPPORTED BY U.S. Dept. of Transportation, National Highway Traffic Safety Admin. funds n.a.

2.1241,

COOPERATIVE AGREEMENT FOR EPIDEMIOLOGY RESEARCH CENTER

E.P. Radford, University of Pittsburgh, Graduate School of Public Health, Dept. of Epidemiology, *4200 5th Ave., Pittsburgh, Pennsylvania* 15260 (R806815-01)

By a cooperative research center agreement between of the EPA and the University of Pittsburgh, an Environmental Epidemiology Center would be established at the University's Graduate School of Public Health. Its primary goals would be to: (1) bring together a wide range of school, university, community, regional, national, and even international resources to plan and perform research in the field of environmental epidemiology and contributory and related fields; (2) provide specialized assistance to the EPA; (3) provide means for scientists in these fields from outside the university to contribute to Center research, service, and educational activities; and (4) provide advanced graduate and post-graduate training in these fields. An executive committee, comprised of Dr. Edward P. Radford, Director and Professor of Epidemiology, Dr. Philip E. Enterline, Associate Director and Program Coordinator for Biometry, Program Coordinators for Environmental Epidemiology of Chronic Disease, Environmental Toxicology, Air and Water Pollutant Effects, and Environmental Radiation Effects (Drs. Lewis H. Kuller, Yves C.E. Alarie, Julian B. Andelman, and Neil Wald, respectively), Dean and Professor of Epidemiology Herschel E. Griffin, and Directors of EPA Health Effects Research Laboratories, would govern the Center with the assistance of a National Advisory Board having EPA, Center, and 'external' representation. A variety of mechanisms having optimal flexibility to respond to ever-changing needs and circumstances would be used to address needs of the EPA and field of environmental epidemiology and assistance needs of the EPA. In addition to research and service activities, Center Fellows, Visiting Scholars, EPA Visitors/Exchange, and Symposium Series Programs would be established. The Center would also provide graduate- and post-graduate-level training, and perhaps new courses and educational programs in environmental epidemiology would be established through the Center and School.

SUPPORTED BY U.S. Environmental Protection Agency $346,000

2.1242,

DEVELOPMENT AND EVALUATION OF AN ENVIRONMENTAL DATA ANALYSIS SYSTEM

L. Milask, Sigma Data Computing Corp., *12730 Twinbrook Pkwy., Rockville, Maryland* 20852 (79-0655)

OBJECTIVE: The objective of the IAG is to provide for collaboration in the development and application of the UPGRADE System to support analysis in the area of environmental health.

APPROACH: Databases dealing with such environmental health areas as populations at risk to air polluton, morbidity and mortality rates, and/or health care utilization will be investigated and appropriate variables added to existing databases. These data will be analyzed using the UPGRADE System and reports prepared.

PROGRESS: Investigation of databases has begun. Enhancements to the UPGRADE/EXTRACT System to allow for increased data capabilities are underway. Information on the SMSA level is being collected and morbidity rates are being calculated in preparation for a new database. New release 4.0 has been completed and is in operation. User's manual will be available by January 1980.

SUPPORTED BY U.S. Environmental Protection Agency, Office of Monitoring & Technical Support $70,000

2.1243,

EPIDEMIOLOGICAL ASSESSMENTS OF THE RELATION BETWEEN SELECTED ENVIRONMENTAL VARIABLES AND AGE-ADJUSTED MORTALITY/MORBIDITY RATES

T. Darby, U.S. Dept. of Health & Human Services, Public Health Service, Office of Health Research Statistics & Technology, National Center for Health Statistics, *3700 East West Hwy., Hyattsville, Maryland* 20782 (07-01071)

OBJECTIVE: Develop methodologies to relate morbidity/mortality data to air and water quality data by county of SMSA.

APPROACH: Investigate use of data from NCHS surveys (HIS, HANES, Vital Statistics) in conjunction with environmental data. Apply correlational analysis, multiple regression, factor analysis, and mapping to determine small-area differences, geographic variations, or trends, possibly attributed to environmental variables.

PROGRESS: Creation of a file of age-adjusted and age-specific rates of acute and chronic conditions from Health Interview Survey aggregated over 5 years.

SUPPORTED BY U.S. Environmental Protection Agency, Office of Monitoring & Technical Support $55,000

2.1244,

SAMPLE ANALYSES FOR ROCKY FLATS HUMAN BURDEN STUDY

W. Menzies, U.S. Dept. of Defense, Air Force, McClellan Central Lab., *1155th Tech. Ops. Squadron, McClellan A.F.B., Sacramento, California* 95652

OBJECTIVE: The principal objective of the study is to determine if those people who reside near the Rocky Flats Nuclear Weapons Facility have higher burdens of plutonium than the general population. This effort is to provide the sample analyses for this project.

APPROACH: Analyze samples collected by the University of Colorado Medical School using standard radiochemical techniques.

PROGRESS: As of March 10, 1980, 836 samples have been analyzed. total of 1,061 samples are to be analyzed for this project.

SUPPORTED BY U.S. Environmental Protection Agency, Office of Research & Development, Environmental Monitoring & Systems Lab. $35,500

2.1245,

ROCKY FLATS HUMAN BURDEN STUDY

J.C. Cobb, University of Colorado, Medical Center, School of Medicine, Dept. of Preventive Medicine & Comprehensive Health Care, *4200 E. 9th Ave., Denver, Colorado* 80262 (68-03-2915)

OBJECTIVE: To provide statistical and epidemiological analyses of the data from samples collected under this contract and analyzed under the Interagency Agreement with McClellan AFB. Data from these analyses will indicate if persons living near the Rocky Flats Nuclear Weapons Plant have increased body burdens of plutonium.

APPROACH: Samples were collected from autopsied humans by the University of Colorado Medical School in three geographical areas. The first area was within 0-25 Kilometers radius of the Facility; the second area was 25-50 kilometers radius of the Facility; and the third area was the remainder of Colorado east of the Rockies. Liver and lung tissues were analyzed for plutonium content.

PROGRESS: Preliminary results indicate that the plutonium activity levels in tissue samples from each collection area are within the activity levels expected from global fallout. Measurements of the 240 Pu/239 Pu isotope ratios indicate that several of the samples from the 0-25 and the 25-50 kilometers collection areas contain small quantities of weapons grade plutonium.

SUPPORTED BY U.S. Environmental Protection Agency, Office of Research & Development, Environmental Monitoring & Systems Lab. $110,000

2.1246,

INHALED PARTICULATE MATTER NETWORK

R. Weaver, Systems Research & Development Corp., *3022 Chapel Hill Rd., P.O. Box 12221, Research Triangle Park, North Carolina* 27707 (68-02-2449)

Objectives are to expand current data handling capabilities and to process incoming data from the Inhaled Particulate Matter network.

Outputs are to be in the form of quarterly and annual reports summarizing the data.

Trial tests of current systems have been completed by the contractor and they can handle existing data formats. Systems analysis on siting expansion has been completed and programming has begun. Systems analysis on raw data file is scheduled to begin in August. To date the contractor is two weeks ahead of schedule.

PROGRESS: System analysis and programming efforts for maintenance of the system are complete. Work has begun for special report programs needed for quarterly and annual reports.

SUPPORTED BY U.S. Environmental Protection Agency, Office of Research & Development, Environmental Monitoring & Systems Lab. $50,000

2.1247,

DERIVE EXPOSURE/DOSE ASSESSMENT MODEL FOR INDIVIDUALS IN A POPULATION

S.K. Friedlander, California Inst. of Technology, School of Engineering, Dept. of Chemical Engineering, *1201 E. California Blvd., Pasadena, California* 91109 (68-03-0434)

OBJECTIVE/APPROACH: To report on a survey of the literature on exposure/dose models relating carcinogens in the environment and human exposure to them. An assessment will be made of the applicability of available models to environmental carcinogen transport and impact.

FINAL OUTPUT: The final output will be a report which will consist of a comprehensive survey of the literature on development and application of mathematical simulation models describing sources, environmental pathways, and exposure/dose relationships of environmental carcinogens. The applicability of one or more of these models will be tested and research identified as required.

PROGRESS: Proceedings on Conference on Chemical Carcinogens in the Environment in final editing prior to publication. Final report on models and applicability completed. Released for publication.

SUPPORTED BY U.S. Environmental Protection Agency, Office of Research & Development, Environmental Monitoring & Systems Lab. $0

2.1248,

DESIGN A SYSTEM FOR COST-EFFECTIVE ASSESSMENT OF ENVIRONMENTAL CARCINOGENS (#16)

G.B. Wiersma, U.S. Environmental Protection Agency, Office of Research & Development, Environmental Monitoring & Systems Lab., *P.O. Box 15027, Las Vegas, Nevada* 89114

OBJECTIVE/APPROACH: 1. Serve as a mechanism for evaluating available monitoring system techniques to assess exposure of humans from environmental carcinogens. 2. Provide the basis for identifying potentially exposed populations to carcinogens in support of future epidemiological studies should they be desired. 3. Provide the data base needed for the development of a definitive exposure monitoring system in conjunction with epidemiological studies.

SUPPORTED BY U.S. Environmental Protection Agency, Office of Research & Development, Environmental Monitoring & Systems Lab. $848,700

2.1249,

RETROSPECTIVE EXPOSURE MONITORING FOR SELECTED ENVIRONMENTAL CARCINOGENS

G.D. Potter, U.S. Environmental Protection Agency, Office of Research & Development, Environmental Monitoring & Systems Lab., *P.O. Box 15027, Las Vegas, Nevada* 89114

OBJECTIVE/APPROACH: Determine the availability and locate materials which can be analyzed for concentrations of selected chemicals. Suitable materials may include home or locally packaged foods, biological specimens, such as tree rings, soil cores, preserved plants and/or animals. The selection of suitable samples will be investigated. Methodologies for collection and analysis will be documented.

FINAL OUTPUT: A series of reports which can be used to estimate past exposure of populations to specific carcinogenic or toxic materials released from industrial or agricultural sources in specific impact areas.

PROGRESS: A preliminary study on tree rings has been completed and analytical data from neutron activation spectra of the rings for potential 'marker' materials transported with toxic substances is under way, and a report showing correlation between arsenic emission from a smelter and its concentration in annual rings from trees has been completed.

SUPPORTED BY U.S. Environmental Protection Agency, Office of Research & Development, Environmental Monitoring & Systems Lab. $0

2.1250,

ABSORPTION, DISTRIBUTION, AND EXCRETION OF ACTINIDE ELEMENTS BY DAIRY CATTLE

G.D. Potter, U.S. Environmental Protection Agency, Office of Research & Development, Environmental Monitoring & Systems Lab., Exposure & Dose Assessment Branch, *P.O. Box 15027, Las Vegas, Nevada* 89114

OBJECTIVE/APPROACH: The purpose of this research is to provide input data for hazard assessment of areas contaminated by plutonium, uranium, and americium originating from nuclear testing activities, nuclear power plants, nuclear fuel reprocessing/fabrication facilities, and uranium extraction/fabrication activities. Since man consumes large quantities of dairy products and beef, evaluation of radiological hazards associated with actinide releases must include transport to man via the food chain from cattle which could ingest large quantities of these actinides. Dairy cows and goats are maintained in metabolism stalls and actinide elements are administered by oral or intravenous routes. Blood, milk, urine, and fecal actinide concentrations are determined daily until the animals are sacrificed for determination of tissue nuclide burdens. The actinides administered are in specific chemical/physical forms which include the forms found in the environment. A new study on the feeding of debris from old nuclear test sites to goats has been initiated in order to determine which of the long-lived radionuclides from the debris will be observed in tissues.

FINAL OUTPUT: Comparison of 238Pu and 239Pu metabolism in cows. Summary report comparing studies on plutonium, americium, curium and neptunium. The results of these studies will be used to evaluate the radiological hazard of specific radionuclides via the food chain to man.

PROGRESS: Report published on 241Am metabolism in dairy goats and cows. Preliminary data from 238/239Pu study indicated that the bioavailability of 239Pu is not much different from 238Pu, which was predicted from the differences in specific activity and non-biological solubility studies. Report: Cm transport in dairy animals - to GPO 3/79. Bioavailability of Cm similar to other actinides.

SUPPORTED BY U.S. Environmental Protection Agency, Office of Research & Development, Environmental Monitoring & Systems Lab. $298,000

2.1251,

ASSESSMENT, CONTROL AND HEALTH EFFECTS OF INDOOR AIR POLLUTION

D. Moschandreas, Geomet Inc., *15 Firstfield Rd., Gaithersburg, Maryland* 20760 (68-02-2294)

OBJECTIVES: To develop a model for estimating extent of indoor air pollution.

APPROACH: Monitor indoor/outdoor levels of selected air pollutants in order to develop and verify the model.

OUTPUT: A model that will relate levels of outdoor pollution to levels of pollutants expected in adjacent indoor structures, particularly residences.

SUPPORTED BY U.S. Environmental Protection Agency, Office of Research & Development, Environmental Monitoring & Systems Lab. $0

2.1252,

DENVER STUDY

C.E. Rodes, U.S. Environmental Protection Agency, Office of Research & Development, Environmental Monitoring & Systems Lab., *Research Triangle Park, North Carolina* 27711

OBJECTIVE: To obtain data in support of health effects study.

APPROACH: Equipment will be supplied, maintained, and calibrated at Jewish Children's hospital in Denver.

SUPPORTED BY U.S. Environmental Protection Agency, Office of Research & Development, Environmental Monitoring & Systems Lab. $64,500

2.1253,

REYE'S SYNDROME AND TISSUE ORGANOCHLORIDES/OTHER CHEMICAL RESIDUES

R.G. Rowe, University of Minnesota, Duluth Campus, School of Medicine, Lake Superior Basin Studies Center, *2400 Oakland Ave., Duluth, Minnesota* 55812 (R805126-01)

OBJECTIVE: To determine if the disease Reye's Syndrome is correlated to bioaccumulated chemicals and to determine the body burden of selected chemicals in humans.

APPROACH: Tissues from persons dying from Reye's Syndrome are to be chemically analyzed and compared to persons dying by other causes. The analysis of the tissues is to be by GC-MS at the Duluth EPA laboratory.

PROGRESS. The available tissues have been amassed and the cases described. The tissues are now awaiting analysis at ERL-Duluth.

The grant portion of the project is completed and awaits in-house completion.

SUPPORTED BY U.S. Environmental Protection Agency, Office of Research & Development, Environmental Research Lab. $0

2.1254,

WATER QUALITY RESEARCH PROGRAM DEVELOPMENT

K.H. Mancy, University of Michigan, Ann Arbor Campus, Graduate School, Dept. of Environmental Chemistry, *Rackham Bldg., Ann Arbor, Michigan* 48104

OBJECTIVE: The PL480 research addresses the impacts of the Aswan High Dam on water quality in Lake Nasser and downstream portions of the Nile River. These water quality impacts are measured in terms of physical, chemical, and biological parameters. In human terms, impacts on agriculture, public health, and socioeconomic effects are also being examined. During 1975 and 1976, a country-wide water quality monitoring network along the River Nile and Lake Nasser was established. This network is supplemented by special functional surveys which include plankton, benthos, hydrophytes, and fisheries. The scientific information is being fed to an environmental information storage and retrieval system, called the Nile Data Bank. Public health impacts studies have been solely concerned with the effects of changes in water resources on parasitic diseases in rural Egypt. Agricultural impacts studies are based on laboratory and field assessment of the effects of changes in water quality with current and projected developments on Egyptian agricultural productivity. Socioeconomic impacts studies are concerned with the assessment of alternative development strategies on environmental effects useful to the decision maker.

PROGRESS: Scientific reports covering the various sub-project results were presented in the United States in September 1978 and a final report on the Public Health Sub-project was published as an EPA report in January 1979. Other final reports will follow. Project has been extended for an additional two years.

SUPPORTED BY U.S. Environmental Protection Agency, Office of Research & Development, Environmental Research Lab. $1,500

2.1255,

WATER QUALITY STUDIES ON THE RIVER NILE AND LAKE NASSER

K.H. Mancy, University of Michigan, Ann Arbor Campus, School of Public Health, Dept. of Environmental & Industrial Health, *Ann Arbor, Michigan* 48104 (R803291-04)

OBJECTIVE: This grant provides United States dollar support for the principal investigator and his management needs in directing the PL-480 project SFCP-03-542-1 'Water Quality Studies on the River Nile and Lake Nasser.' See Task No. K609A-050.

SUPPORTED BY U.S. Environmental Protection Agency, Office of Research & Development, Environmental Research Lab. $0

2.1256,

EVALUATION OF HUMANS EXPOSED TO WATERBORNE CHEMICALS IN THE GREAT LAKES

H.E. Humphrey, State Div. of Environmental Epidemiology, *3500 N. Logan, Lansing, Michigan* 48909 (R807192)

OBJECTIVE: Identify a cohort of persons in the Great Lakes area exposed to chemical contaminants present in the Great Lakes in order to investigate

whether or not long or short term health effects can be observed and related to such exposure.

APPROACH: Human blood and milk samples will be obtained. Levels of PCBs, PBBs, DDE and other contaminants known to be present in the Great Lakes will be quantified. Acute and chronic medical effects will be looked for and correlated with residue levels.

SUPPORTED BY U.S. Environmental Protection Agency, Office of Research & Development, Environmental Research Lab. $306,500

2.1257,

HEALTH IMPACTS OF ALTERED GEOCHEMISTRY ASSOCIATED WITH MINE DRAINAGE FROM WESTERN INTERIOR COALS

B.G. Wixson, University of Missouri, Rolla Campus, School of Engineering, Dept. of Civil Engineering, *Rolla, Missouri* 65401 (R807133)

OBJECTIVE: This study is designed to determine the existence of relationship between acid mine drainage contamination of potable water supplies and human health. This is to be done in the western interior coal region encompassing the states of Missouri, Iowa, Oklahoma, and Kansas.

APPROACH: The approach is through an ecologic study looking for relationships between epidemiologic data and water quality data. The epidemiologic data include county cancer mortality rates on 30 causes of death from NCI and census information. Water quality data include surface and ground water quality data and data obtained from samples of tap water.

SUPPORTED BY U.S. Environmental Protection Agency, Office of Research & Development, Health Effects Research Lab. $0

2.1258,

RELATIONSHIP OF ORGANIC CONTAMINANTS IN DRINKING WATER TO CANCER MORTALITY AND MORBIDITY IN CONNECTICUT

R.S. Woodhull, State Dept. of Health, *79 Elm St., Hartford, Connecticut* 06115 (68-03-2775)

OBJECTIVE: This study will provide the necessary data on drinking water supplies in Connecticut to determine the relationship between (1) type of water supply and drinking water cancer and mortality over time and (2) organics in drinking water and the incidence of bladder cancer.

APPROACH: This objective will be accomplished through two studies: (1) Drinking water and cancer mortality - This study will utilize existing drinking water data for the state of Connecticut along with newly collected data for comparison with the tumor registry. (2) Bladder cancer study - This study is part of a large scale EPA bladder cancer study. It will be a case-control study using 540 cases and 1080 controls selected in Connecticut. Questionnaires will be given and water samples will be collected for chemical analysis.

SUPPORTED BY U.S. Environmental Protection Agency, Office of Research & Development, Health Effects Research Lab. funds n.a.

2.1259,

RELATIONSHIP OF SODIUM AND OTHER INORGANIC CONSTITUENTS IN DRINKING WATER TO HYPERTENSION IN CONNECTICUT

A.V. Sardinas, State Dept. of Health, *79 Elm St., Hartford, Connecticut* 06115 (68-03-2699)

OBJECTIVE: An effort is being made to determine the amount of variability in sodium and other inorganic constituents found among water supplies in Connecticut. Once this variability has been ascertained it will be correlated with the occurrence of hypertension.

APPROACH: In addition to the compilation of historical water data, water samples will be collected from a random sample of households and analyzed for the various inorganic constituents. At the time of the water collection, the heads of households will be interviewed and screened for hypertension. The data will be analyzed to detect any relationships. From the hypertension screening survey, a population will be selected for a case-control study. The water samples of approximately 400 hypertensive individuals will be compared to water samples of approximately 400 matched normotensive individuals on the basis of the results of PIXE analysis.

PROGRESS: All interviews have been completed and all water samples have been collected. Analyses are underway. Selection of the 800 individuals for the case-control study is presently underway.

SUPPORTED BY U.S. Environmental Protection Agency, Office of Research & Development, Health Effects Research Lab. $0

2.1260,

CASE-CONTROL STUDY OF WATER QUALITY AND CARCINOGENESIS IN PENNSYLVANIA

A.K. Bahn, University of Pennsylvania, School of Medicine, Dept. of Community Medicine, *36th & Hamilton Walk, Philadelphia, Pennsylvania* 19174 (R804594-01)

OBJECTIVES: One of the major aims of the project will be to devise and develop methods for evaluating possible links between colon cancer and substances in drinking water.

APPROACH: The investigation will be a 'case-control' study based on exposure histories of individuals. First, the water-drinking habits of persons who died from cancer of the colon will be compared with those of decedents whose cause of death was other than cancer; these subjects will be matched according to age, sex, and area of residence. Investigators will also seek information on lifetime occupation, diet, and smoking habits. At the same time, quality of water from a variety of sources, including surface and ground water supplies, will be examined. Any relationship between incidence of cancer of the colon and type, amount, or source of water consumed may then be discernible.

PROGRESS: The survey instruments have been developed and field tested. Arrangements have been made for obtaining names of decedent cases and controls from the State and more than one-half of the hospitals in the study area have agreed to participate in the study. Full-scale implementation of the study is currently underway.

SUPPORTED BY U.S. Environmental Protection Agency, Office of Research & Development, Health Effects Research Lab. $0

2.1261,

HUMAN HEALTH HAZARDS OF VIRUSES IN DRINKING AND RECREATIONAL WATERS

D.B. Nelson, University of Wisconsin, Madison Campus, Medical School, Dept. of Medicine/Preventive Medicine, *307 N. Charles St., Madison, Wisconsin* 53706 (R804161-03)

The basic objectives of the proposed study are: (1) to determine the minimum human oral infective dose of Sabin type 1 poliovirus strain in infants, (2) define the age specific rate of acquisition of antibodies to a number of important enteroviruses in young children with similar socioeconomic backgrounds who have different drinking water sources, (3) determine by serologic testing the incidence of enterovirus infections in children who participate in swimming classes at urban beaches and pools and compare to a control group engaged in non-swimming team sports, and (4) determine the frequency of recent exposure to recreational waters by children seeking medical attention with confirmed enteroviral illness and compare to a control group being seen for non-infectious problems. Data obtained from this study will indicate whether: (1) infants can be experimentally infected with very low oral doses of enterovirus, (2) children with similar socioeconomic backgrounds who are exposed to different types of drinking and recreational water sources acquire enterovirus infections at different rates, (3) children who swim frequently at beaches or pools acquire more infections than children who participate in non-swimming team sports, and (4) children with enteroviral illnesses have greater frequeny of swimming than children who did not acquire enteroviral illness during this time.

PROGRESS: The findings of this study showed that swimming children had a higher incidence of illness apparently of viral etiology than non-swimmers. Water contaminated by infected swimmers may have served as the transmission route, although definitive data were not obtained. Feeding studies with poliovaccine virus and 32 human infants indicated that about 70 times the dose required to infect 50% of the cell cultures (TCID50) was required to infect 50% of the infants; a dose of 50 TCID50 infected about 20% of the infants.

SUPPORTED BY U.S. Environmental Protection Agency, Office of Research & Development, Health Effects Research Lab. $0

2.1262,

AN HISTORICAL COHORT EPIDEMIOLOGICAL STUDY OF THE HEALTH EFFECTS ON NEWBORNS AND INFANTS OF CLO2 AS A WATER DISINFECTANT

G.S. Moore, University of Massachusetts, Amherst Campus, School of Health Sciences, *Amherst, Massachusetts* 01002 (R806139-01)

OBJECTIVE: Chlorine dioxide is a powerful oxidant and chlorite, one of the by-products of ClO2 disinfection, is another powerful oxidant. The health effects of ClO2 disinfection of humans has not been fully assessed. There is evidence that pregnant mothers, fetuses in utero, and newborns may be at increased risk to oxidant stress and are likely to exhibit increased erythrocyte destruction and/or MetHb formation in blood cells exposed to chlorine dioxide or chlorite. The objective of this research is to assess the extent of this risk by an historical epidemiological study on these at risk groups in a population served by a water supply disinfected with ClO2.

Final draft report in preparation.

SUPPORTED BY U.S. Environmental Protection Agency, Office of Research & Development, Health Effects Research Lab. $53,000

2.1263,

DISEASE TRANSMISSION ASSOCIATED WITH LAND APPLICATION OF WASTEWATER

H.I. Shuval, Hebrew University of Jerusalem, Hadassah Medical School, Environmental Health Lab, *P.O. Box 1172, Jerusalem 91000, Israel* (R806416-01)

OBJECTIVE: 1) To determine and measure if there is a degree of added risk of communicable disease incidence associated with wastewater land application and irrigation in agricultural communities (kibbutzim). 2) To determine the relationship between routes of transmission and disease incidence in the study population.

APPROACH: A prospective epidemiological study will be carried out in 30 kibbutzim in Israel which practice wastewater irrigation and in control groups not irrigating with wastewater. Health records of the various population groups will be studied and epidemiologic follow-ups of highly susceptible groups will be made (visiting volunteers, etc). Serologic and other lab tests will be used to compare infection rates of exposed and control groups. Air monitoring studies for aerosolized bacteria and viruses will be carried out.

SUPPORTED BY U.S. Environmental Protection Agency, Office of Research & Development, Health Effects Research Lab. $161,000

2.1264,

DETECTION OF VIRAL GASTROENTERITIS AGENTS

N.R. Blacklow, University of Massachusetts, Medical School at Worcester, School of Medicine, Dept. of Medicine, *419 Belmont St., Worcester, Massachusetts* 01604 (R806591-01)

OBJECTIVE: The major objective of this project is to assess the contribution of viruses to environmentally transmitted enteritis.

APPROACH: The problem is being approached in two ways. The first approach is the development of new and more sensitive methods for the detection of agents in viral enteritis. This includes attempts to propagate the agents in vitro, and improvement of the sensitivity of immunological assays for these viruses that have already been developed in our laboratory. Development of new immuno-assays for viral agents of enteritis not previously studied is also planned. The second approach is to utilize techniques presently available in our laboratory for the study of naturally occurring disease outbreaks and for prospective seroepidemiological studies.

SUPPORTED BY U.S. Environmental Protection Agency, Office of Research & Development, Health Effects Research Lab. $60,000

2.1265,

EPIDEMIOLOGICAL IMPACT OF GROUNDWATER RECHARGE

M. Nellor, Los Angeles County Sanitation District, *1955 Workman Mill Rd., P.O. Box 4998, Whittier, California* 90607 (R806399-01)

OBJECTIVE: To assess the potential health effects associated with the long-term use of drinking water which has been recharged in part with reclaimed water.

APPROACH: An epidemiology study will be done using existing data to determine if residents of an area which has been supplied with recycled water

differ in patterns of morbidity and mortality from residents in the same area prior to implementing recycling and from residents from similar communities drinking non-recharged water.

SUPPORTED BY U.S. Environmental Protection Agency, Office of Research & Development, Health Effects Research Lab. $145,000

2.1266,

HEALTH EFFECTS OF HUMAN EXPOSURE TO BARIUM IN DRINKING WATER

B.W. Carnow, University of Illinois, Medical Center at Chicago, School of Public Health, Dept. of Occupational & Environmental Medicine, *Box 4348, Chicago, Illinois* 60680 (R803918)

OBJECTIVES: To determine by epidemiologic and supportive laboratory studies the health effects of consuming barium in Illinois drinking water exceeding the recommended drinking water standard of 1.0 mg/liter. Particular emphasis will be given to see if barium consumption is associated with cardiovascular and renal disease and the prevalence of hypertension.

APPROACH: (a) Mortality rates will be retrospectively examined for statistical differences between deaths attributed to cardiovascular diseases in communities in Illinois with elevated barium levels in their drinking water supplies and the National and State averages. Diseases examined will include hypertension, ischemic heart disease, peripheral vascular disease, cerebrovascular disease and renal disease. (b) A household morbidity study will be performed on an exposed population. Morbidity rates will be compared with the National and State averages. The exposed population will be subjected to blood pressure measurements and a questionnaire. Tap water samples from households will be analyzed for trace metal composition.

PROGRESS: We have identified those Illinois communities above the standard of 1.0 mg/liter. We have acquired Illinois State Death Certificate Tapes from which mortality rates will be examined. We have made initial contact with the communities involved in the morbidity study. Project completed with results showing an increase in death rates in population exposed to barium in their drinking water as opposed to those not exposed, and an increase in blood pressure for males exposed to 7.0 mg/l of barium in their drinking water when compared to similar population having less than 0.1 mg/l. Final report entitled; 'Health Effects of Human Exposure to Barium in Drinking Water' (EPA-600/1-79-003) published Jan. 1979.

SUPPORTED BY U.S. Environmental Protection Agency, Office of Research & Development, Health Effects Research Lab. $0

2.1267,

A STUDY OF CANCER AND THE PUBLIC DRINKING WATER SUPPLIES IN MISSOURI

C.J. Marienfeld, University of Missouri, Columbia Campus, School of Medicine, Dept. of Community Health, *M228 Medical Sciences, Columbia, Missouri* 65201 (R805297-03)

Establishment and maintenance of a statewide surveillance system for human cancer incidence in relationship to the multiple sources of community public water supplies in Missouri and the methods of treatment of such local water supplies. Using the available mortality and morbidity data, a computerized rural route geocoding system will be used to locate the residence of the affected individuals identified as a part of the population at risk within the geographic water supplied area.

PROGRESS: Some interesting relationships have been observed in the cancer death rates in Missouri and water supply characteristics. Supplies have been classified as to impact of coal mining and burning. Results of the epidemiological studies seem promising and the studies will be continued. If more consistent relations are developed some more chemistry and bioassay would seem warranted.

SUPPORTED BY U.S. Environmental Protection Agency, Office of Research & Development, Health Effects Research Lab. $110,000

2.1268,

EPIDEMIOLOGIC STUDY OF BLADDER CANCER RISK ASSOCIATED WITH TRIHALOMETHANES IN DRINKING WATER

K. Canter, U.S. Environmental Protection Agency, Office of Research & Development, Health Effects Research Lab., *5555 Ridge Ave., Cincinnati, Ohio* 45268

OBJECTIVE: To assess the bladder cancer risks associated with exposure to purgeable organics in drinking water.

APPROACH: Include exposure to purgeable organics as one of the risk factors to be evaluated as part of the large National Cancer Institute supported study of bladder cancer and saccharine usage.

PROGRESS: All of the cases and controls have been interviewed, much of the historical water supply and water quality data has been abstracted, and the water sampling and analysis effort is well underway.

SUPPORTED BY U.S. Environmental Protection Agency, Office of Research & Development, Health Effects Research Lab. $50,000

2.1269,

EPIDEMIOLOGICAL STUDY OF TOXIC EXPOSURE RISK FACTORS IN INFERTILITY

R.K. Miday, U.S. Environmental Protection Agency, Office of Research & Development, Health Effects Research Lab., *5555 Ridge Ave., Cincinnati, Ohio* 45268

OBJECTIVE: Participate in a cooperative effort to design and conduct a study to assess the influence of toxic occupational and environmental chemical exposures on the occurrence of infertility through the use of existing data bases.

SUPPORTED BY U.S. Environmental Protection Agency, Office of Research & Development, Health Effects Research Lab. $45,000

2.1270,

FEASIBILITY STUDY FOR USE OF SPONTANEOUS ABORTION AS A MONITORING SYSTEM FOR ENVIRONMENTAL TOXIC EXPOSURES

R.K. Miday, U.S. Environmental Protection Agency, Office of Research & Development, Health Effects Research Lab., *5555 Ridge Ave., Cincinnati, Ohio* 45268

OBJECTIVE: Participate in a cooperative effort to evaluate the incidence of spontaneous abortions as a monitoring system for environmental toxic substances.

APPROACH: Participates in planning, evaluation, and review activities.

SUPPORTED BY U.S. Environmental Protection Agency, Office of Research & Development, Health Effects Research Lab. $50,000

2.1271,

A STUDY OF CANCER AND THE PUBLIC DRINKING WATER SUPPLIES OF MISSOURI

C. Sonich, U.S. Environmental Protection Agency, Office of Research & Development, Health Effects Research Lab., *5555 Ridge Ave., Cincinnati, Ohio* 45268

OBJECTIVE: To participate with Dr. Marienfeld, principal investigator for coop. agree. No. R-805297-03, in planning for future activities and interpretation of results for the project titled 'A Study of Cancer and the Public Drinking Water Supplies of Missouri.'

APPROACH: Participate in planning and review meetings.

SUPPORTED BY U.S. Environmental Protection Agency, Office of Research & Development, Health Effects Research Lab. $5,000

2.1272,

EXPLORATORY EPIDEMIOLOGIC STUDY OF POSSIBLE RELATIONSHIPS OF DRINKING WATER QUALITY TO BIRTH DEFECTS AND SPONTANEOUS ABCRTIONS

D.G. Greathouse, U.S. Environmental Protection Agency, Office of Research & Development, Health Effects Research Lab., *5555 Ridge Ave., Cincinnati, Ohio* 45268

OBJECTIVE: Participate in a cooperative effort to design a study protocol to evaluate the potential role of drinking water quality in the incidence of birth defects and spontaneous abortions. Assist in interpretation of final results.

APPROACH: Actively participate in planning and review activities.

SUPPORTED BY U.S. Environmental Protection Agency, Office of Research & Development, Health Effects Research Lab. $5,000

2.1273,

EPIDEMIOLOGY STUDY OF HEALTH EFFECTS OF CHLORINE DIOXIDE

D.G. Greathouse, U.S. Environmental Protection Agency, Office of Research & Development, Health Effects Research Lab., *5555 Ridge Ave., Cincinnati, Ohio* 45268

OBJECTIVE: Assist principal investigator for a cooperative agreement in the development of a study protocol to examine the health effects of exposure to chlorine dioxide treated water.

APPROACH: Review and modify initially submitted study protocol. Participate in planning and review meetings.

SUPPORTED BY U.S. Environmental Protection Agency, Office of Research & Development, Health Effects Research Lab. $30,000

2.1274,

HEALTH CONSEQUENCES OF BENZENE CONTAMINATION OF DRINKING WATER

R. Miday, U.S. Environmental Protection Agency, Office of Research & Development, Health Effects Research Lab., *5555 Ridge Ave., Cincinnati, Ohio* 45268

OBJECTIVE: A small population (35) of persons exposed to well water contaminated with benzene (8 ppm) will be studied to determine the incidence of adverse health effects.

APPROACH: Combined environmental, epidemiologic, and clinical pathological study utilizing an appropriate unexposed control group.

PROGRESS: Preliminary data analysis shows no association of biochemical abnormalities and benzene exposure.

SUPPORTED BY U.S. Environmental Protection Agency, Office of Research & Development, Health Effects Research Lab. $50,000

2.1275,

STUDY OF EFFECTS OF HOME WATER SOFTENERS ON BLOOD PRESSURES OF SCHOOL AGE CHILDREN - OHIO

A. Okun, U.S. Environmental Protection Agency, Office of Research & Development, Health Effects Research Lab., *5555 Ridge Ave., Cincinnati, Ohio* 45268

OBJECTIVE: This project is designed to investigate the possible relationship between the sodium content of drinking water and increased arterial blood pressure. Based on past evidence, it appears that blood pressure should increase with sodium content when tested among groups of individuals. This proposal will investigate a source of sodium not previously examined and will hold water type constant. This will help to eliminate serious confounding variables not previously controlled.

APPROACH: A community having approximately 40% usage of home water softeners was surveyed. The blood pressures of the seventh grade students were taken and data was obtained on the necessary control variables. Water and urine samples were collected to verify water softener use. A 24 hour diet diary was also obtained to help control for other sources of sodium in the diet. Analyses are to be performed in order to test for blood pressure differences between water groups while controlling for confounding variables.

PROGRESS: All data collection has been completed. Water samples were obtained from all but 6 individuals having home water softeners. Water groups were confirmed for those individuals whose water sample sodium level differed from the expected value for their stated water group through telephone interviews. Data entry and cleaning is completed. An analysis strategy has been determined and analysis is presently progressing.

SUPPORTED BY U.S. Environmental Protection Agency, Office of Research & Development, Health Effects Research Lab. $20,000

2.1276,

DETERMINE IF DRINKING WATER PLAYS A RISK IN THE DEVELOPMENT OF NEUROLOGIC DISEASES

D.G. Greathouse, U.S. Environmental Protection Agency, Office of Research & Development, Health Effects Research Lab., *5555 Ridge Ave., Cincinnati, Ohio* 45268

OBJECTIVE: Participate in a cooperative effort to develop a study protocol for assessment of the potential role of drinking water in the development of neurologic diseases. Assist in the review and interpretation of final results.

APPROACH: Actively participate in planning and review activities.

SUPPORTED BY U.S. Environmental Protection Agency, Office of Research & Development, Health Effects Research Lab. $5,000

2.1277,

ASSESSMENT OF EFFECT (BODY BURDEN AND CARDIOVASCULAR) OF CHANGE IN BOSTON WATER SUPPLY

D. Greathouse, U.S. Environmental Protection Agency, Office of Research & Development, Health Effects Research Lab., *5555 Ridge Ave., Cincinnati, Ohio* 45268

OBJECTIVE: To assess the effects of instituting corrosion control water treatment in an area that has lead and copper household plumbing materials.

APPROACH: Collect household water samples and toenail clippings from participants in a continuing V.A. health study before and 1 year after the initiation of corrosion control. Pre and past cardiovascular health will be determined by V.A. during the regular scheduled physical examinations. Effects will be compared among people exposed to a gradient of lead and copper in their drinking water.

PROGRESS: Tap water samples and toenail clippings were collected before and after the initiation of corrosion control treatment. The first stage water samples have been analyzed and analysis of the second stage samples is underway. Two hundred and thirty five participants provided samples before and after the change.

SUPPORTED BY U.S. Environmental Protection Agency, Office of Research & Development, Health Effects Research Lab. $25,000

2.1278,

HEALTH EFFECTS OF ENERGY BYPRODUCTS ON DRINKING WATER

M.A. Shapiro, University of Pittsburgh, Graduate School of Public Health, Dept. of Industrial Environmental Health Sciences, *4200 5th Ave., Pittsburgh, Pennsylvania* 15260 (R805599)

OBJECTIVE: The objectives of this grant involve the determination of the health implications of contamination of drinking waters with by-products of coal mining and its use in the Eastern (Appalachian) coal mining region of the U.S. Immediate and future recommendations will be provided to the agency.

APPROACH: Sources of contamination (mining, coal conversion, etc) and composition of by-products will be identified. Methods of transport and pathways through which contaminants enter the drinking water will be determined. Using available toxicologic and epidemiologic liteature, the compounds likely to have a significant impact on the health of the exposed population(s) will be identified. Comparisons of morbidity and mortality rates for relevant diseases will be performed to signal any major public health problems.

PROGRESS: No results have been reported as of yet. A final report is expected by the end of the calendar year.

SUPPORTED BY U.S. Environmental Protection Agency, Office of Research & Development, Health Effects Research Lab. $0

2.1279,

LEVELS OF CADMIUM-EXPOSURE INDICATORS IN THE UNITED STATES

D. Canavan, Swedish Hospital Medical Center, Laboratory of Pathology, *747 Summit Ave., Seattle, Washington* 98104 (CA8-3029-D)

There is a need to determine the prevalance of elevated beta2-microglobulin in the urine of persons in the United States. This low molecular weight protein is directly relaxed to the level of cadmium in the kidney. When the cadmium in the renal cortex reaches a certain concentration, proteinuria is initiated. Metabolism changes, especially with cadmium metabolism, are likely to occur even before the onset of proteinuria.

Studies by the Food and Drug Administration indicate that the cadmium intake through food and water in the United States is very close to the maximum intake recommended by the World Health Organization. With the factor of safety so small, it would be prudent to begin collecting data on whether or not a segment of the population is already showing signs of excess cadmium ingestion as evidenced by the buildup of beta2-microglobulin.

The proposed program is designed to obtain measurements of beta2-microglobulin, cadmium, specific gravity, and creatinine on 1000 different urine samples, which will be furnished by the Health and Nutrition Survey II of the National Center for Health Statistics. These data, together with other Survey results provided to us, will allow us to make preliminary evaluation of the health effects of cadmium in the United States, and to make a decision on whether to participate in the next Health and Nutrition Examination Survey (III, starting in 1980). Such participation would involve a major study on the levels of cadmium exposure in the U.S., and would require blood and feces, as well as urine, samples.

SUPPORTED BY U.S. Environmental Protection Agency, Office of Research & Development, Health Effects Research Lab. $0

2.1280,

CAUSES OF DEATH OF ANESTHETISTS FROM THE CHLOROFORM ERA

H.W. Linde, Northwestern University, Chicago Campus, School of Medicine, Dept. of Anesthesia, *303 E. Chicago Ave., Chicago, Illinois* 60611 (R805473-01)

OBJECTIVE: To study the mortality of physicians who gave anesthesia during the period when chloroform was in common use, i.e. anesthetists dying prior to 1947.

APPROACH: Causes of death for anesthetists were obtained from American Medical Association records and from registrars of vital statistics. Causes of death were compared with those of the general population to determine if there were excesive deaths due to cancer.

PROGRESS: Results are available in EPA-600/1-79-043. It was found that combined death rates were lower among anesthesiologists than the U.S. male population, but exceeded them for some cardiovascular diseases. Death rates for combined malignant neoplasms were low, with digestive organ neoplasms being most common. Respiratory tract cancer was universally low.

SUPPORTED BY U.S. Environmental Protection Agency, Office of Research & Development, Health Effects Research Lab. $0

2.1281,

A CASE CONTROL STUDY OF CHLORINATED DRINKING WATER AND CANCER

C.J. Lynch, Enviro Control Inc., *11300 Rockville Pike, 1 Central Plaza, Rockville, Maryland* 20852 (68-03-2727)

OBJECTIVE: The objective of this project is to determine if consuming chlorinated drinking water is a risk factor for the development of respiratory cancer in the presence of other known risk factors, such as smoking and occupational exposures.

APPROACH: This project is part of a large ongoing NCI case-control study of lung cancer and cigarette smoking that is managed by Enviro Control. Additional data being collected to answer the water chlorination question include water consumption data, residence history, occupational exposure history and water utility information. The relative risk associated with chlorinated drinking water exposure will then be determined after stratifying for tobacco consumption.

PROGRESS: Interviewing has been ongoing at all 6 study sites for three months. Collection of water utility data is underway.

SUPPORTED BY U.S. Environmental Protection Agency, Office of Research & Development, Health Effects Research Lab. $125,000

2.1282,

CHROMOSOME STUDIES IN HUMAN SUBJECTS EXPOSED TO ARSENIC IN DRINKING WATER

B.K. Vig, University of Nevada, Reno Campus, School of Arts & Sciences, Dept. of Biology, *Reno, Nevada* 89507 (R805665-01)

The project is aimed at finding out if chromosome exposure of human population for 5 or more years to arsenic at concentrations of 0.05 mg/l or higher in drinking water increases the incidence of genetic damage measured as chromosomes aberrations and sister chromatid exchanges (SCE's) in comparison to those individuals who have been drinking water containing arsenic less than 0.01 mg/l, a limit recommended by the U.S.E.P.A. The plan calls for analyzing lymphocytes grown in vitro. Family histories about abnormalities of skin and other organs of the body shall be collected as well as the data on fetal wastage and abnormalities of births among the offspring of the couples who have been drinking arsenic-water. The studies shall be carried out in the area around Reno, Nevada, where a large number of families in rural areas depend upon the well water containing as high an amount of arsenic as mg/l.

SUPPORTED BY U.S. Environmental Protection Agency, Office of Research & Development, Health Effects Research Lab. $13,000

2.1283,

A STUDY OF THE DISTRIBUTION AND HEALTH EFFECTS OF GIARDIA LAMBLIA IN DOMESTIC WATER SUPPLY

F. Frost, State Health Div., *Olympia, Washington* 98504 (R805809-02)

This proposal seeks support for continuation of a pilot research effort begun by the State of Washington. The efforts grew out of an outbreak of giardiasis in Camas, Washington in 1976. The proposal seeks to determine the distribution of Giardia lamblia in domestic water supply and whether health effects of Giardia contaminated water can be identified. The pilot project has been done in cooperation with Dr. Walt Jakubowski of HERL, Cincinnati. The proposal seeks to establish statewide case reporting system for laboratory confirmed Giardia infections using our pilot model of laboratory reporting and patient follow-up. It also seeks to continue use of commercial trappers to submit stool specimens from trapped water mammals. Thirdly, it will use an EPA developed filter for identifying Giardia contaminated surface water used as a source of drinking water.

PROGRESS: a widespread distribution of human cases of giardiasis has been revelaed in Washington State. Infected beaver and muskrat were found in 20 counties. Giardiasis occurs in many small outbreaks, among travelers, persons with backcountry exposures, children and in isolated cases with no obvious source.

SUPPORTED BY U.S. Environmental Protection Agency, Office of Research & Development, Health Effects Research Lab. $86,000

2.1284,

STUDIES OF DRINKING WATER QUALITY AND CANCER IN IOWA

P. Isaacson, University of Iowa, School of Medicine, Dept. of Preventive Medicine & Environmental Health, *Jessup Hall, Iowa City, Iowa* 52240 (R806301-02)

OBJECTIVE: The basic objective is to use the extensive data and information resources of Iowa to further examine the human cancer risks associated with drinking water quality. In particular, the research effort will include assessments of the cancer risks associated with nitrates, radioactivity (radium 226), and energy related production by-products in drinking water.

APPROACH: Populations will be defined, or classified, into groups of similar exposure based on general or specific water quality factors. Within the defined groups, the population will be stratified by sex and community size. Actual and expected age adjusted cancer incidence rates will be computed for each subgroup. Incidence ratios (observed frequency/expected frequency) will be compared among comparable subgroups.

PROGRESS: Much of the available water quality data has been computerized; special purpose computer programs have been written; and preliminary assessments of cancer risks have been completed.

SUPPORTED BY U.S. Environmental Protection Agency, Office of Research & Development, Health Effects Research Lab. $221,000

2.1285,

HEALTH IMPACT STUDIES OF MINERAL FIBERS IN THE DULUTH MUNICIPAL WATER SUPPLY

L.J. Michienzi, State Dept. of Health, *717 Delaware St. S.E., Minneapolis, Minnesota* 55440 (R805428-01)

This research effort is to help evaluate the human health risk of prolonged exposures to mineral fibers.

The project will employ four different research methodologies to obtain information on the carcinogenicity of mineral fibers as found in the Duluth, Minnesota water supply prior to mineral fiber removal.

Two major classes of investigation will be undertaken: 1. A retrospective epidemiological evaluation of the incidence of cancers from all sites occurring within the target population: a. comparative analysis of age and sex; b. a case-by-case review of all cancers found within the population and evaluation of cancers by site relative to morbidity rates from the Third National Cancer Survey and the SEEK program of the N.C.I. These comparisons will be analyzed with consideration given to the environmental monitoring data compiled from the fourth part of the project (Environmental Surveillance). 2. The second overall method of risk assessment will be an in vitro study employing the so-called Ames screening method for determination of carcinogenicity followed up by use of mammalian cell cultures in an attempt to develop a dose-response relationship between the level of mineral fibers and degree of mutagenicity.

SUPPORTED BY U.S. Environmental Protection Agency, Office of Research & Development, Health Effects Research Lab. $21,000

2.1286,

STATISTICS AND DATA MANAGEMENT SUPPORT

W.C. Nelson, U.S. Environmental Protection Agency, Statistics & Data Management Office, *Research Triangle Park, North Carolina* 27709

Under this project statistical and data management support are provided to the 300 permanent and temporary personnel of the Health Effects Research Laboratory of ORD. Projects include design of experiments and studies; statistical analyses and interpretation of data sets; systems design and computer programming; and data processing. Support is given for clinical and epidemiological studies; mortality studies; pesticide research; toxic substances and carcinogenesis; radiant energy research; criteria document preparation; and administrative systems support. Detailed work plans and protocols are available for individual projects.

SUPPORTED BY U.S. Environmental Protection Agency, Office of Research & Development, Health Effects Research Lab. $220,000

2.1287,

COMPARE OCCURRENCE AND LEVELS OF DRINKING WATER CONSTITUENTS AMONG 12 MATCHED PAIRS OF HIGH AND LOW CANCER MORTALITY COUNTIES (ABBREV)

D.G. Greathouse, U.S. Environmental Protection Agency, Office of Research & Development, Health Effects Research Lab., *5555 Ridge Ave., Cincinnati, Ohio* 45268

OBJECTIVE: The aim of this project is to determine if matched counties with contrasting cancer mortality rates use drinking water that differs significantly in terms of occurrence and levels of contaminants, treatment technologies used, and/or source type (ground or surface).

APPROACH: Twelve pairs of matched counties were selected; matching criteria were region of the country, avg. educational level, percent of the population employed in the manufacturing industry, percent urbanization, total population years at risk. Within each pair, one county had a high and the other a low mortality rate for females due to colon, rectum, bladder, and liver cancer. Historical water quality and treatment information were collected for performance. Extensive water analyses were performed; analysis included determinations for 40 inorganics, trihalomethanes, TOC, fluorescence, asbestos, radionuclides, and mutagens.

PROGRESS: The field work has been completed and all water samples have been analyzed. Most of the data has been computerized. It is anticipated that the data analysis effort will begin by October 1, 1979 and be completed by March 31, 1980.

SUPPORTED BY U.S. Environmental Protection Agency, Office of Research & Development, Health Effects Research Lab. $46,000

2.1288,

GEOGRAPHIC DISTRIBUTION OF CARDIOVASCULAR DISEASE MORTALITY AND CONSTITUENTS OF DRINKING WATER

R.H. Osborne, U.S. Environmental Protection Agency, Office of Research & Development, Health Effects Research Lab., *5555 Ridge Ave., Cincinnati, Ohio* 45268

OBJECTIVE: This grant will map areas of high cardiovascular mortality and correlate this with high levels of selected water constituents (sodium, potassium, etc.)

APPROACH: Current mortality data and data on the levels of these constituents will be charted so that high/low levels of these elements may be compared with high/low levels of cardiovascular mortality.

SUPPORTED BY U.S. Environmental Protection Agency, Office of Research & Development, Health Effects Research Lab. $45,000

2.1289,

EPIDEMIOLOGICAL STUDY BY ASBESTOS EXPOSURE IN CONNECTICUT

G.F. Craun, U.S. Environmental Protection Agency, Office of Research & Development, Health Effects Research Lab., Epidemiology Branch, *Research Triangle Park, North Carolina* 27711

The age adjusted sex specific incidence data for stomach, colon, and rectal cancer for Connecticut townships for the period 1935 to 1973 were used to investigate whether asbestos cement pipe usage for transporting domestic drinking water is associated with gastrointestinal cancer. The townships were grouped according to the assessment of exposure (AOE) and risk factor (RF) for asbestos. These are composite indices of asbestos exposure including factors relating to the age of the pipe, the ability of water to leach asbestos from the pipe, and the length of pipes used by the population. No association was noticed between these asbestos risk scores and gastrointestinal tumor incidence.

Results of study utilizing actual fiber count data from the Connecticut water supplies and a more sophisticated analysis procedure did not show any association. A paper describing the study has been submitted to the Envir. Health Journal.

SUPPORTED BY U.S. Environmental Protection Agency, Office of Research & Development, Health Effects Research Lab. $0

2.1290,

THE 'WATER FACTOR' AND ITS CONTRIBUTION TO CARDIOVASCULAR DISEASE

R.H. Osborne, U.S. Environmental Protection Agency, Office of Research & Development, Health Effects Research Lab., *5555 Ridge Ave., Cincinnati, Ohio* 45268

OBJECTIVE: Assist in the development of a study protocol and interpretation of final results for a project titled 'The 'Water Factor' and Its Contribution to Cardiovascular Disease.'

APPROACH: Participate in planning and review activities.

SUPPORTED BY U.S. Environmental Protection Agency, Office of Research & Development, Health Effects Research Lab. $5,000

2.1291,

DETECTION OF UNCULTURABLE ENTERIC VIRUSES

E.W. Akin, U.S. Environmental Protection Agency, Office of Research & Development, Health Effects Research Lab., *5555 Ridge Ave., Cincinnati, Ohio* 45268

OBJECTIVE: To detect in human specimens the viral etiological agents (and specific antibody) of waterborne gastroenteritis and hepatitis A that cannot be cultivated, and thereby identified, in vitro.

APPROACH: Establish serological tests such as RIA, ELISA and IEM and then apply these tests to specimen collected in HERL-supported waterborne outbreak investigations.

PROGRESS: IEM of rotavirus in infant diarrheal stools has been accomplished.

SUPPORTED BY U.S. Environmental Protection Agency, Office of Research & Development, Health Effects Research Lab. $30,000

2.1292,

RETROSPECTIVE EPIDEMIOLOGIC STUDY OF HEPATITIS A AND WATER QUALITY

O. Batik, U.S. Environmental Protection Agency, Office of Research & Development, Health Effects Research Lab., *5555 Ridge Ave., Cincinnati, Ohio* 45268

OBJECTIVE: Determine existance of correlation between hepatitis disease and drinking water source and quality.

APPROACH: Conduct retrospective epidemiological studies in two areas of country where good hepatitis A case reporting occurs.

PROGRESS: Initial study did not reveal an association between water quality and hepatitis A cases. report published AJPH 70:#2, 167-168. 1980.

SUPPORTED BY U.S. Environmental Protection Agency, Office of Research & Development, Health Effects Research Lab. $3,000

2.1293,

STUDY OF THE HEALTH EFFECTS OF SODIUM IN DRINKING WATER

R.W. Tuthill, U.S. Environmental Protection Agency, Office of Research & Development, Health Effects Research Lab., Field Studies Div., Epidemiology Branch, *5555 Ridge Ave., Cincinnati, Ohio* 45268

OBJECTIVES: To replicate, under identical circumstances, a recent study reported from University of Massachusetts, Amherst. In that study the distribution of blood pressure of school children in a high sodium community (106 ppm) was significantly upshifted when compared to the children of a low sodium community (8 ppm). The current study will compare two communities with 22 and 376 ppm sodium respectively to replicate the earlier findings and to ascertain a possible dose response as a basis for a sodium drinking water standard.

APPROACH: The blood pressure of 7th grade pupils will be taken by carefully standardized individuals in the schools of both communities. A 24 hour dietary diary, home water samples, and first morning urine samples will be obtained on a sub-set of approximately 100 children in each community and analyzed for sodium and potassium. Report is being written.

SUPPORTED BY U.S. Environmental Protection Agency, Office of Research & Development, Health Effects Research Lab. $50,000

2.1294,

LITHIUM - EPIDEMIOLOGICAL ASSESSMENT OF CHRONIC EXPOSURE

R.K. Miday, U.S. Environmental Protection Agency, Office of Research & Development, Health Effects Research Lab., *5555 Ridge Ave., Cincinnati, Ohio* 45268

OBJECTIVE: To participate with Dr. Ferrell, principal investigator for cooperative agreement No. R-806219-01, in the design and interpretation of a study titled 'Lithium: Epidemiological Assessment of Chronic Exposure.'

APPROACH: Participate in planning and review meetings.

SUPPORTED BY U.S. Environmental Protection Agency, Office of Research & Development, Health Effects Research Lab. $5,000

2.1295,

DEVELOP AND EVALUATE METHODS FOR ISOLATION AND IDENTIFICATION OF GASTROENTERITIS BACTERIA FROM ENVIRONMENTAL AND CLINICAL SAMPLES

T.H. Ericksen, U.S. Environmental Protection Agency, Office of Research & Development, Health Effects Research Lab., *5555 Ridge Ave., Cincinnati, Ohio* 45268

OBJECTIVES: To develop selective and differential methods for the isolation, detection, enumeration and identification of pathogenic bacteria associated with outbreaks and endemic gastroenteritis.

APPROACH: Laboratory experiments involving modification of temperature, pH, concentration technics, nutrient type and level will be performed. Specific agents to be investigated initially will be Campylobacter, Yersinia and enterotoxigenic E. coli.

PROGRESS: Draft protocols for isolation and detection of Salmonella, Shigella, Campylobacter, yersinia and enterotoxigenic E. coli from water samples have been prepared. The protocols are undergoing review

and will be used as a basis for studies under this task.

SUPPORTED BY U.S. Environmental Protection Agency, Office of Research & Development, Health Effects Research Lab. $50,000

2.1296,

ASSESSMENT OF ASBESTOS EXPOSURE TO U.S. PUBLIC FROM DRINKING WATER

J.R. Millette, U.S. Environmental Protection Agency, Office of Research & Development, Health Effects Research Lab., *5555 Ridge Ave., Cincinnati, Ohio* 45268

Over 1500 asbestos analyses of water supplies in 43 states, Puerto Rico and the District of Columbia were evaluated in order to assess the exposure of the United States Population to asbestos in drinking water. It was concluded that the large majority of U.S. water consumers are not exposed to concentrations of asbestos fibers above one million fibers per liter. In a few areas people are exposed to concentrations up to one hundred million fibers per liter. The majority of persons receiving water from asbestos-cement pipe distribution systems are not exposed to significant number of fibers from the pipe. In areas of aggressive water, however, water consumers using asbestos-cement mains may be exposed to high concentrations of fibers.

SUPPORTED BY U.S. Environmental Protection Agency, Office of Research & Development, Health Effects Research Lab. $60,000

2.1297,

AN ENVIRONMENTAL HEALTH STUDY OF LEAD IN TEETH

D.R. Wilkinson, Delaware State College, Undergraduate School, Dept. of Chemistry, *Dover, Delaware* 19901 (R802890-03)

The proposed research program is designed to determine lead concentration in deciduous teeth of children under age 6, as well as in contaminating dust samples from the homes of the donors and air samples from the immediate area. In addition, automobile traffic rates in the immediate area will be studied and socioeconomic data collected on the families of children under study. The teeth samples will be collected in Birmingham, England, a city which offers a unique laboratory for such a study, i.e. a tremendously large traffic cloverleaf, around which are constructed many high-rise apartments, and a state housing development. In addition England offers a state health program offering personal information on donors and their families. Samples of teeth will be collected in England, coded, and mailed along with data to Delaware State College where they will be freeze-ground, put into solution and volumetrically brought up to a predetermined volume. The concentration of lead will be determined through the use of a Jarrel-Ash 810 Atomic Absorption Spectrophotometer. The results will add to knowledge presently being obtained concerning the ability to determine lead accumulated in the body by a technique which will cause little or no damage to the donor. The correlation between automobile traffic, lead accumulation levels and morbidity patterns should be shown.

PROGRESS: A draft narrative report has been received from the grantee. It is under review, with initial comments suggesting the significant refinement will be needed.

SUPPORTED BY U.S. Environmental Protection Agency, Office of Research & Development, Health Effects Research Lab. $6,000

2.1298,

EVALUATION OF THE HEALTH RISKS ASSOCIATED WITH THE TREATMENT AND DISPOSAL OF MUNICIPAL WASTEWATER AND SLUDGE

C.S. Clark, University of Cincinnati, School of Medicine, Dept. of Environmental Health, *Eden & Bethesda Aves., Cincinnati, Ohio* 45221 (R805445-01)

This three part study is intended to be the first phase of a long-term effort to prepare guidelines to minimize the health effects from the land application of municipal wastewater and sludges and from other treatment processes. Population groups to be considered are those occupationally exposed to all aspects of the waste-handling operations, those exposed by way of their living, working or having recreational pursuits nearby and those who consume or otherwise come into contact with any crops or other products of the treatment system. The first part consists of an evaluation of current information on the health risks utilizing existing reviews and assessments as well as supplemental literature search. This evaluation will also result in detailed plans for additional studies that are needed.

A pilot study of workers exposed to heat dried municipal sewage sludge that is ultimately applied to the land comprises the second part of the project. Included in the pilot study is a determination of the chemical and biological properties of the sludge and examination of the workers for possible effects of the sludge constituents.

The third part is a cause of death study of former employees of a large wastewater treatment system to determine if any causes of death occur more frequently than expected. The results of this mortality study will be used to help define the need for additional research.

SUPPORTED BY U.S. Environmental Protection Agency, Office of Research & Development, Health Effects Research Lab. $559,300

2.1299,

EPIDEMIOLOGICAL STUDY OF WOMEN EXPOSED TO STYRENE AND REPRODUCTIVE DYSFUNCTION

G. Lemasters, University of Cincinnati, School of Medicine, *Eden & Bethesda Aves., Cincinnati, Ohio* 45221 (R806669-01)

OBJECTIVE: The objectives are to determine whether or not women occupationally exposed to styrene experience any reproductive dysfunction when compared with a similar working unexposed control group, and to determing if measuring reproductive dysfunction is a useful methodology for monitoring populations exposed to toxic chemicals.

APPROACH: The approach is through the use of an historical cohort epidemiological study of women aged 18-30 who have worked in the styrene manufacturing industry. A questionnaire will be administered via telephone to the exposed and unexposed workers to measure spontaneous abortion, menstrual dysfunction, stillbirth, prematurity, infertility and congenital malformation.

SUPPORTED BY U.S. Environmental Protection Agency, Office of Research & Development, Health Effects Research Lab. $136,000

2.1300,

STUDY OF BLOOD LEAD LEVELS IN URBAN AND REMOTE POPULATIONS

S. Piomelli, New York University, School of Medicine, Dept. of Medicine, *550 1st Ave., New York, New York* 10016 (DA8-1686-J)

OBJECTIVES/APPROACH: To establish a natural background level of lead in blood. A population of Nepolese natives and New York City residents will be tested for air lead exposures/blood lead levels/HB/EP/and ferritin.

PROGRESS: Due to very low blood leads being observed, further quality control efforts are being made before majority of samples are being analyzed. Delays in submission of final report are inevitable.

SUPPORTED BY U.S. Environmental Protection Agency, Office of Research & Development, Health Effects Research Lab. $8,000

2.1301,

LEVELS OF CADMIUM-EXPOSURE INDICATORS IN THE UNITED STATES

H. Barbano, U.S. Dept. of Health & Human Services, Public Health Service, Office of Health Research Statistics & Technology, National Center for Health Statistics, Methodology & Plans Section, *3700 East West Hwy., Hyattsville, Maryland* 20782 (D8-F0270)

There is a need to determine the prevalence of elevated beta2-microglobulin in the urine of persons in the United States. This low molecular weight protein is directly related to the level of cadmium in the kidney. When the cadmium in the renal cortex reaches a certain concentration, proteinuria is initiated. Metabolism changes, especially with calcium metabolism, are likely to occur even before the onset of proteinuria. Studies by the Food and Drug Administration indicate that the cadmium intake through food and water in the United States is very close to the maximum intake recommended by the World Health Organization. With the factor of safety so small, it would be prudent to begin collecting data on whether or not a segment of the population is already showing signs of excess cadmium ingestion as evidenced by the buildup of beta2-microglobulin. The proposed program is designed to obtain measurements of beta2-microglobulin, cadmium, specific gravity, and creatinine on 1000 different urine samples, which will be furnished by the Health and Nutrition Survey II of the National Center for Health Statistics. These data, together with other Survey results provided to us, will allow us to make preliminary evaluation of the health effects of cadmium in the United States, and to make a decision on whether to participate in the next Health and Nutrition Examination Survey (III, starting in 1980). Such participation would involve a major study on the levels of cadmium exposure in the U.S., and would require blood and feces, as well as urine, samples.

SUPPORTED BY U.S. Environmental Protection Agency, Office of Research & Development, Health Effects Research Lab. $0

2.1302,

ALTERNATE DRINKING WATER DISINFECTANT CLO2 - EVALUATION IN BETHESDA, OHIO

J.B. Lucas, U.S. Environmental Protection Agency, *5555 Ridge Ave., Cincinnati, Ohio* 45268

OBJECTIVES: The goal of the study is to evaluate the epidemiological effects associated with the use of chlorine dioxide (ClO2) as an alternate disinfectant for surface drinking water supplies.

APPROACH: The study will be a field study evaluating an existant water treatment practice.

PROGRESS: This study has been completed. The results have been submitted to the Archives of Environmental Health for publication. This is a peer review journal. Pre-publication information can be obtained from G.E. Michael.

SUPPORTED BY U.S. Environmental Protection Agency, Office of Research & Development, Health Effects Research Lab. $0

2.1303,

A LONGITUDINAL EVALUATION OF LEAD BODY BURDEN IN GROWING CHILDREN

R.K. Miday, U.S. Environmental Protection Agency, Office of Research & Development, Health Effects Research Lab., *5555 Ridge Ave., Cincinnati, Ohio* 45268

OBJECTIVE: To provide Dr. Lubin, principal investigator for cooperative aggreement No. R-804168-01, assistance in analyzing the data and interpreting the results for the project titled 'A Longitudinal Evaluation of Lead Body Burden in Growing Children.'

APPROACH: Review hypotheses to be tested, survey collected data, prepare written directions for appropriate statistical analysis of the data, and participate in review meetings, assist in the writeup of the statistical methods and conclusions.

SUPPORTED BY U.S. Environmental Protection Agency, Office of Research & Development, Health Effects Research Lab. $5,000

2.1304,

INVESTIGATION OF WATERBORNE DISEASE OUTBREAKS

E.C. Lippy, U.S. Environmental Protection Agency, Office of Research & Development, Health Effects Research Lab., *5555 Ridge Ave., Cincinnati, Ohio* 45268

Isolate causative agent of outbreak from water system, determine route of entry, propose corrections to prevent reoccurrence.

Collection of samples using large volume sampling techniques and laboratory analysis to identify causative agent. Engineering evaluation of water system to determine how, when and where contaminant entered the system and recommend corrective measures to prevent future occurrence.

Investigate 4-6 waterborne outbreaks annually. Continue to improve techniques and methodology so agent isolation is improved from current 50% detection rate. Publicize deficiencies in water systems to reduce number of waterborne outbreaks.

SUPPORTED BY U.S. Environmental Protection Agency, Office of Research & Development, Health Effects Research Lab. $8,000

2.1305,

INORGANIC ANALYSES TO SUPPORT EPIDEMIOLOGIC STUDIES

K. Kelty, U.S. Environmental Protection Agency, Office of Research & Development, Health Effects Research Lab., Field Studies Div., Water Analysis Group, *5555 Ridge Ave., Cincinnati, Ohio* 45268

OBJECTIVE/APPROACH: To provide inorganic analyses for epidemiological studies. Samples of drinking water are being analyzed for a variety of parameters, including pH, conductivity, hardness, alkalinity, flu-

oride, nitrates, Na, Mg, Li, Be, Si, Pb, Cd, Cu, Zn, and Fe.

OUTPUTS: Analysis of 1,000 Boston drinking water samples (4,092 elemental determinations). Analysis of 630 Boston tissue samples (2,520 elemental determinations).

SIGNIFICANT RESULTS: A new method for the determination of Pb and Cd has been evaluated and successfully applied. It consists of a modification of Middleton's digestion procedure (Analyst: 79, p. 138-147) and an adaptation of Henn's atomic absorption method (ASTM STP, pp 54-64).

PROGRESS: Approximately 3600 analyses of drinking water for the cancer studies were completed and reported on December 8, 1978. Currently drinking water samples exposed to asbestos piping are being analyzed.

SUPPORTED BY U.S. Environmental Protection Agency, Office of Research & Development, Health Effects Research Lab. $40,000

2.1306,

PROGRAM MANAGEMENT OF HEALTH EFFECTS REGARDING WASTEWATER

H.R. Pahren, U.S. Environmental Protection Agency, Office of Research & Development, Health Effects Research Lab., *5555 Ridge Ave., Cincinnati, Ohio* 45268

Manage extramural program on land application of treated wastewater and associated health effects. A number of new starts were accomplished and many others continued.

SUPPORTED BY U.S. Environmental Protection Agency, Office of Research & Development, Health Effects Research Lab. $80,000

2.1307,

REVIEW 1978 LITERATURE ON HEALTH EFFECTS ASSOCIATED WITH LAND APPLICATION OF WASTEWATER

N.E. Kowal, U.S. Environmental Protection Agency, Office of Research & Development, Health Effects Research Lab., *5555 Ridge Ave., Cincinnati, Ohio* 45268

OBJECTIVE: To prepare the annual summary, 'Health Effects Associated with Wastewater Treatment and Disposal,' for the June 1979 Literature Review issue of Journal Water Pollution Control Federation.

APPROACH: Monitor current literature, abstract relevant papers as they appear, and summarize into brief paper for publication. Repeat annually.

PROGRESS: Project completed, and manuscript sent to JWPCF.

SUPPORTED BY U.S. Environmental Protection Agency, Office of Research & Development, Health Effects Research Lab. $0

2.1308,

ENUMERATION METHODS FOR HEALTH EFFECTS WATER QUALITY INDICATORS

A.P. Dufour, U.S. Environmental Protection Agency, Office of Research & Development, Health Effects Research Lab., Marine Field Station, *Liberty Ln., West Kingston, Rhode Island* 02892

The objective is to evaluate existing or develop new methods for the enumeration of microbial pathogens and indicators potentially important in the development of health effects criteria for marine and fresh recreational waters. These indicators are evaluated in the course of epidemiological studies and examined for their applicability in the characterization of pollution sources.

Methods will be developed for coliforms and coliform biotypes including E. coli and Klebsiella, enterococci and enterococcus biotypes. P. aeruginosa, C. perfringens, chlorine resistant coliphage; A. hydrophila bifidobacteria, salmonellae and enteropathogenic E. coli. Extramural resources are being used to develop methods for C. albicans, Yersinia enterocolitica, Shigella and E. coli of human origin. Emphasis is on membrane filter methods because they tend to be precise and facile and amenable to the examination of large quantities of water.

Methods have been developed and evaluated for nearly all of the fecal and environmental indicators. Methods development for most of the pathogens is in progress.

PROGRESS: Report for criteria document being written.

SUPPORTED BY U.S. Environmental Protection Agency, Office of Research & Development, Health Effects Research Lab. $68,000

2.1309,

APPRAISAL OF HEALTH ASPECTS OF LAND APPLICATION OF WASTEWATER

N.E. Kowal, U.S. Environmental Protection Agency, Office of Research & Development, Health Effects Research Lab., *5555 Ridge Ave., Cincinnati, Ohio* 45268

OBJECTIVE: To prepare an assessment of the potential health effects of the land treatment of wastewater.

APPROACH: Organize by agents of concern and routes of human exposure, select relevant information from recent literature, and synthesize into a health assessment. Revise every 2-3 years as new research results come in.

PROGRESS: Organization has been prepared, and literature review began.

SUPPORTED BY U.S. Environmental Protection Agency, Office of Research & Development, Health Effects Research Lab. $0

2.1310,

ANNUAL REVIEW OF WATERBORNE DISEASE OUTBREAKS

G.F. Craun, U.S. Environmental Protection Agency, Office of Research & Development, Health Effects Research Lab., Epidemiology Branch, *5555 Ridge Ave., Cincinnati, Ohio* 45268

OBJECTIVES: Disseminate information on Waterborne Outbreaks to the Scientific, Regulatory and Political Community.

APPROACH: A worldwide literature review is conducted annually and data on waterborne outbreaks are summarized. Detailed analyses of drinking water related outbreaks in the U.S. are compiled annually in cooperation with the CDC and State regulatory agencies.

PROGRESS: Latest literature review, June 1978, published in Journal Water Pollution Control Federation. Update on drinking water related outbreaks presented at the Annual Conference of the American Water Works Association in June 1978. Reports appear in JAWWA (71:422-428, 1979), AJPH (69:817-819, 1979) and journal at Env. Hlt. (41:259-265, 1979). The annual review of waterborne outbreaks has been submitted to JWPCF for the June 1980 issue.

SUPPORTED BY U.S. Environmental Protection Agency, Office of Research & Development, Health Effects Research Lab. $2,000

2.1311,

SCREEN SERA FROM AEROSOL EPIDEMIOLOGICAL STUDIES FOR ANTIBODY TO LEGIONNAIRES' DISEASE BACTERIUM

T.H. Ericksen, U.S. Environmental Protection Agency, Office of Research & Development, Health Effects Research Lab., Field Studies Div., Epidemiology Branch, *5555 Ridge Ave., Cincinnati, Ohio* 45268

OBJECTIVE: To determine if sewage and/or its treatment is a possible route of exposure for persons to Legionnaires' Disease Bacteria (Legionella pneumophila).

APPROACH: Sera already obtained from sewer workers and persons living in the neighborhood of sewage plants, will be tested for antibodies to LDB using the IFA method developed by Center for Disease Control, Atlanta, Georgia. These results will be compared to those obtained from the sera of control groups. The results obtained from this study could determine the role of sewage as a possible source of LDB in the environment, thereby contributing to its spread and exposure to susceptible populations.

PROGRESS: Training of personnel in the methodology to be used is complete. Arrangement for transfer of the necessary equipment under revocable license is in progress. Some of the reagents necessary for testing have been obtained from Center for Disease Control.

SUPPORTED BY U.S. Environmental Protection Agency, Office of Research & Development, Health Effects Research Lab. $7,000

2.1312,

PUBLISH PROCEEDINGS OF NATIONAL SYMPOSIUM ON WATERBORNE TRANSMISSION OF GIARDIASIS

J.C. Hoff, U.S. Environmental Protection Agency, Office of Research & Development, Municipal Environmental Research Lab., Water Supply Research Div., *26 W. St. Clair St., Cincinnati, Ohio* 45268

OBJECTIVE: The objective of this task is to combine 19 manuscripts, 7 abstracts, open discussions, and a panel discussion from a jointly sponsored HERL-MERL symposium held in September 1978 into a state-of-the-art document on waterborne transmission of giardiasis.

APPROACH: Private contractors will be utilized to typemark manuscript material, typeset the document, and do initial proofreading. Paste-up will be done in-house. Approximately 5000 copies of the final document will be printed.

PROGRESS: Typemarking, typesetting, and initial proofreading have been completed. Recipients of copies are being identified and approximately 4,000 requests have been received for copies.

This task completed June, 1979 with issuance of publication No. EPA-600/9-79-001, 'Waterborne Transmission of Giardiasis.'

SUPPORTED BY U.S. Environmental Protection Agency, Office of Research & Development, Health Effects Research Lab. $9,000

2.1313,

IDENTIFICATION AND PREVALENCE OF YERSINIA ENTEROCOLITICA IN WASHINGTON STATE WATER SUPPLIES

T.F. Wetzler, University of Washington, School of Public Health & Community Medicine, Dept. of Environmental Health, *4000 15th Ave. N.E., Seattle, Washington* 98105 (R805313-02)

OBJECTIVE: Determine prevalence of Yersinia enterocolitica and indicator organisms in non-treated, filtered and chlorinated water supplies in Washington State. Identify the isolates and determine their virulence. Produce antisera to non-typable strains isolated. Establish levels of yersiniosis in Washington State and attempt to establish the source of the etiologic agent.

APPROACH: Examine water samples from 50 selected water systems. Indicators of the sanitary quality of the water are also determined. All Yersinia isolates will be identified biochemically and serologically. Antisera developed for untypable strains will be developed. Virulence testing of Yersinia isolated includes the 'suckling' mouse test and gerbil yersiniosis will be correlated to potential water-or food-borne transmission.

PROGRESS: Biochemical properties, biochemical profiles and serologic typing have been completed on approximately 154 Yersinia isolates obtained from 57 water utilities in Washington State. Antisera for 25 European strains has been prepared. Antisera for untypable strains is in progress. Virulence testing with 'suckling' mice and gerbils has been standardized.

SUPPORTED BY U.S. Environmental Protection Agency, Office of Research & Development, Health Effects Research Lab. $0

2.1314,

DEMONSTRATION PROGRAM TO SHOW OHIO LANDOWNERS AND MUNICIPALITIES ACCEPTABLE SYSTEMS FOR APPLYING SLUDGE ON LAND

V.V. Hamparian, Ohio State University, Columbus Campus, School of Medicine, Dept. of Medical Microbiology, *370 W. 9th Ave., Columbus, Ohio* 43212 (S805189-01)

OBJECTIVE: Health effects in humans and animals resulting from the application of municipal sewage sludge to farms in Ohio will be evaluated. Subjects covered include: (1) Monitoring of pathogens in stools, sludge, and soil. (2) Monitoring farm family health status and serology. (3) Relating sludge virus to viral infections. (4) Investigating viability of soil pathogens. (5) Monitoring health status of farm animals. (6) Monitor trace element accumulation of cattle. (7) Measure parasite survival and infection rate of cattle. (8) Monitor animals for tuberculosis and Salmonella infection. 9. Monitor cadmium content in stools and relate to cadmium intake.

SUPPORTED BY U.S. Environmental Protection Agency, Office of Research & Development, Health Effects Research Lab. $250,000

2.1315,

CANCER INCIDENCE IN RELATION TO ASBESTOS IN DRINKING WATER IN THE PUGET SOUND REGION

L. Polissar, Fred Hutchinson Cancer Research Center, Program in Epidemiology & Biostatistics, *1124 Columbia St., Seattle, Washington* 98104 (R805846-02)

Cancer mortality and incidence data will be used to determine if there is an elevated cancer risk for persons living in areas of the Puget Sound Region with a high concentration of asbestos in the water supply. Data will include death certificates, incidence records from SEER population-based tumor registry, census tabulations, and water analyses. Statistical methods will include calculations of rates and relative risks. A case-control study will be undertaken.

SUPPORTED BY U.S. Environmental Protection Agency, Office of Research & Development, Health Effects Research Lab. $102,400

2.1316,

A LONGITUDINAL EVALUATION OF LEAD BODY BURDEN IN GROWING CHILDREN

A.H. Lubin, Childrens Hospital, *561 S. 17th St., Livingston Pike, Columbus, Ohio* 43205 (R804168-03)

OBJECTIVE: The objective of this study is to assess the association of biochemical nutritional and growth parameters with the amount of exposure of commonly accepted sources of environmental lead (air, dust and water) during the mother's pregnancy and in the offspring's subsequent first two years of life.

APPROACH: Approximately 200 children in each of three cities, Columbus, Ohio; Boston, Massachusetts; and New Bedford, Massachusetts are being enrolled and prospectively followed during the first two years of life, with frequent personal and environmental sampling.

PROGRESS: Initial data indicate a correlation between lead in blood of the mother, cord blood lead, and newborn infant lead values. Lead in dust results confirm dust to be a significant source of lead intake.

SUPPORTED BY U.S. Environmental Protection Agency, Office of Research & Development, Health Effects Research Lab. $215,000

2.1317,

EPIDEMIOLOGICAL STUDY OF DISEASE ASSOCIATED WITH WASTEWATER SPRINKLER IRRIGATION

H.I. Shuval, Hebrew University of Jerusalem, Hadassah Medical School, *P.O. Box 1172, Jerusalem 91000, Israel* (R805174)

OBJECTIVE: To determine if there is a degree of added risk of communicable disease incidence among residents of kibbutzim practiciing wastewater utilization as compared to those not utilizing wastewater.

APPROACH: Evaluate retrospective data collected from about 80 kibbutzim along with environmental factors that influence microbial die-off.

PROGRESS: No statistically significant differences with limited data.

SUPPORTED BY U.S. Environmental Protection Agency, Office of Research & Development, Health Effects Research Lab. $0

2.1318,

CROSS-SPECIES TRANSMISSION OF GIARDIA

C.P. Hibler, Colorado State University, College of Veterinary Medicine & Biomedical Sciences, Dept. of Pathology, *Fort Collins, Colorado* 80523 (R805215)

OBJECTIVE: Determine if it is possible for various wild and domestic animals to act as reservoirs for human Giardia in the environment.

APPROACH: Live-trapped wild animals and various domestic animals were examined for Giardia. Negative animals were exposed to human Giardia and their feces examined for Giardia. Giardia present in animals upon initial examination were given to SPF dogs which acted as human surrogates.

PROGRESS: Animals, such as beaver, muskrat, mountain sheep, dogs, and cats, can serve as Giardia carriers in the environment. Infected animals could, therefore, disseminate Giardia into water used for drinking. Draft final report submitted for review.

SUPPORTED BY U.S. Environmental Protection Agency, Office of Research & Development, Health Effects Research Lab., Field Studies Div. $0

2.1319,

HEALTH RISKS OF HUMAN EXPOSURE TO WASTEWATERS

C.S. Clark, University of Cincinnati, School of Medicine, Dept. of Environmental Health, *Eden & Bethesda Aves., Cincinnati, Ohio* 45221 (R803643)

OBJECTIVE: Determine if there is an increased risk of infection as a result of occupational exposure to wastewater.

APPROACH: Sewer maintenance and sewage treatment plant personnel will be monitored by collection of health watch data and examination of clinical specimens to determine if infection rates are higher than in control populations consisting of highway maintenance and water treatment plant personnel. Approximately 400 workers in 3 cities (Cincinnati, Chicago, Memphis) will be included in the study.

PROGRESS: Preliminary analysis indicates no difference in disease rates among exposed and control populations.

SUPPORTED BY U.S. Environmental Protection Agency, Office of Research & Development, Health Effects Research Lab., Field Studies Div. $0

2.1320,

DETERMINATION OF MINIMAL HUMAN INFECTIOUS DOSE OF AN ENTEROVIRUS IN DRINKING WATER

G.M. Schiff, Christ Hospital, Institute of Medical Research, *2139 Auburn Ave., Cincinnati, Ohio* 45219 (R806173)

OBJECTIVE: To determine the miminal infectious dose of echovirus 12 in drinking water in susceptible adult male volunteers.

APPROACH: To inoculate volunteers with varying doses of echovirus 12 suspended in drinking water and follow the volunteers for evidence of infection (viral shedding and antibody response) and/or illness.

PROGRESS: Two studies conducted; data not yet completely analyzed. However, preliminary results indicate that as few as 10 PFU of echovirus 12 can cause infection in a significant percentage of exposed & susceptible male adults.

SUPPORTED BY U.S. Environmental Protection Agency, Office of Research & Development, Health Effects Research Lab., Field Studies Div. $140,000

2.1321,

INCIDENCE OF METHEMOGLOBINEMIA IN AREAS WITH NITRATE CONTAMINATION OF WATER SUPPLY

Unknown, U.S. Environmental Protection Agency, Office of Research & Development, Health Effects Research Lab., *5555 Ridge Ave., Cincinnati, Ohio* 45268

OBJECTIVE: Determine occurrence and distribution of methemoglobinemia and whether cases are associated with nitrate-contaminated water supplies.

APPROACH: Establish medical sentinel system in several areas where nitrates are known to be a problem and investigate cases of methemoglobinemia to determine whether they are associated with drinking water. Review medical records and investigate cases.

SUPPORTED BY U.S. Environmental Protection Agency, Office of Research & Development, Health Effects Research Lab., Field Studies Div. $15,000

2.1322,

ANNUAL REVIEW OF WATERBORNE OUTBREAKS IN U.S.

G.F. Craun, U.S. Environmental Protection Agency, Office of Research & Development, Health Effects Research Lab., Field Studies Div., *5555 Ridge Ave., Cincinnati, Ohio* 45268

OBJECTIVE: Publish review of reported outbreaks of waterborne disease.

APPROACH: Maintain surveillance of reported outbreak and publish annually a brief account of the outbreak by etiological agent on disease symptom.

PROGRESS: Report is published in June issue of Journal of Water Pollution Control Federation.

SUPPORTED BY U.S. Environmental Protection Agency, Office of Research & Development, Health Effects Research Lab., Field Studies Div. $2,000

2.1323,

EVALUATE MINIMUM-INFECTIVE-DOSE DATA ON ORAL INGESTION OF ENTERIC VIRUSES

E.W. Akin, U.S. Environmental Protection Agency, Office of Research & Development, Health Effects Research Lab., Field Studies Div., *5555 Ridge Ave., Cincinnati, Ohio* 45268

OBJECTIVE: To evaluate the MID data from currently ongoing EPA research activity and the scientific literature in view of the health risk of virus in drinking water.

APPROACH: Prepare report evaluating current data and defining data gaps.

SUPPORTED BY U.S. Environmental Protection Agency, Office of Research & Development, Health Effects Research Lab., Field Studies Div. $3,000

2.1324,

GIARDIA DETECTION AND INFECTIVITY PROCESSING OF WATER SAMPLE CONCENTRATES FROM OUTBREAK INVESTIGATIONS

C.P. Hibler, Colorado State University, College of Veterinary Medicine & Biomedical Sciences, Dept. of Pathology, *Fort Collins, Colorado* 80523 (C2428 N.A.E.)

OBJECTIVE: Determine presence and infectivity of Giardia from samples collected during waterborne disease outbreaks.

APPROACH: Use EPA or accepted methodology to identify Giardia from disease outbreak samples. Determine the infectivity of Giardia by the use of SPF dogs.

PROGRESS: Giardia cysts have been reported from water samples collected at Giardiasis outbreak sites.

SUPPORTED BY U.S. Environmental Protection Agency, Office of Research & Development, Health Effects Research Lab., Field Studies Div. $10,000

2.1325,

SURVEILLANCE OF WATERBORNE DISEASE IN SEASONAL USE AREAS

Unknown, U.S. Environmental Protection Agency, Office of Research & Development, Health Effects Research Lab., *5555 Ridge Ave., Cincinnati, Ohio* 45268

OBJECTIVE: Intensify surveillance of waterborne illness at seasonal use areas to identify problems unique to water systems serving those areas and improve methodology of identifying outbreaks.

APPROACH: Temporary part-time employees will be utilized during summer months and assigned to agencies responsible for monitoring seasonally operated water supplies. Surveillance techniques with application to transients will be used to identify illness.

SUPPORTED BY U.S. Environmental Protection Agency, Office of Research & Development, Health Effects Research Lab., Field Studies Div. $45,000

2.1326,

BACTERIOLOGICAL LABORATORY SUPPORT FOR WATERBORNE OUTBREAK INVESTIGATION AND VIRUS FIELD STUDY

T.H. Ericksen, U.S. Environmental Protection Agency, Office of Research & Development, Health Effects Research Lab., Field Studies Div., *5555 Ridge Ave., Cincinnati, Ohio* 45268

OBJECTIVE: Identify bacteriological organisms as possible etiologic agents in disease outbreaks. Determine possible relationship(s) between bacterial entities and viruses recovered as part of the virus field study.

APPROACH: Appropriate bacterial agents will be identified using standard and state-of-the-art methods in support of waterborne disease outbreaks and the virus field study.

SUPPORTED BY U.S. Environmental Protection Agency, Office of Research & Development, Health Effects Research Lab., Field Studies Div. $10,000

2.1327,

VIROLOGICAL LABORATORY SUPPORT FOR WATERBORNE OUTBREAK INVESTIGATION

R.E. Stetler, U.S. Environmental Protection Agency, Office of Research & Development, Health Effects Research Lab., Field Studies Div., Acute Disease Program, *5555 Ridge Ave., Cincinnati, Ohio* 45268

OBJECTIVE: Field personnel will provide a concentrate from the waterborne outbreak site which will be assayed to determine if viral agents were present and the possible cause of the outbreak.

APPROACH: Concentrates from field samples are passaged in cell cultures for possible propagation, isolation, and identification.
PROGRESS: For FY 79, two outbreaks with a total of five samples were assayed and all were negative for viruses.
SUPPORTED BY U.S. Environmental Protection Agency, Office of Research & Development, Health Effects Research Lab., Field Studies Div. $5,000

2.1328,

AN EPIDEMIOLOGICAL STUDY OF PRESQUE ISLAND STATE PARK BEACHES ON LAKE ERIE, ERIE, PENNSYLVANIA

S.J. Zagorski, Gannon College, Undergraduate School, Dept. of Biology, *109 W. 6th, Erie, Pennsylvania* 16501 (R806791-01)
OBJECTIVE: The objective of this proposal is to correlate the incidence of illness among bathers with the quality of water as indicated by results of bacteriological assays obtained from fresh recreational water sites on Lake Erie, Erie, Pennsylvania. The sites selected are expected to differ substantially in water quality, one known to be impacted by contamination and the other relatively clean. Computer assisted analysis of the data will employ a SAS program already developed.
APPROACH: Conduct bacteriological and epidemiological surveys at the beaches and by telephone follow-ups. Microbial assays include those for Escherichia coli, Clostridium perfringens, and enterococci. Results of these studies should amplify the development of fresh recreational water quality criteria.
PROGRESS: Bacteriological surveys pinpoint the source of contamination impacting one of the test beach areas and show no impact on the other site selected. All assay procedures, survey forms, and statistical analyses procedures to be employed have been used successfully in other research programs.
Final report being written.
SUPPORTED BY U.S. Environmental Protection Agency, Office of Research & Development, Health Effects Research Lab., Marine Field Station $56,000

2.1329,

THE DEVELOPMENT OF CRITERIA FOR RECREATIONAL WATERS

J.L. Gale, University of Washington, School of Public Health & Community Medicine, Dept. of Epidemiology & International Health, *4000 15th Ave. N.E., Seattle, Washington* 98105 (R806841-01)
OBJECTIVE: The project's objective is to provide information for the development of fresh recreational water quality criteria by obtaining data on the level of contamination in the water and relating these to data obtained on human health effects.
APPROACH: Conduct bacteriological and epidemiological surveys at two beaches on Lake Washington near Seattle, conduct telephone follow-ups, and statistically determine the relationship between microbial indicator densities in the water and illness among exposed bathers. Microbial assays include those for Escherichia coli, enterococci, and Clostridium perfringens.
PROGRESS: Results of bacteriological assays distinguish two beaches on Lake Washington, one heavily impacted by contamination, the other with no significant fecal pollution. These are the identified test and control beaches in this proposal. All assay procedures, survey forms, and statistical analyses procedures to be employed in this study have been used successfully in other research programs.
Final report being published.
SUPPORTED BY U.S. Environmental Protection Agency, Office of Research & Development, Health Effects Research Lab., Marine Field Station $37,000

2.1330,

DEVELOPMENT OF CRITERIA FOR FRESH RECREATIONAL WATERS

J.M. Robertson, University of Oklahoma, Norman Campus, Office of Research Admin., *1000 Asp Ave., Room 314, Norman, Oklahoma* 73069 (R806712-01)
OBJECTIVE: The objective of this proposal is to correlate the incidence of illness among bathers with the quality of water as indicated by results of bacteriological assays obtained from fresh recreational water sites near Tulsa, Oklahoma. The sites selected are expected to differ substantially in water quality, one being impacted by a known source of contamination and the other relatively clean. Computer assisted analysis of the data will employ a SAS program already developed.
APPROACH: Conduct bacteriological and epidemiological surveys at the beaches and by telephone follow-ups. Microbial assays include those for Escherichia coli, Clostridium perfringens, and enterococci. Results of these studies should amplify the development of fresh recreational water quality criteria.
PROGRESS: Bacteriological surveys pinpoint the source of contamination impacting one of the test beach areas and show no impact on the other site selected. All assay procedures, survey forms, and statistical analyses procedures to be employed have been used successfully in other research programs.
SUPPORTED BY U.S. Environmental Protection Agency, Office of Research & Development, Health Effects Research Lab., Marine Field Station $40,000

2.1331,

METHODOLOGIES FOR UTILIZATION OF ENVIRONMENTAL-IMPACT-ASSESSMENT DATA

L.R. Babcock, University of Illinois, Chicago Circle Campus, School of Engineering, *Box 4348, Chicago, Illinois* 60680 (R805476)
OBJECTIVE: To define methodological approaches for use within the EPA which would facilitate the identification of hazards and setting of standards and control priorities.
APPROACH: Define methodology of use by health-effects personnel and others of environmental impact and assessment data to generate meaningful cause-effect results.
SUPPORTED BY U.S. Environmental Protection Agency, Office of Research & Development, Industrial Environmental Research Lab. $71,000

2.1332,

DEMONSTRATION PROGRAM TO SHOW LANDOWNERS AND MUNICIPALITIES ACCEPTABLE SYSTEMS FOR APPLYING SLUDGE ON LAND

J.K. Hill, Farm Bureau Development Corp., *245 N. High St., Columbus, Ohio* 43216 (S805189-01)
OBJECTIVE: The objective is to demonstrate safe, beneficial use of wastewater sludge as a soil amendment on agricultural land. Institutional arrangements to permit objective evaluations and decisions by both rural and urban residents will be demonstrated. The effect of proper application and management of a land application of sludge on public health and the environment will be determined.
APPROACH: Four communities in Ohio that already dispose of sludge by spreading it on farm land will supply sludge for application to selected farms in a carefully planned and managed system. In addition to sludge application on fields, sludge will be applied to carefully selected plots for measurement of its effect on yield and composition of crop, composition of soil, and consumption of ground and surface water. An epidemiological study of livestock and people who come in contact with sludges will measure the health effects of sludge spreading.
SUPPORTED BY U.S. Environmental Protection Agency, Office of Research & Development, Municipal Environmental Research Lab. $450,000

2.1333,

IDENTIFICATION AND EVALUATION OF WATERBORNE EXPOSURE ROUTES TO HUMANS FROM OTHER THAN FOOD AND DRINKING WATER

A. Wechsler, Arthur D. Little Inc., *15 Acorn Park, Cambridge, Massachusetts* 02140 (68-01-3857)
OBJECTIVE: To develop and test a framework/methodology for identifying and evaluating the populations exposed and risks associated with routes of exposure to waterborne priority pollutants other than by food and drinking water ingestion.
APPROACH: (1) Identification of routes of exposure, exposure activities, extent and frequency of exposure, and subpopulations exposed; (2) development of criteria for evaluation of the potential significance of exposure via alternate waterborne routes.
CURRENT PROGRESS: Potential exposure routes have been identified, and classified according to type of activity, type of water associated with the exposure route, and other descriptive categories, e.g., frequency and extent of exposure, geographic and population factors. literature search was done to determine kinds and availability of data to fit categorization scheme. Task complete. Report will be available in early 1979.
SUPPORTED BY U.S. Environmental Protection Agency, Office of Water & Waste Management, Office of Water Planning & Standards $0

2.1334,

DEVELOPMENT AND TESTING OF ASSESSMENT METHODOLOGIES APPLIED TO THE GENETIC AND CHRONIC FUNCTIONAL IMPAIRMENT IN HUMANS

A.E. Wechsler, Arthur D. Little Inc., *15 Acorn Park, Cambridge, Massachusetts* 02140 (68-01-3857)
OBJECTIVE: To review, evaluate and develop risk assessment metholodogies for genetic and chronic (non-carcinogenic) functional impairments, followed by application of these methodologies in two risk assessments. To refine and integrate risk assessment methodology.
APPROACH: (1) To perform a literature review of methods currently used to extrapolate experimental data to yield possible known effects for mutagenicity, teratogenic and chronic functional impairments, (2) Develop assessment methods for genetic and chronic functional risk catagories for carcinogenic risks in humans, (3) To propose an integrated risk assessment using materials balance, environmental fate and monitoring data to assess exposure to human and nonhuman. The methodology will then be tested on zinc and phthalate esters. This will be used to determine ranges of human risks associated with carcinogenicity, genetic, and functional disorders.
SUPPORTED BY U.S. Environmental Protection Agency, Office of Water & Waste Management, Office of Water Planning & Standards $0

2.1335,

DEVELOPMENT AND OPERATION OF A STATEWIDE FIRE INCIDENT AND CASUALTY REPORTING SYSTEM

R.W. Mafley, State Div. of Fire Prevention, *1010 Commonwealth Ave., Boston, Massachusetts* 02215 (U.S.F.A.-79010)
OBJECTIVE: Develop, implement, and operate a comprehensive statewide uniform fire incident and casualty reporting system. Initiate a computerized data collection and retrieval system at the State level encompassing fire and police arson investigation reports, laboratory reports, and insurance adjustment reports filed within the State Fire Marshal's office.
APPROACH: The collection of data from cities and towns will be aggregated and tabulated and will be distributed by the State Fire Marshal.
CURRENT PLANS: The primary consideration is to train full-time, part-time and volunteer fire departments in the proper procedure of coding the 902F form.
PROGRESS: Orientation by National Fire Data Center Scheduled Instructors Class, April 23, 24, 25, 1979, in the NFIRS program.
SUPPORTED BY U.S. Federal Emergency Management Agency, U.S. Fire Admin. $20,000

2.1336,

VIRAL ETIOLOGY AND EPIDEMIOLOGY OF RESPIRATORY INFECTION IN AN ISOLATED ANTARCTIC STATION

E.C. Dick, University of Wisconsin, Madison Campus, Medical School, Dept. of Preventive Medicine, *307 N. Charles St., Madison, Wisconsin* 53706 (NSG 2104)
No summary has been provided to the Smithsonian Science Information Exchange.
SUPPORTED BY U.S. National Aeronautics & Space Admin., Ames Research Center $30,000

2.1337,

LANDSAT STUDY RELATING SOIL ZINC CONTENT TO INCIDENCE OF DIABETES

I.G. Molnar, Lincoln University, School of Agriculture, Dept. of Agricultural & Natural Resources, *Jefferson City, Missouri* 65101 (NSG 13-1)
There is a considerable body of research which suggests a relationship exists between diabetes and zinc deficiencies within various animals and man. The objective of this research is to combine information obtained from epidemiological studies of the incidence of diabetes with zinc content of soils as indicated by geochemical maps of Missouri. Efforts will be made to expand and refine existing geochemical maps using Landsat data.
PROGRESS/CURRENT PLANS: Contract awarded in December 1979. Initial work currently underway.
SUPPORTED BY U.S. National Aeronautics & Space Admin., National Space Technology Lab. $0

2.1338,

A STUDY OF RESPIRATORY VIRUS TRANSMISSION AMONG PERSONNEL IN ISOLATION IN ANTARCTICA

E.C. Dick, University of Wisconsin, Madison Campus, Medical School, Dept. of Preventive Medicine, *307 N. Charles St., Madison, Wisconsin* 53706 (DPP76-83918 A01)

The University of Wisconsin proposes an investigation of person-to-person transmission of common cold viruses in an isolated population of 200 at McMurdo Station, Antarctica. This population is unique in that it consists of normal American citizens (primarily United States Naval personnel) with their normal complement of colds who will suddenly be completely isolated for about 5 weeks. It should be possible during this period to follow the movement of common cold viruses through this population without 'outside viruses' entering the chain of infection. Careful study of the characteristics of each person's illness and the inter-personnel methods by which person-to-person transmission can be interrupted. This approach seems promising, as prior studies in open populations and in human volunteers suggest that colds may be more difficult to transmit than previously supposed.

Analysis of data detained during the 77/78 field season will be carried out at the University of Wisconsin, Madison.

This research represents a continuation of that currently supported by DPP-7683918.

SUPPORTED BY U.S. National Science Foundation, Directorate for Astronomical Atmospheric Earth & Ocean Scis., Div. of Polar Programs $0

2.1339,

EFFECTS OF INDUSTRIALIZATION ON MORTALITY RATES

T. Hershberg, University of Pennsylvania, Graduate School, *203 Logan Hall, Philadelphia, Pennsylvania* 19104 (SES79-07128)

This project provides an empirical evaluation of competing theories explaining differing reductions in mortality for various socioeconomic sectors of a modernizing urban population. At issue is the effect on mortality of the availability of health care, sanitation, and diet and housing improvements for different social groups. Specific questions focus (a) on patterns of age, sex, and cause-of-death mortality by racial, ethnic, and occupational groups, with a special emphasis on the experience of urban blacks; and (b) on the effects on changes in these group-specific patterns attributable to access to water and sewer facilities, population densities, proximity to industrial pollutants, health care, and housing characteristics and composition. To be illustrative of major modernizing trends generally, the study focuses on changes in a developing American city, Philadelphia, during a period of rapid socioeconomic advance, the late nineteenth century. The relevant Philadelphia data, while unique in detail and quality pertinent to the central issues, also contain sufficiently large numbers of blacks and immigrant populations to permit comparison of the differing impact of early industrial development on their individual survival rates. The study will develop new techniques of mortality analysis for spatially separated groups and will provide inferences having current applications elsewhere.

SUPPORTED BY U.S. National Science Foundation, Directorate for Biological Behavioral & Social Sciences, Div. of Social & Economic Science $92,814

2.1340,

SOCIOECONOMIC DETERMINANTS OF CHANGES IN MORTALITY RATES

A. Palloni, University of Texas, Austin Campus, School of Social & Behavioral Sciences, Dept. of Sociology, *200 W. 21st, Austin, Texas* 78712 (SOC79-08288)

Latin America has experienced long-term increases in life expectancy and decreases in mortality rates that exceed the change rates for the transition period in Europe. Yet, recent signs indicate a slowdown in change rates for Latin America that may still keep the continent below the pace-setting standards of Europe. This research seeks to provide a more detailed specification of the Latin American change rates and an explanation for them over the last seventy years. Among factors affecting mortality decline, the study considers the impact of endogenous developments (i.e., rising standard of living) and exogenous developments (introduction of new and low-cost medical technology). The study will trace the separate and joint effects of these developments on overall mortality and on changing variation in the causes and rates of mortality by levels of socioeconomic status. The research employs available documentary data from death registrations, population censuses, and other records. This research should help extend basic knowledge of empirical regularities in trends and causes of human death, leading to the day when general theories of mortality change can be more confidently advanced.

SUPPORTED BY U.S. National Science Foundation, Directorate for Biological Behavioral & Social Sciences, Div. of Social & Economic Science $80,128

2.1341,

THE SIMULATION OF INFLUENZA DIFFUSION

G.F. Pyle, University of Akron, Center for Urban Studies, *302 E. Buchtel Ave., Akron, Ohio* 44304 (SOC79-05530)

From past experience it is known that the spread of a new strain of influenza virus throughout the country into a nonimmune population can have serious consequences. While a number of hypotheses exist that help to explain the spread, little is known of the actual process by which an influenza virus diffuses throughout geographic space. In part, this is because the origin locations of viruses tend to differ with different strains. In part also, it is because geographic changes occur from one time to another in the factors involved in the diffusion process: population size, travel patterns and transport infrastructure linkages, for example. The purpose of this research is to modify and apply current methodologies used to describe and explain the temporal-spatial diffusion of other phenomena to simulate the spread of influenza. Such methods take into account various propositions hypothesized to be associated with the spread of diseases and include simulation techniques employed in hierarchical, linear and radial diffusion processes.

The research will perform several simulation experiments using different hypothesized variables to replicate the 1946 and 1957 influenza diffusion patterns. The relationships between each simulated pattern will be statistically tested against the actual pattern for specific penetration periods of the influenza season. Using the results of this research, the 1968 pattern will be simulated and the relationship to the actual pattern tested statistically.

The knowledge obtained from the research can be used to simulate the spread of new influenza viruses for which barriers can be created to hinder its progress. The knowledge would be applicable to other disease agents known to diffuse in a geographic fashion.

SUPPORTED BY U.S. National Science Foundation, Directorate for Biological Behavioral & Social Sciences, Div. of Social & Economic Science $64,858

2.1342,

ECONOMIC MODELS OF THE DETERMINANTS OF CHILD HEALTH

M.R. Rosenzweig, Yale University, Graduate School, Dept. of Economics, *206 Elm, New Haven, Connecticut* 06520 (SOC7814481)

This research develops and tests economic models of the determinants of child health and mortality using cross-sectional individual survey data in combination with local community information. Empirical analyses are planned based on U.S., rural Indian and Colombian representative household samples, with the objective of evaluating the impact of individual characteristics, environmental conditions, and medical services on indicators of infant health. Such indicators include the probability of survival and biometric transformations of birthweight. In addition to estimating reduced-form equations, more restricted models are explored in which related family behavior such as mother's labor supply, duration of breast feeding, and the demand for consumption and medical inputs are treated as jointly determined and the relevant structural equations estimated. Regional information on prices and on labor market variables, which can be considered exogenous to individual household health outcomes and health-related activities, aid in the identification of these structural equations.

SUPPORTED BY U.S. National Science Foundation, Directorate for Biological Behavioral & Social Sciences, Div. of Social & Economic Science $139,300

2.1343,

ENVIRONMENTAL RISK FACTORS IN NASOPHARYNGEAL CARCINOMA IN MALAYSIA

R.W. Armstrong, University of Hawaii System, Manoa Campus, School of Arts & Sciences, Dept. of Geography, *2444 Dole St., Honolulu, Hawaii* 96822 (SOC79-10521)

The objective of this research is to compare the self-specific environments of Chinese and non-Chinese patients having nasopharyngeal carcinoma (NPC) with those of healthy control subjects to identify particular patient-environment interactions that may play a part in the etiology of NPC. The research will pay particular attention to exposures to certain occupational environments and dietary patterns both of which are suspected, on the basis of previous research, of being associated with a high risk of NPC. The control subjects will be sampled from the general population to serve as comparison groups in the determination of relative risk. Information on the self-specific environments will be collected through structured and non-structured interviews of 110 patients, 160 control subjects and members of their families. Information will also be collected from investigations of job sites, residences, and neighborhoods. The interviews will seek information on the daily activity patterns of the participants spread over one week. The field work will be conducted in the State of Selangor, Malaysia. The research will clarify evidence for the association between poorer socioeconomic environments and NPC, and test various hypotheses, particularly that carcinogens are inhaled in certain industrial occupational settings, and that exposure to Cantonese salted fish is a high risk NPC factor. The research will also examine the value of using daily activity patterns as a basis for obtaining information about self-specific environments and the importance of this information in identifying possible environmental risk factors. The methodology could have application in studies of other cancers.

SUPPORTED BY U.S. National Science Foundation, Directorate for Biological Behavioral & Social Sciences, Div. of Social & Economic Science $99,203

2.1344,

DIFFERENTIAL MORTALITY - COMPARATIVE STUDY OF SOCIOECONOMIC EXPLANATIONS

C.B. Nam, State University System of Florida, Florida State University, School of Social Sciences, Dept. of Sociology, *205 Wildwood Dr., Tallahassee, Florida* 32306 (SOC78-07298)

Death rates vary over the life cycle in a standard fashion, with mortality probabilities being highest at the infant and older ages. Nevertheless, when age curves of mortality are compared for different groups, they sometimes can be seen to intersect so that one group has higher death rates at younger and middle ages and lower rates at older ages. Past research has shown that this phenomenon is not solely due to erroneous data and is therefore partially a result of some type of selection in survival patterns. Explanations for why the pattern is observed in some cases and not others, and what produces it, will be sought in this study. A series of cross-national aggregate comparisons of mortality curves will be analyzed, including both crossovers and non-crossovers, and the effects of socioeconomic level, mortality level, and causes of death will be measured. The general hypothesis is that socioeconomically advantaged populations in all societies have prolonged life expectancies until old age, when mortality rates for the advantaged exceed the rates for the surviving disadvantaged. Cross-tabular and regression approaches will be used. The findings should be significant for understanding social aspects of health, survival, and the aging process, as well as for adding to our knowledge about social and racial stratification.

SUPPORTED BY U.S. National Science Foundation, Directorate for Biological Behavioral & Social Sciences, Div. of Social & Economic Science $0

2.1345,

ENVIRONMENTAL QUALITY AND HUMAN PERFORMANCE

S.D. Roscoe, Illiana Aviation Sciences Ltd., *Box 2238, Station A, Champaign, Illinois* 61820 (DAR78-12722)

This project is an investigation of the effects of tobacco smoke in combination with other individually mild environmental stressors, such as the reduced atmospheric pressure, loud noise, and whole-body vibration encountered by passengers in airplanes, trains and busses. Sensitive measures of the depression or facilitation of human performance of concurrent tasks that require divided attention will be corre-

lated with affective psychological responses of irritation, anxiety, depression, narrowing of attention, slow thinking, and hostile responses not typical of the individual.

The objective will be to quantify the effects of these individually mild environmental stressors upon basic functional components of human performance representative of a wide range of tasks encountered in complex, demanding jobs. The anticipated results will be of fundamental scientific nature, generalizable to the development of regulatory quidelines and administrative decisions regarding environmental pollution levels and exposure limits in public conveyances.

SUPPORTED BY U.S. National Science Foundation, Directorate for Engineering & Applied Science, Div. of Applied Research $93,098

2.1346,

WORKING CONFERENCE ON NUTRITION AND BEHAVIOR - NEW RESEARCH DIRECTIONS

B.E. Hindman, Franklin Inst. of the State of Pennsylvania, *20th & Benjamin Franklin Pkwy., Philadelphia, Pennsylvania* 19103 (OPA79-20650)

There is a great deal of controversy in the scientific community with regard to the definition of the exact relationship that exists between human nutrition and consequent measurable behavior both in the short and long term. The objective of this workshop is to bring this problem area into sharper focus.

The workshop will draw upon experts from the fields of nutrition, neurology/neurobiology/neurochemistry, psychology, psychiatry, physiology, pharmacology, toxicology, behavioral testing methodology, and epidemiology to discuss the present status of the research with regard to this problem and to identify new or additional status of the research with regard to this problem and to identify new or additional research directions.

Four commissioned papers, specifically relating nutrition to behavior from the vantage point of toxicology, physiology/neurochemistry, epidemiology, and pharmacology, will be written by experts in these fields. These papers will provide a sharp focal point to the workshop sessions and will help generate useful discussion. An expert organizing committee of four renowned researchers will develop the final agenda of defined subtopics.

The report and recommendations resulting from the workshop will be used as input to NSF to assist in program planning in Human Nutrition, and to Federal Drug Administration, US Department of Agriculture (Human Nutrition Center), and National Institutes of Health for use in future program development. The workshop will be held in Williamsburg, Virginia, in March 1980.

SUPPORTED BY U.S. National Science Foundation, Directorate for Engineering & Applied Science, Div. of Problem Focused Research $66,624

2.1347,

RESEARCH NEEDED TO IMPROVE DATA ON THE MINERAL CONTENT OF HUMAN TISSUES

M. Milner, American Inst. of Nutrition, *9650 Rockville Pike, Washington, District of Columbia* 20014 (OPA79-20493)

A major barrier to understanding the significance of minerals in human nutrition and health is the absence of an adequately organized, systematic data base dealing with the mineral content of various human tissues. This project would consist of a three-day workshop to critically evaluate current knowledge concerning the mineral content of human tissues, to assess the costs and sampling problems in obtaining this information, and to identify research needs and prioritries in relation to establishing an adequate data base.

The workshop will bring together experts in nutrition, medicine, epidemiology, pathology, physiology, and biochemistry. Ten commissioned papers will be written by appropriate experts to summarize the current state-of-the-art in measuring the content of various important minerals, such as zinc, copper, chromium, selenium, etc., in human tissue. Other topics will include mineral balance and the relation of specific minerals and various disease states.

The research agenda resulting from this workshop will be used as input for the National Science Foundation in program planning for its Human Nutrition program and to National Institutes of Health (National Institute of Arthritis, Metabolic and Digestive Diseases). Food and Drug Administration, Environmental Protection Agency, and U.S. Department of Agriculture for use in future program development.

The workshop will be held in Bethesda, Maryland, in May 1980.

SUPPORTED BY U.S. National Science Foundation, Directorate for Engineering & Applied Science, Div. of Problem Focused Research $49,694

2.1348,

ANNUAL CONFERENCES ON TRACE SUBSTANCES IN ENVIRONMENTAL HEALTH

D.D. Hemphill, University of Missouri, Columbia Campus, School of Agriculture, Dept. of Horticulture, *130 Jesse Hall, Columbia, Missouri* 65201 (PFR78-05696 A01)

The Thirteenth Annual Conference on Trace Substances in Environmental Health (June 4-7, 1979) is part of a continuing program of the University of Missouri's Environmental Health Program. The purpose of these Conferences is to explore the biological, ecological and health significance of chemical substances that may be present in 'trace' amounts in the environment. The Conferences are concerned with both organic and inorganic substances in our air, food and water. As a consequence, only a few selected areas can be considered in depth each year. These conferences form part of an overall interdisciplinary approach necessary to understand the complexity of environmental and ecological problems and methods for their control.

The grant continues earlier support under Grant PFR 78-05696 (Twelfth Conference).

The general areas for the Thirteenth Conference include: Epidemiology of Trace Substances, Environmental Pollution, Environmental Geochemistry and Health, Analytical Methodology, Metabolic and Health Effects of Chemical Substances.

SUPPORTED BY U.S. National Science Foundation, Directorate for Engineering & Applied Science, Div. of Problem Focused Research $24,425

2.1349,

STATISTICS AND ENVIRONMENTAL FACTORS IN HEALTH

D.L. Thomsen, Society for Industrial & Applied Mathematics, *33 S. 17th St., Philadelphia, Pennsylvania* 19103 (MCS76-05813 A02)

The mathematical statisticians, who are faculty associates on this project, will develop statistical techniques most effective in tackling problems in environmental health. These techniques will entail extensions of the concepts of spatial correlation, reliability, longitudinal statistics, and various aspects of regression.

SUPPORTED BY U.S. National Science Foundation, Directorate for Mathematical & Physical Sciences, Div. of Mathematical & Computer Sciences $0

2.1350,

ANALYSIS OF NONLINEAR MATHEMATICAL MODELS IN PHYSIOLOGY, ECOLOGY, AND EPIDEMIOLOGY

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Continuation of MCS72-04965 A04.

In recent years, the importance of mathematical models in ecology, physiology, economics, etc., has been recognized. Since many of the phenomena under study involve nonlinear interactions, the models often lead to nonlinear equations. The purpose of this research is to continue the study of the formulation of such models and the rigorous mathematical investigation of the associated equations. Of particular interest are models which take into account time delays or hereditary dependence, and consequently most of the equations formulated are delay-differential or delay-integral equations, partial differential equations, or higher order difference equations. The importance of these delayed effects is well-recognized, but only in the last decade or so has the theory of these equations been sufficiently advanced to permit the successful resolution of the questions of interest in the applications.

For most of the equations a primary objective is to determine when there are equilibrium states and when these are stable, when there are stable solutions, and when more complicated behavior may occur. Another objective is to determine the extent to which this depends on the presence of delayed effects, and on the magnitudes of the delays. In the long run, it is anticipated that these studies, besides being of mathematical interest, will be of assistance to ecologists, medical researchers, and others, as they attempt to understand observed phenomena.

SUPPORTED BY U.S. National Science Foundation, Directorate for Mathematical & Physical Sciences, Div. of Mathematical & Computer Sciences $0

2.1351,

DISCUSSIONS OF CHEMICAL HAZARDS FOR UNION MEMBERS

J. Golodner, Labor Inst. for Human Enrichment Inc., *815 16th St. N.W., Washington, District of Columbia* 20006 (OSS78-24068)

Occupational health hazards are more and more in the forefront of today's news, although they have been with us in one form or another since the beginnings of technology. Current Government statistics show that American workers are exposed to large numbers of toxic chemicals which cause large numbers of deaths and diseases each year. Most workers do not have sufficient training or information to enable them to fully understand the problems and protect themselves. This proposal seeks to reach blue collar workers and to present to them the kind of technical information they need to increase their awareness of, and help them understand, occupational health problems. The education medium will be a play on occupational health, followed immediately by a discussion period between the audience and technical experts. This project is viewed in part as a pilot program to explore the utility of this approach. The play will be presented in union halls, at work sites, etc., in an attempt to communicate with blue collar workers who normally are not reached by such media as public TV, science writing, or museum exhibits.

In order to assure balance and objectivity, an advisory committee includes representatives of industry and labor as well as academic experts on occupational health.

SUPPORTED BY U.S. National Science Foundation, Directorate for Science Education, Office of Science & Society $59,110

2.1352,

EPIDEMIOLOGIC STUDIES OF CHAGAS' DISEASE IN SOUTHERN MEXICO

R.S. Goldsmith, University of California, San Francisco Campus, School of Medicine, Dept. of Epidemiology & International Health, *551 Parnassus Ave., San Francisco, California* 94122 (INT78-21361)

The proposed study of Chagas' disease brings to the task the talents of Dr. Robert Goldsmith and colleagues of the University of California, San Francisco, together with Dr. Fernando Beltan of the Mexican Center for Ecological Research in the southeast, located in San Cristobal, Chiapas State. Chagas' disease (American trypanosomiasis) is an infection of man and animals caused by the protozoa, Trypanosoma cruzi, and which is transmitted by many species of triatomine bugs which live in dwellings and animal nests. The disease is endemic in an area extending from Argentina to the United States.

Previous studies by Dr. Goldsmith in the Oaxaca and Chiapas States of Mexico have shown that a considerable number of people are infected. However, fundamental information is lacking to provide data needed to develop rational methods of control. The investigators will trap and study infected wild animals, radiotracking of animals back to their nests and biological and behavioral studies of the organisms which carry the pathogens. Susceptibility of the organisms to insecticides will be measured. Observations on humans will involve studies of cardiac effects of the disease. The Mexican Ministry of Public Health considers Dr. Goldsmith's studies on Chagas' disease to be important to be continued.

SUPPORTED BY U.S. National Science Foundation, Directorate for Scientific Technological & Internat. Affairs, Div. of International Programs $39,988

2.1353,

MEDICAL AND PHYSICAL STUDIES OF MERCURY IN THE ENVIRONMENT AT ALMADEN, C.R., SPAIN

R. Wilson, University of Rochester, School of Medicine & Dentistry, Dept. of Radiation Biology & Biophysics, *601 Elmwood Ave., Rochester, New York* 14627 (INT78-19907)

Mercury has been mined from the region of Almaden, Spain for two thousand years. Even today, the mines produce over one quarter of the world's mercury supply. The miners, residents and general environment of Almaden have thus been exposed to mercury at unusual levels for an extensive period of time.

This multi-faceted project involvng U.S. and Spanish scientists is directed at gaining a better understanding of the impact of mercury in the environment in and around the mining area. Studies are being carried out on the levels of airborne mercury in the town and the mines and on the occupational exposure of underground and refinery workers. Also, methods are being developed for assessing body burdens of mercury and for quantifying various diagnostic, therapeutic and prophylactic measures such as chelating agents.

SUPPORTED BY U.S. National Science Foundation, Directorate for Scientific Technological & Internat. Affairs, Div. of International Programs $76,854

2.1354,

COMPARATIVE RISK - ASSESSMENT AND ACCEPTABLE RISK CRITERIA FORMULATION

G.F. Flanagan, Oak Ridge National Lab., *P.O. Box Y, Oak Ridge, Tennessee* 37830

SCOPE: 1. A working group will develop plans for research needed to formulate acceptable risk criteria. 2. Conduct a survey of available data pertaining to coal or nuclear fuel cycle risks from occupational, routine or accidental releases.

SUPPORTED BY U.S. Nuclear Regulatory Commission, Office of Nuclear Regulatory Research $300,000

2.1355,

HUMORAL IMMUNITY AND IMMUNOGENETICS IN PSORIATIC ARTHRITIS

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The program is designed to investigate pathogenetic mechanisms in Psoriatic Arthritis (PsA). Immunologic factors, genetic influences and environmental agents are under study. Our previous work elsewhere produced evidence of immune complexes by Clq deviation in 40% of Ps and PsA patients. In the past further evidence supporting immune reactivity has been found in the form of apparently slightly elevated levels of serum cryoglobulins and definite elevations of serum IgA. Serum IgG and IgM have been normal. Greater numbers of patients and controls need study. Our previous studies showed a prevalence of BW38 in 40% of peripheral PsA patients. This finding was recently confirmed by a group at NIH who extended the observation to include an association with CW6 and DR W 4. B27 in central PsA patients has been frequently shown

We are currently typing at A,B,C, and DR loci. The number of patients studied since the laboratory opened is too few for useful observation at this point.

Increasing evidence is suggesting a role for bacteria and/or bacterial products in the pathogenesis of spondyloarthritis. Epidemics of Salmonella, Shigella, and Yersinian have led to B27 positive individuals to the development of 'reactive' arthritis which appears clinically similar to Reiter's syndrome. Klebsiella has been found in stool cultures and correlated with disease activity in AS. We are currently designing studies to examine the role bacteria and/or bacterial products could play in the pathogenesis of PsA.

SUPPORTED BY U.S. Veterans Admin., Dept. of Medicine & Surgery funds n.a.

2.1356,

AGENT ORANGE (DEFOLIANT) TOXICITY - FAT CONTENT OF DIOXIN IN STUDY AND VOLUNTEER CONTROL SUBJECTS

P.E. Donahue, U.S. Veterans Admin., Dept. of Medicine & Surgery, Medical Center, *820 S. Damen Ave., Chicago, Illinois* 60612 (173-34-2231)

Because of increasing concern that chemical defoliants used in Viet Nam may have long term pathologic effects, VACO has requested a number of hospitals in the Chicago area to study individuals exposed to chemical defoliants.

Because any detrimental effects of these materials are speculative at present it is important to identify individuals with documented exposure to such agents while in military service. Toward the end, a special questionaire designed by VACO has been employed and is being utilized to identify individuals who were at risk and have presented themselves for evaluation to V.A. West Side Medical Center.

Individuals will be screened with routine biochemical investigation and complete physical examination. Those with relatively well documented exposure will be asked to volunteer for a minor operative procedure which will remove a portion of fat from their abdominal wall.

This 25 grams of fat from the abdominal wall will then be sent to center laboratory at the University of Nebraska where it will be analyzed for residual chemical contamination. By this means it is thought that residual chemical which might be lodged in the fatty tissue can be documented as present or not present.

SUPPORTED BY U.S. Veterans Admin., Dept. of Medicine & Surgery funds n.a.

2.1357,

STUDY OF FREQUENCY OF HOSPITAL-ACQUIRED VIRAL RESPIRATORY INFECTIONS IN AN ADULT MULTI-BED WARD

R.L. Tabor, U.S. Veterans Admin., Dept. of Medicine & Surgery, Medical Center, *Biloxi, Mississippi* 39531 (439-76-0221)

Hospital acquired respiratory infections are a well recognized problem resulting in increased patient suffering, prolonged hospitalization and increased risk of unnecessary antibiotic therapy. Although studies have been done on the frequency of hospital acquired viral respiratory infections in pediatric patients, a closer analysis is needed to evaluate the nature and extent of the problem in adult patients.

The purpose of this study is to determine the frequency of respiratory viral cross-infection among patients in an adult multi-bed ward. At the time of admission serum will be drawn from all consenting patients. A second serum will be drawn from any patient developing symptoms of respiratory infection, 10 to 12 days following the onset of symptoms. The second serum will be drawn from asymptomatic patients at time of discharge. The paired sera will be tested for rises in titers to respiratory viruses. Significant rises will be utilized as an indicator of infection. Clinical data from patient interview and chart review will include length of stay, onset date and symptoms of any respiratory viral infection, diagnoses, medications, history of influenza vaccine, age and race. Length of stay, age, diagnoses, bed location, medication and vaccine history will be evaluated as possible predisposing factors contributing to the acquisition of infection. The number and type of respiratory viral infections among the patients in the 12-bed ward will be reported. Hypothesis: Rises in titers to the same viruses will occur in those patients acquiring respiratory viral infections.

SUPPORTED BY U.S. Veterans Admin., Dept. of Medicine & Surgery funds n.a.

2.1358,

DIABETES INTERVENTION STUDY

F. Vinicor, U.S. Veterans Admin., Dept. of Medicine & Surgery, Medical Center, *1481 W. 10th St., Indianapolis, Indiana* 46202 (051-34-8588)

PROJECT OBJECTIVES: (1) Analyze impact of health professional and patient education on the knowledge, skill, and behavior of the professional and health outcomes of the patient. (2) Develop diabetic patient data base for epidemologic studies.

PLAN: Patients with D.M. are identified, informed consent obtained, and an extensive data base collected. Health professionals and all their patients are then randomly assigned to one of four groups: (1) Existing health patterns; (2) Patient education; (3) Professional education; (4) Patient and professional education. Educational interventions are systematically applied; professional and patient behavior and outcomes are observed.

METHODOLOGY: Patient assessment: history, physical exam, vascular analysis (doppler analysis), nerve conduction studies, fundus photography, bone mass and dental assessment. Patient and professional education includes intensive instructional-based concepts with innovative techniques (e.g. computer reminders, compliance training).

FINDINGS: 350 patients have been evaluated. The mean age is 58 years, mean age of onset at 48 years and mean duration of diabetes 10 years. 71% of patients are on insulin, 14% on oral agents and only 15% on diet alone. The mean percent IBW was 130% with a body fat of 37%. 1/4 do not understand an insulin reaction. Two thirds of patients believe diet is more important than urine testing but only 15% report they always follow the diet. The mean fasting blood sugar was 243 mg/dl, 2 hr pp blood sugar was 352mg%, and A1Hgb was 11.7%.

SUPPORTED BY U.S. Veterans Admin., Dept. of Medicine & Surgery funds n.a.

2.1359,

RELATIONSHIPS BETWEEN LEAD IN HOME DRINKING WATER, CARDIOVASCULAR RISK FACTORS AND OTHER HEALTH INDICES

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PROJECT OBJECTIVES: To examine relationships between lead and other trace metals found in home drinking water and indices of health, with particular emphasis on cardiovascular health.

PLAN: The study is being performed in collaboration with the National Heart, Lung, and Blood Institute (NHLBI) and the Environmental Protection Agency (EPA). Samples of home drinking water and nail clippings were collected from 325 Normative Aging Study (NAS) subjects in 1976-1977 and analyzed for lead and other trace metals by the EPA in Cincinnati. A follow-up collection of water and nail clippings was completed on the same subjects in August, 1979. These samples will also be analyzed by the EPA. Health data were collected as part of subjects' regular NAS physical examinations.

METHOD: A data set linking trace metal data from the 1976-1977 water samples to NAS health data was constructed by the NAS in August, 1979 and sent to NHI BI in Bethesda, Md. for statistical analysis. Frequency distributions of trace metal data have been obtained, and regression analyses relating hypertension to trace metal exposure controlling for age and other known risk factors will be performed.

FINDINGS: Lead levels in the Boston area were lower than those found in Glasgow and British samples. Nevertheless, 27 percent had casual samples above 50 micrograms/liter, and 52 percent had first morning samples above that level. Levels beyond 50 micrograms/liter are generally considered undesirable.

SUPPORTED BY U.S. Veterans Admin., Dept. of Medicine & Surgery funds n.a.

2.1360,

RISK OF HEPATITIS AMONG HOSPITAL PHLEBOTOMISTS

C.P. Craig, U.S. Veterans Admin., Dept. of Medicine & Surgery, Medical Center, Infectious Disease Section, *13000 N. 30th St., Tampa, Florida* 33612 (209-28-4083)

This research protocol is designed to evaluate the incidence of hepatitis among phlebotomists in hospitals. Data being collected from phlebotomist who will be bleeding every 2 months over a six month period include the following: 1) Exposure to oncology patients, 2) exposure to hemodialysis patients, 3) number of hours spent in drawing blood weekly, and 4) past history of hepatitis. Control populations will consist of phlebotomists working in voluntary blood banks and secretaries employed in participating hospitals. The study has been active for approximately 4 months and has already demonstrated that hospital phlebotomists have serologic evidence of previous hepatitis B in excess of the general population, approximately 20%. Completion date for the study is January 1, 1980.

SUPPORTED BY U.S. Veterans Admin., Dept. of Medicine & Surgery funds n.a.

2.1361,

INVESTIGATIONS ON LEGIONNAIRES' DISEASE

S.M. Finegold, U.S. Veterans Admin., Dept. of Medicine & Surgery, Medical Center, Infectious Disease Section, *Wilshire & Sawtelle Blvds., Room 209, Los Angeles, California* 90073 (550-14-6341)

The Legionnaire's bacillus has recently been recognized as an important cause of serious forms of pneumonia. Wadsworth VAH has had an ongoing outbreak for approximately one year, with 33 documented cases, deaths, and a number of additional cases not yet studied serologically.

The proposed project would provide standard and advanced diagnostic tools, including those for microscpic, cultural and immunologic demonstration of the organism or evidence of its participation in the disease process. Studies will also be directed toward evaluation of autopsy material for the previous 3 years for evidence of the disease, epidemiologic information, biology of the organism, new diagnostic tools, antimicrobial susceptibility, and studies of possible toxin production.

SUPPORTED BY U.S. Veterans Admin., Dept. of Medicine & Surgery funds n.a.

2.1362,

PROSPECTIVE STUDY OF THE PREVALENCE OF LEGIONNAIRES' DISEASE IN VETERANS WITH PNEUMONIA

P. Edelstein, U.S. Veterans Admin., Dept. of Medicine & Surgery, Medical Center, Research Service, *Wilshire & Sawtelle Blvds., Room 209, Los Angeles, California* 90073 (545-66-4479)

The work performed in the last year has been related to the clinical bacteriology and serology of Legionella pneumophila. Techniques of yolk sack inoculation, direct immunofluorescence (DFA) microscopy, indirect immunofluorescent serological techniques, and methods of primary isolation on solid media have been perfected. Twenty-five strains of L. pneumophila have been isolated from clinical specimens (blood-3, lung-8, transtracheal aspirate-10, endotracheal aspirate-4), using in vitro methods in all except one case. This represents about 1/3 of the known human isolates. The bacillus can be grown in primary isolation an average time of 5 days after inoculation. This is clinically useful, and has widespread application. A semi-selective medium which enables isolation of the organism from contaminated clinical specimens have been developed. A serological laboratory for determination of antibody titers against L. pneumophila has been established. Antibody levels against all four known serotypes are being tested for. Methods for the rapid diagnosis of the disease by DFA methods have been established. DFA examination of sputa has been helpful in the diagnosis of 19 cases of Legionnaires' disease at Wadsworth. Unfortunately, primarily because of the need to set up these techniques first, very few patients have been enrolled in the prospective study of pneumonia. However, tremendous progress in the sphere of clinical microbiology of the organism has been made. More patients will be studied in the near future. This work has resulted in the publication of seven papers. Several more manuscripts are in preparation, or have been submitted for publication.

SUPPORTED BY U.S. Veterans Admin., Dept. of Medicine & Surgery funds n.a.

2.1363,

PILOT STUDY OF THE RELATIONSHIP BETWEEN SMOKING AND PARKINSON'S DISEASE

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Previous studies found fewer cigarette smokers among persons with Parkinson disease than among other patients. We reinvestigated this phenomenon utilizing nonpatient controls. One hundred and fifty (63%) of 237 cases and 224 (47%) of 474 controls never smoked cigarettes (p less than 0.001). Significantly different smoking rates were also present at 10 and 20 years before onset of Parkinsonism.

SUPPORTED BY U.S. Veterans Admin., Dept. of Medicine & Surgery funds n.a.

2.1364,

INVESTIGATION OF CERTAIN MEDICAL IMPLICATIONS OF AN IODINATED WATER SUPPLY

W.C. Thomas, U.S. Veterans Admin., Dept. of Medicine & Surgery, Medical Center, *Gainesville, Florida* 32601 (266-52-6674)

Since 1963, the water supply of the Florida Correctional Institute at Lowell, Florida, has been iodinated, rather than chlorinated, as a means of water purification. During these years 177 of the inmates gave birth to 181 infants, and there were no detectable goiters in any of these newborns. Thirty-five of the inmates were hospitalized at the College of Medicine at the University of Florida to determine how quickly RAI uptakes would return to the normal range and whether perchlorate or diuretics would hasten the removal of accumulated iodine. These latter agents were only slightly effective in accelerating iodide excretion, and in untreated subjects RAI uptake values were within the range of normal after two to three weeks of using a noniodinated water supply.

SUPPORTED BY U.S. Veterans Admin., Dept. of Medicine & Surgery funds n.a.

2.1365,

EPIDEMIOLOGY AND CLINICAL SIGNIFICANCE OF NON-A, NON-D BETA HEMOLYTIC STREPTOCOCCI IN ADULT MEN

R.H. Parker, U.S. Veterans Admin., Dept. of Medicine & Surgery, Medical Center, Infectious Diseases Section, *50 Irving St. N.W., Washington, District of Columbia* 20422 (537-26-2718)

This study will investigate the prevalence of beta-hemolytic streptococci other than groups A and D in a hospitalized adult population and to correlate the recovery of these isolates with infectious and noninfectious diseases. Primary goals will be to define a carrier state for these microorganisms, to determine the significance of in-hospital acquisition of these microorganisms and to determine the effect of antimicrobial therapy on colonization and infection rates with these microorganisms.

SUPPORTED BY U.S. Veterans Admin., Dept. of Medicine & Surgery funds n.a.

2.1366,

PREVALENCE OF UNDETECTED DEPRESSION & HOPELESSNESS AND THE RELATIONSHIP TO THE USE OF MEDICAL SERVICES BY MEDICAL PATIENTS

H.L. Barnes, U.S. Veterans Admin., Dept. of Medicine & Surgery, Medical Center, *Togus, Maine* 04330 (004-26-3732)

PROJECT OBJECTIVES: The purpose of this project is to investigate (1) the prevalence of undetected depression and hopelessness with patients who come to a medical/surgical outpatient clinic; and (2) if the level of depression and hopelessness is related to the excessive use of services.

PLAN: The Beck Depression Inventory (BDI), a self-rating scale, and the Hamilton Rating Scale for Depression (HRS), a clinical interview, will be used to measure depressive symptoms and the Hopelessness Scale (HS) for measuring symptoms of hopelessness. To factor out severity and extent of illness, the Seriousness of Illness Rating Scale (SIRS) will be used while also determining the relationship of these two factors to depression and hopelessness.

METHOD: Subjects will be male patients who come to the medical outpatient clinic of the Togus VA in Maine during a 3-6 week period of July/August, 1979.

CLINICAL RELATIONSHIP: Treatment and management plans for patients with detected depression and hopelessness could be implemented more efficaciously and lower the possibility of suicide or reduce utilization of ancillary medical services and to speed recovery for an illness.

SUPPORTED BY U.S. Veterans Admin., Dept. of Medicine & Surgery funds n.a.

2.1367,

NONINVASIVE ASSESSMENT OF CAROTID DISEASE IN HYPERTENSIVE SUBJECTS

G.E. Bone, U.S. Veterans Admin., Dept. of Medicine & Surgery, Medical Center, Vascular Surgery Section, *4500 S. Lancaster Rd., Dallas, Texas* 75216 (465-64-8052)

This study will assess the prevalence and natural history of asymptomatic carotid arterial occlusive disease in a population of patients with chronic arterial hypertension. The status of carotid arteries will be documented noninvasively by pulsed Doppler ultrasonic arteriography, periorbital Doppler cerebrovascular examination, and ocular plethysmography/carotid phonoangiography. During the initial 12 months, it is hoped to enter approximately 700 patients. Baseline studies will establish the prevalence and morphologic characteristics of carotid artery disease in this cohort. Each patient will be subsequently re-evaluated at periodic intervals over a subsequent 4-year period.

The results of this study may: 1) define the potential morbid significance, if any, of asymptomatic carotid artery disease, 2) clarify the relative contribution of carotid artery disease to stroke pathogenesis in the hypertensive patient, 3) enhance the existing fund of knowledge regarding the influence of recognized cardiovascular risk factors in carotid artery disease, and 4) establish the relative feasibility and cost-effectiveness associated with the various noninvasive techniques employed for routine and/or mass screening of stroke-prone populations.

SUPPORTED BY U.S. Veterans Admin., Dept. of Medicine & Surgery funds n.a.

2.1368,

IMMUNOLOGICAL MECHANISM AFFECTING INFECTION BY HERPES GROUP VIRUSES

M. Oxman, U.S. Veterans Admin., Dept. of Medicine & Surgery, Medical Center, Infectious Diseases Section, *3350 La Jolla Village Blvd., San Diego, California* 92161 (041-30-0453)

The objective of this research program is to identify specific immunologic defects in immunosuppressed patients which predispose them to severe infections by varicella-zoster virus (VZV) and other members of the herpes virus group, to develop practical methods for the assessment of relevant host defenses against these virus infections, and to develop and evalute practical methods for prophylaxis and therapy. Our aims are: 1) to develop practical techniques for the measurement of virus-specific humoral and cellular immunity to VZV; 2) to utilize these techniques to characterize the responses of normal individuals to primary (varicella) and recurrent (herpes zoster) VZV infections; 3) to apply these techniques in a prospective study of the natural history of VZV infections in immunosuppressed patients in order to determine which (if any) can be used to identify in advance patients at increased risk; 4) to determine the effect of prophylactic administration of VZV-immune globulin on the frequency, severity and complications of VZV infections in patients with Hodgkin's disease and non-Hodgkin's lymphoma; and 5) to attempt to adopt the techniques developed with VZV to the measurement of humoral and cellular immunity to cytomegalovirus (CMV) and herpes simplex virus (HSV) and then apply these to the prospective study of the natural history of CMV and HSV infections in immunosuppressed patients.

SUPPORTED BY U.S. Veterans Admin., Dept. of Medicine & Surgery funds n.a.

2.1369,

GASTRIC LESIONS IN RHEUMATOID ARTHRITIS PATIENTS

P.H. Guth, U.S. Veterans Admin., Dept. of Medicine & Surgery, Medical Center, Gastroenterology Section, *Wilshire & Sawtelle Blvds., Room 209, Los Angeles, California* 90073 (562-36-8405)

Both aspirin and the new non-steroidal anti-inflammatory medications cause gastric mucosal injury. The proposed study is a prospective endoscopic analysis of the prevalence and characteristics of gastric lesions in rheumatoid arthritis (RA) patients on chronic aspirin or non-steroidal anti-inflammatory agent therapy. Three hypotheses are to be tested: 1) RA patients on chronic aspirin therapy have an increased prevalence of gastric lesions when compared to RA subjects on other non-steroidal anti-inflammatory agents or enteric coated aspirin; 2) gastric ulcers in RA patients develop after chronic aspirin ingestion (greater than 3 months); and 3) aspirin-associated gastric ulcer develops in the absence of antral gastritis. Two groups of RA patients will be studied. Group I will consist of newly diagnosed RA patients on no therapy who will be followed by endoscopy and biopsy over a 4 month period after institution of aspirin therapy. Group II will consist of previously diagnosed RA patients on chronic therapy (no less than 3 months) who will undergo one endoscopy and biopsy. Group II patients will be subdivided into 4 categories, those on 1) soluble aspirin, 2) enteric coated aspirin, 3) non-steroidal anti-inflammatory agents, and 4) indocin therapy alone. All endoscopies will be performed by an investigator unaware of the patients symptomatology and clinical status. All histologies will be interpreted by an investigator unaware of the patient's identity and point in the study at which it was taken. Results will be analyzed in terms of the hypotheses being tested.

SUPPORTED BY U.S. Veterans Admin., Dept. of Medicine & Surgery funds n.a.

2.1370,

INTERNATIONAL EPIDEMIOLOGY STUDY ON SMOKING PATTERNS AND LUNG CANCER

O. Auerbach, U.S. Veterans Admin., Dept. of Medicine & Surgery, Medical Center, *Tremont Ave. & S. Centre St., East Orange, New Jersey* 07019 (083-36-0408)

At the request of Enviro Control, Inc. and with the approval of the NCI, the principal investigator serves as pathologist in an International Epidemiology Study on Smoking Patterns and Lung Cancer. The goal of this study is to attempt to determine whether the tobacco used in cigarettes in the different countries will cause development of different histologic types of lung cancer. The benefit of one individual evaluat-

ing all the material is that there will be uniformity in the histologic evaluation.

A conference was held on June 7, 1979, with Dr. Thomas Owen of the NCI, Dr. Neil Lynch of Enviro Control and Dr. Christian Vutuc from Vienna, Austria, which should result in a better understanding between this laboratory and the individuals submitting slides for the study. Although we have not received slides for evaluation since June 1978, they will be sent again in the near future. Some of the countries participating in this study are: France, Germany, Austria, Italy, Scotland and Cuba. The Cuban pathologists have asked for a conference with the principal investigator in Cuba to discuss the format of the study and also WHO classification of lung tumors. The principal investigator will also examine material in a study of Cuban migrant workers in the Miami area who develop lung cancer. The contract for this study has been awarded and material should begin to arrive within the next six months.

SUPPORTED BY U.S. Veterans Admin., Dept. of Medicine & Surgery funds n.a.

2.1371,

EPIDEMIOLOGY, GENETICS, AND MOLECULAR BIOLOGY OF AMINOGLYCOSIDE RESISTANCE IN NOSOCOMIAL INFECTIONS

J.F. John, U.S. Veterans Admin., Dept. of Medicine & Surgery, Medical Center, *109 Bee St., Charleston, South Carolina* 29403 (201-36-1416)

This project is designed to examine the epidemiology of resistance factors carried by or characteristic of pathogenic gramnegative bacteria producing infection in hospitalized patients. New molecular techniques will be employed to characterize individual plasmids and these markers will then be used to determine the extent of R factor activity within given hospital. The aminoglycoside family of drugs has become very important in the therapy of serious infections in the hospitalized patient. We will study emergence and persistence of resistance to the aminoglycosides and determine the R-factor mediated resistance mechanisms for this group of drugs. By understanding better R-factor mediated aminoglycoside resistance, we hope to contain resistance to these agents and preserve their use as effective therapeutic agents.

SPECIFIC OBJECTIVES: (A) To determine the incidence and significance of R factor mediated aminoglycoside resistance in hospitalized patients using intensive surveillance of hospital wards and daily collection of aminoglycoside resistant isolates from the bacteriology laboratories. (B) To characterize these R-factors as to their molecular weight, patterns of self-transmissibility, elaboration of modifying enzymes, and coexistence of other resistance markers. (C) To determine the distribution and persistence in patients, hospital staff and environmental reservoirs of specific plasmids by obtaining cultures from medical personnel and the inanimate environment.

SUPPORTED BY U.S. Veterans Admin., Dept. of Medicine & Surgery funds n.a.

2.1372,

EPIDEMIOLOGY OF LEGIONNAIRE'S DISEASE IN A VETERAN POPULATION EXPOSED TO A MAJOR CONSTRUCTION PROJECT

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The overall objective is to provide further epidemiologic information concerning Legionnaire's Disease. The source of origin, mode of spread, and risk factors related to Legionnaire's Disease are not known, though speculation from previous epidemics indicates a possible relationship to building reconstruction and contaminated water air cooling systems. The specific aims will be: 1) Measure the endemic incidence of Legionnaire's Disease at the NLR Div. of the Little Rock VA Medical Center; 2) Measure seasonal variations in incidence of Legionnaire's Disease at the same facility; 3) test whether intensive construction and demolition of the facility over 3 years will significantly increase the incidence of Legionniare's Disease; 4) isolate the sources for both the endemic drift and epidemic outbreak, should they occur. Surveillance will be undertaken of the hospital population, personnel, and construction crew. Small samples of blood will be drawn for indirect fluorescent antibody tests against one or more antigenic strains of Legionnaire's Disease at the initiation of the study, and either estimated or stored as serum. All subjects entering the study will have further blood drawn for titres either on their anniversary, or on discharge, and repeated during subsequent re-admissions. Clinical incidence of Legionnaire's Disease will be monitored by similar investigation of unexplained febrile episodes persisting over 48 hours, and supported by other diagnostic means.

Subject profiles, data base, and continuing information will be collected and analysed by conventional techniques, involving considerable program analysis and computer time. A preliminary random survey of one quarter of the chronic patient population performed in January 1979, revealed that 12 percent had significant Legionnaire's Disease titres at greater than 1:128. Currently a similar survey of non-hospital veterans is being studied with the help of the state American Legion.

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2.1373,

STUDIES ON STAPHYLOCOCCAL INFECTIONS

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PROJECT OBJECTIVES: (1) To obtain specimens for isolation of Staph. aureus from the nose of all patients admitted to the hospital for one year, all employees and all infections of patients and employees. (2) To study the correlation of bacteriophage types of Staph. aureus with disease states, occupations of hospital employees and with infections. (3) To study the effects of antibiotic therapy on the carriage of Staph. aureus. (4) To compare types of Staph. aureus isolated from hospital employees carried by patients and their hospital acquired infections.

PLAN: The isolation of Staph. aureus was attempted on 4213 specimens obtained from the noses of 2583 patients on admission to the hospital from 401 employees and from 315 infections of patients and 20 infections of employees. All isolates were studied for Gram stain, hemolysis, coagulase, fermentation of mannitol, bacteriophage susceptibility and antibiotic sensitivity.

RESULTS: Total isolates numbered 1334. 90.8 percent were typeable. Significant changes have occurred in 25 years when results were compared to a similar study performed by the investigator in 1954. In 1954, bacteriophage types carried by hospital employees were similar to those causing nosocomial infections of patients and different from those carried by patients at time of admission. In 1977, the types are similar from all sources indicating a complete diffusion of 'hospital' types into the community. Carriage rates of Staph. aureus were 34.4 percent for employees and 25.8 percent for patients. Bacteriophage type 94/96 is predominant.

Correlations were not significant with occupations, diseases, treatment with antibiotics because of insufficient numbers in each group.

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2.1374,

STUDY OF RELATIONSHIP OF SMOKING TO CANCER OF THE PANCREAS

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Cancer of the pancreas is now the fourth leading cause of cancer death in the United States. Among the etiologic factors said to be associated with pancreatic cancer are occupational exposures and a history of diabetes. Cigarette smoking has also been associated with cancer of the pancreas.

Several years ago we made a preliminary analysis of specimens of pancreas taken from routine autopsies. Included in the study were 1,294 men whose smoking histories had been obtained from previous studies. Slides were put into random order identified only by a serial number and examined for any evidence of pathology, particularly for duct cells with atypical nuclei, and these findings were combined with the smoking history for each case. Atypical nuclei were found in ducts of the pancreas in 22 percent of the men who never smoked regularly, 46 percent of the men who smoked 1-9 cigarettes a day, 57 percent of the 10-19 cigarettes a day smokers, 66 percent of the 1-2 packs a day smokers and 75 percent of those who smoked 2 or more packs a day.

We decided to design a more detailed protocol for analyzing atypical duct cells in the pancreas which requires 30 sections to be taken from each pancreas obtained at autopsy from several hospitals in New Jersey and upstate New York. We have collected 2,313 pancreata since 1971. Of these, smoking histories have been obtained for 1,288 cases. We will continue to collect specimens until we have collected enough cases by age and smoking habits to begin our histologic evaluation. It is expected that we will begin our study this year.

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2.1375,

DYSPEPSIA, PEPTIC ULCER AND ITS COMPLICATIONS

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The purpose of this study is to evaluate dyspepsia in peptic ulcer patients and the complications of same. The dyspepsia study was delayed pending a request for NIH for funding and the presence of new epidemiologist.

This present study is designed to identify and characterize psychological and physiological variables in patients with dyspepsia but without ulcer (x-ray negative dyspepsia), as compared to duodenal ulcer and normal subjects. The study remained in an inactive status during the better part of last year. We are now ready to follow-up on the 65 subjects who were screened and defined to have a history of ulcer complications and the 85 subjects who were defined to not have any history of ulcer complications.

SUPPORTED BY U.S. Veterans Admin., Dept. of Medicine & Surgery funds n.a.

2.1376,

STUDY OF LEGIONNAIRES DISEASE AT THE NORTHPORT VA MEDICAL CENTER

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Legionnaires Disease was first described as a specific entity following the outbreak at the American Legion Convention in Philadelphia in July, 1976. Since then the legionnaires bacillus has been shown to be a relatively common cause of respiratory infection in many parts of this country and throughout the world. While many epidemic outbreaks have been identified, sporadic cases have been even more common. Studies of people without any history of acute illness have shown elevated antibody titers in many suggesting that asymptomatic infection is also quite common. To our knowledge, no study has investigated the prevalence of this entity in patients with chronic obstructive lung disease or in the general population on Long Island. We initiated the current study in order to obtain answers to these two questions. Analysis of initial results of this study revealed positive titers in 27% of 71 patients with COPD and in 16% of 45 patients without evidence of COPD. There was no statistically significant difference between these two values (p greater than .2). However, when the mean antibody titers were compared by the T test, there was a significant difference (p less than .02). We conclude that there may be a higher incidence of Legionnaires Disease in patients with chronic obstructive pulmonary disease and propose to continue this study. We plan to compare a group of patients with COPD with age matched control population.

SUPPORTED BY U.S. Veterans Admin., Dept. of Medicine & Surgery funds n.a.

2.1377,

PREVALENCE OF DEPRESSION AND CHARACTERISTICS OF THE DEPRESSED GERIATRIC PATIENT IN THE MEDICAL CLINIC

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OBJECTIVES OF PROJECT: 1) To validate two depression scales, the Zung Self-Rating Depression Scale (SDS) and the Popoff Index of Depression (ID), in geriatric patients; 2) to estimate the prevalence of depression; 3) to identify characteristics of depressed geriatric medical patients; 4) to describe medical utilization patterns of depressed geriatric medical patients.

RESEARCH PLAN: The depression rating instruments which will first be validated in a sample of geriatric medical patients will be used in mail survey of all persons 60 years and older enrolled in the MCCU. Prevalence of depression will be estimated and utilization patterns examined.

METHODOLOGY: The validation phase of the study will consist of comparing the instrument score results with psychiatric interveiw using Research Diagnostic Critera (RDC) for the diagnosis of Major Depressive Disorder. Instrument results from the mail survee will be subjected to both routine scoring methods and a discriminant analysis. The prevalence of depression will be estimated from instrument results. Diagnosis will be linked to medical service utilization data stored in the MCCU data bank, and analysis of the depressed and non-depressed groups will include demographic differences, lab test utilization, problems treated, medication ordered and rate of recognition of depression by the provider.

FINDINGS TO DATE: Both self-rating depression scales were found to statistically agree with psychiatric interview, although performance in this age group was lower than in younger subjects. Estimates of prevalence of depression in geriatric medical patients range from 25-35% depending upon the method of scoring. Further analysis is currently underway.

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2.1378,

CASE CONTROL STUDY OF LUNG CANCER IN FORMER MALE RESIDENTS OF CUBA

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The Health Systems Division of Equifax is conducting a two year epidemiologic study on the health effects of different smoking habits. This study is being conducted under subcontract to Enviro Control, Inc. of Rockville, MD, for the Smoking and Health Program funded by the National Cancer Institute. Incident cases of lung cancer in Cuban males in the Miami/Dade County area will be identified and interviewed. Each case will be assigned an age matched (plus or minus 5 years) hospital and a neighborhood control.

Newly diagnosed cases of lung cancer will be identified through the pathology departments of participating hospitals. The physician of record will be contacted to determine the patients eligibility as a Cuban and to obtain consent to interview the patient. Hospital controls will be identified through records of hospital admissions and the same procedures for contacting attending physicians will be followed. Neighborhood controls will be located from a predetermined search pattern based on the address of a lung cancer case.

After signing a consent form, each subject will be interviewed about his work history, personal habits such as smoking, family medical history and diet. All cases and controls will be interviewed in the same manner by trained interviewers. The interviewers will not be aware of a subjects diagnosis or control status and all responses are held in confidence.

SUPPORTED BY U.S. Veterans Admin., Dept. of Medicine & Surgery funds n.a.

2.1379,

HISTOCOMPATIBILITY, VIRAL AND IMMUNOGENETIC FACTORS IN ALCOHOLIC AND NON-ALCOHOLIC CIRRHOSIS OF THE LIVER

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The specific aims of the proposed study are threefold: first, to determine the frequency of the histocompatibility antigenic types in alcoholic, post-hepatitic, and cryptogenic cirrhosis: second, to determine the incidence of serological parameters of type A, type B, and non-A, non-B, hepatitis viruses among patients with alcoholic and non-alcoholic cirrhosis; and finally, to characterize the binding of immunoglobulin to hepatocytes in liver biopsy specimens from patients with alcoholic and non-alcoholic cirrhosis.

This study will be carried out in patients with chronic liver disease who have been admitted to the hospital for diagnosis and/or management of their liver disease and who would normally require a liver biopsy for proper management of their disorder. Demographic and pertinent historical data as it relates to chronic alcoholism and the epidemiology of viral hepatitis will be abstracted from the patient's medical records. Tissue typing, haptoglobin phenotypes, serological assays for the hepatitis viruses, autoimmune antibody determinations and standard liver chemistries, including serum bile salt analyses will be performed on blood specimens. In addition to the standard processing of the liver biopsy specimen for light microscopy, immunofluorescent studies will be performed to characterize the nature of immunoglobulin binding to hepatocytes.

The results of these studies should better elucidate the importance of genetic predisposition, viral hepatitis, and immunoglobulin binding in the pathogenesis of cirrhosis of the liver.

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2.1380,

THE PREVALENCE OF CIRRHOSIS IN ALCOHOLIC CALCIFIC PANCREATITIS, AND THE CORRELATION WITH HLA TISSUE TYPING

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PROJECT OBJECTIVES: (1) To determine the prevalence of histologic cirrhosis in patients with alcoholic calcific pancreatitis, (2) to identify a possible genetic marker which may enable early identification of patients 'at risk' for alcoholic pancreatitis and/or alcoholic cirrhosis, (3) to establish whether patients who manifest both pathologies share a common genetic marker. The genetic marker will be sought by ascertaining whether certain HLA antigens are increased (or decreased) in patients with these disorders.

PLAN: Patients with calcific alcoholic pancreatitis will undergo secretin stimulated pancreatic function test, a fecal fat balance study, a liver biopsy and blood studies for tissue HLA, full blood count, protime, platelet count, protein electrophoreses, SGOT, bilirubin, cholesterol, alkaline phosphatase, amylase, calcium and gamma glutyml transpeptidase. Two control groups consisting of alcoholics without cirrhosis or pancreatitis and alcoholic cirrhotics without pancreatitis will be compared.

BENEFITS: The detection of a genetic marker indicating a predisposition to either alcoholic pancreatitis or cirrhosis or both would be a tremendous epidemiological and medical value. The true relationship between the present conflicting prevalence of liver disease and calcific pancreatitis will be established.

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2.1381,

GROUP B STREPTOCOCCAL INFECTIONS IN THE NEWBORN

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Epidemiological aspects of Group B Streptococcal (GBS) infection and specific properties of the GBS were investigated for this final year of the grant. An analysis of factors which predisposed to maternal colonization revealed that the use of estrogen pills prior to conception, maternal fever, and endometritis were significantly correlated with colonization. Infant colonization was significantly correlated with fever at delivery, vaginal delivery and a prolonged second stage of labor. The external auditory canal and umbilicus were the best sites for recovery of GBS in the infants; while vaginal, rectal and periurethral suds were equally satisfactory in the mother. Todd Hewitt Broth containing colistin and nalidixic was found to be an excellent selective medium and did not require blood for good recovery. CIE was only able to detect GBS in 50% of maternal cultures when applied directly to the initial broth containing mixed flora. There were no false positives, however. The function of the alternative pathway of was found to be mildly but significantly correlated with birth weight and independent of maternal illness. The hyaline membranes in babies who died from GBS sepsis and pneumonia and those who died in the first few days [illegible] IRDS were found to contain C3, IgG, C4 and factor B. A common inflammatory pathway is suggested with possible immune injury to alveoli. Finally, an endotoxin-like property was attributed to the GBS based on clinical, in vivo (animal) and in vitro studies.

SUPPORTED BY U.S. Veterans Admin., Dept. of Medicine & Surgery funds n.a.

2.1382,

THE EPIDEMIOLOGY OF NON-A NON-B HEPATITIS

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OBJECTIVE: 1. To determine the frequency of non-A, non-B hepatitis among patients seeking medical attention for their clinical illness. 2. To define the epidemiologic characteristics a non-A, non-B hepatitis in relation to hepatitis A and hepatitis B.

PLAN: 1. All patients presenting to four Baltimore area hospitals with hepatitis will be identified. They will be administered an epidemiologic questionnaire and sera will be collected at the baseline and again in 6 months.

METHODS: 1. Hepatitis B will be defined by HBsAg and antibody markers to hepatitis B core and surface antigen. Hepatitis A will be defined by antibody to H hepatitis A. Non-A, Non-B hepatitis will then be defined as the absence of all of the above markers.

FINDINGS: To date, 105 patients with acute viral hepatitis have been idenfified and bled. Serologic tests are pending.

SUPPORTED BY U.S. Veterans Admin., Dept. of Medicine & Surgery funds n.a.

2.1383,

INTRAHOSPITAL TRANSFER OF PLASMIDS ENCODING FOR MULTIPLE ANTIBIOTIC RESISTANCE

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We have investigated an epidemic of urinary tract infections caused by multiply-resistant Enterobacteriacease at the Seattle Veterans Administration Hospital. Twenty multiresistant Serratia marcescens and 15 isolates representing six other species of enteric organisms isolated during the epidemic were chosen for molecular analysis. Most of S. marcescens belonged to a single colicin type (16) and all of these contained a single 45 megadalton plasma. A similar plasma was found in the six other species. Conjugative experiments demonstrated this to be an R plasma encoding for resistance to 10 separate antimicrobial agents. Plasma restriction endonuclease cleavage studies revealed the R plasmids to be identical in the Serratia strains and the six other species. These data indicate that the antibiotic resistance seen in the epidemic strains were encoded for by a single conjugative R plasmid. This clearly demonstrates that our epidemic was caused by the spread of both an epidemic bacterial strain within the hospital and an 'epidemic' plasmid to a variety of Enterobacteriaceae.

SUPPORTED BY U.S. Veterans Admin., Dept. of Medicine & Surgery funds n.a.

2.1384,

THE EFFECT OF RETIREMENT ON PHYSICAL HEALTH

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This project began on September 30, 1979. a) OBJECTIVES: To examine possible changes in physical health related to occupational retirement and to detail the nature of these changes and the circumstances under which they occur. b) RESEARCH PLAN: The study population consists of 900 males (aged 50 plus as of 1975) from among the participants in the Normative Aging Study. The population is divided into two groups: (a) 380 men working at baseline physical examination but retired at follow-up exam; (b) 520 men employed at baseline and at follow-up exams. Retirees and their working-age peers will be compared for differential patterns of health change while controlling for intervening variables such as education, income, occupational type and attitudes toward work and retirement. In addition, the investigation will specify health change as to type of morbidity and examine whether changes in physical health are more prevalent at any particular time following retirement. c) METHODOLOGY: Health status at baseline and follow-up (3 years apart) will be assessed by self-report and by physical examinations. Physical exam data is currently available from the parent study, as is data from a pre-retirement questionnaire on work situation, health and lifestyle. Follow-up data on the work and retirement situations of the two groups will be collected in the course of this project. d) FINDINGS: First analyses show that retirees themselves report that retiring has had no negative effect on their health.

SUPPORTED BY U.S. Veterans Admin., Dept. of Medicine & Surgery funds n.a.

2.1385,

EPIDEMIOLOGY IN DENTAL STUDENTS

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OBJECTIVE: To observe the frequency of HBsAg and anti-HBs in dental students. To define the incidence of sero-conversion with increased clinical exposure in dental school.

PLAN: To cross sectionally evaluate the entire school and then follow one class - the freshman class - through 4 years of training to see if with increased clinical exposure in the last 2 years of dental school there is an increased rate of sero-conversion.

METHOD: HBsAg and anti-HBs by radioimmunoassay.

FINDINGS: 29 dental students from all four years were evaluated. Two were found to have anti-HBs and none had HBsAg.

Project was terminated because of the inability to recruit substantial enough percentage of students.

SUPPORTED BY U.S. Veterans Admin., Dept. of Medicine & Surgery funds n.a.

2.1386,

CANCER IN LA. - A CASE-CONTROL STUDY OF LUNG, STOMACH AND PANCREAS CANCER

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The aim of this investigation is to identify factors associated with the high cancer rates that Louisiana has been shown to have. The study is designed to determine whether the excess in lung cancer mortality is due to smoking alone or to smoking in combination with other evironmental factors. An assessment will be made of the independent actions of various factors as well as their interactive and synergistic effects. Diet and occupational history will be especially important in assessing risk of cancers of the stomach and pancreas.

The study is a case-control design with noncancer controls matched to cancer cases on the basis of race, sex, hospital and age within five years. Additionally, certain medical conditions that have been strongly associated with smoking have been excluded as controls for lung cancer cases. The effect of this selection of controls should be to sharpen the contrast between the cases and the controls with respect to cigarette smoking and bring the other factors which are operating in lung cancer more sharply into focus.

Data will be gathered in face-to-face interviews by highly trained interviewers in the hospital or in the patient's home if a hospital interview is not possible. The interview contains residential, occupational, smoking and drinking water histories as well as information on diet, exposure to irritants and other questions.

Patients with cancer will be found in the files of the Pathology Department and Tumor Registry. Control patients will be found in admission records.

SUPPORTED BY U.S. Veterans Admin., Dept. of Medicine & Surgery funds n.a.

2.1387,

AN EPIDEMIOLOGICAL STUDY OF DIABETIC RETINOPATHY

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OBJECTIVE: To study the prevalence and severity of diabetic retinopathy in a group of 2400 diabetic patients in their home communities.

RESEARCH PLAN: First year we will ascertain diabetics living in 11 county area. In the second and third years we will examine patients. In the fourth and fifth year we will analyze the data.

METHODOLOGY: We will objectively record retinopathy by use of stereoscopic fundus photographs combined with a standardized protocol for grading retinopathy. The association between the prevalence severity of retinopathy and risk factors such as smoking and blood pressure level will be examined utilizing analysis of variance and other statistical techniques for multiple variables.

RESULTS: Over 400 physicians are participating in study.

SUPPORTED BY U.S. Veterans Admin., Dept. of Medicine & Surgery funds n.a.

2.1388,

SMOKING AND LUNG CANCER - FEASIBILITY STUDY OF A DIAGNOSTIC TEST TO IDENTIFY PERSONS AT HIGH RISK

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The objective of this feasibility study is to assess a convenient, reliable and rapid in vitro virus trasformation assay for use as a diagnostic index to identify smokers who are at increased risk for development of lung cancer. To achieve this objective the research plan is aimed at identifying individuals from which skin biopsies and personal medical histories can be obtained within the following categories: (1) smokers and non-smokers with diagnosed lung cancer, different types of cancer, and debilitating diseases other than cancer, and (2) age-matched controls without medical histories of any of these infirmities. Data from these tests will be analyzed for significant differences in the absolute oncogenic virus dose that affects cell transformation and correlation with the occurrence of lung cancer in the particular patients. Although our findings deal primarily with cancer risk associated with smoking, we may also be able to identify other patients at risk such as those individuals exposed to asbestos and other agents considered as potential environmental carcinogens. In the event appropriate associations are demonstrated during this feasibility study, a large prospectus study in various VA populations will then be proposed. Further, cultured skin fibroblasts exhibiting divergent degrees of transformation will be examined to elucidate the basis for the inherent differences to possibly present clues as to the nature of the human oncogenic process.

SUPPORTED BY U.S. Veterans Admin., Dept. of Medicine & Surgery funds n.a.

2.1389,

TRACHEOBRONCHIAL TREE STUDY

O. Auerbach, U.S. Veterans Admin., Dept. of Medicine & Surgery, Medical Center, *Tremont Ave. & S. Centre St., East Orange, New Jersey* 07019 (083-36-0408)

During the past two decades tar and nicotine content of American cigarettes has been greatly reduced. Although lung cancer death rates have continued to increase, there has been evidence from recent epidemiologic studies that mortality rates over this same period have started to decrease. If reduction of tar and nicotine reduces the risk of lung cancer, then we would expect that histologic changes in the tracheobronchial tree in men who were autopsied in recent years to be less extensive than in men who died 15 or more years ago. If it could be shown that the degree of these histologic changes in cases that died in recent years (1979-1977) are less than in matched groups of cases that died in the 1955-1960 era, then it would lend considerable credence to the epidemiologic findings that reduced tar and nicotine content of cigarettes will result in lower lung cancer mortality.

A total of 182 cases that had been collected in the 1955-1960 era were matched with 182 cases who died in the 1970-1977 era. Cases were matched on age and smoking habits. We supplemented these records with 29 additional 1955-1960 cases and 52 1970-1977 cases. Fifty-five slides were prepared for each case, a total of 10,424 slides. After the cases were selected, the slides were placed in random order and identified only by a serial number. The findings on number of cell rows, percent with atypical nuclei, carcinoma in situ and early invasive cancer were recorded on code sheets and later key punched and combined by cases for analysis. The results of this study were published in the NEW ENGLAND JOURNAL OF MEDICINE 300: 381-386, 1979. In both periods the histologic changes increased with the amount of cigarettes smoked. Sections with advanced histologic changes (carcinoma in situ) occurred far more frequently in smokers who died in 1955-1960. Since all these subjects smoked cigarettes higher in tar and nicotine up to the time of death than those smokers who died in 1970-1977, the differences in findings can be attributed to the changes in tar and nicotine content of the cigarette they smoked.

SUPPORTED BY U.S. Veterans Admin., Dept. of Medicine & Surgery funds n.a.

2.1390,

A COOPERATIVE EPIDEMIOLOGIC AND PATHOLOGIC STUDY OF COLON-RECTUM CANCER

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Colon-rectum cancer ranks second as a cause of cancer death in both men and women. There appear to be geographical differences in incidence, and some investigations have linked the development of these cancers to dietary factors.

In order to shed light on the incidence of undiagnosed primary colon-rectum cancers at autopsy, observe the location of polyps and malignancies found in the colon and determine if atypical lesions and polyps are found more frequently in the colon cancer case than in non-colon cancer cases, we set out to collect a large number of colon specimens from hospitals in New Jersey, New York State, and London. Since the start of the collection of material, about seven years ago, we have accumulated 2886 colon-rectum specimens.

The colons are fixed in formalin, cleaned and examined grossly for evidence of neoplastic lesions and mapped according to their location in the bowel. The lesions are removed and prepared for microscopic examination. The remaining colon is embedded in paraffin and sectioned for later examination. We have concentrated our efforts on 500 of these cases in which the colon-rectum was completely removed including the anal skin. The lesions are examined microscopically and the size, location and type of mucosal lesion are recorded. A paper reporting the results of this investigation has been accepted for publication in CANCER.

Every malignancy that was found in the lining of the bowel arose in a polyp. We now plan to make a microscopic study of the remaining bowel, in cancer cases from the London series that were removed at the time of surgery, to see if there is any evidence of different patterns of neoplastic changes.

SUPPORTED BY U.S. Veterans Admin., Dept. of Medicine & Surgery funds n.a.

2.1391,

PROSPECTIVE GENETIC STUDIES OF COLON AND LUNG CANCER

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To date, we have obtained information on smoking history, other social history, medical history and family history from 149 lung cancer probands and 123 controls. These data are currently being computer coded for purposes of statistical analysis. In addition, the families of six of these lung cancer probands have been studied in depth because of the presence of lung cancer in at least two first degree relatives within the family. Detailed questionnaire data has been obtained from all relatives who were willing to participate in this phase of the study. An effort has been made to confirm all cancer diagnoses reported among family members of the lung cancer probands through pathology reports, medical records and/or death certificates. VA pathology and medical records have also been obtained for each of the lung cancer probands.

SUPPORTED BY U.S. Veterans Admin., Dept. of Medicine & Surgery funds n.a.

2.1392,

TRI-COUNTY STUDY OF CANCER OF THE MOUTH, ESOPHAGUS, LARYNX, STOMACH, COLON AND RECTUM

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In this study, subjects are interviewed with regard to dietary habits, smoking, occupation, medical and dental history. We have interviewed 76 patients from the Veterans Administration Hospital since 1975. To date, we have not obtained enough data for definitive analysis; therefore, we have not reported any results or conclusions. However, preliminary analysis of 100 case/spouse and 100 control/spouse pairs to determine extent of agreement with regard to the subjects' dietary habits is under way. We plan to continue interviewing for approximately 2 more years.

SUPPORTED BY U.S. Veterans Admin., Dept. of Medicine & Surgery funds n.a.

2.1393,

IMMUNE RESPONSE IN INFLAMMATORY NERVOUS SYSTEM DISORDERS

S.D. Cook, U.S. Veterans Admin., Dept. of Medicine & Surgery, Medical Center, Neurology Service, *Tremont Ave. & S. Centre St., East Orange, New Jersey* 07019 (001-28-8308)

We have carried out studies on the epidemiology, virology, and immunology of multiple sclerosis (MS) and the Guillain Barre Syndrome (GBS). Epidemiologic studies in MS have suggested a link between an animal virus (canine distemper) and multiple sclerosis. Increased neutralizing antibody to canine distemper virus was found to be present in MS sera as compared to controls. Our epidemiologic studies in the Guillain Barre Syndrome have shown age and seasonal predilections consistent with an infectious etiology. Approximately 20% of patients with GBS have evidence of an associated acute infection with cytomegalovirus (CMV) as indicated by four fold increases in complement-fixing antibodies, IgM antibodies, and tissue culture studies. A rapid screening test for CMV sera positive cases has been developed in our laboratory using a counter-immunoelectrophoretic method.

SUPPORTED BY U.S. Veterans Admin., Dept. of Medicine & Surgery funds n.a.

2.1394,

PSYCHODYNAMICS OF CANCER

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As of March 10, 1976, data from a structured questionnaire has been accumulated on the following cases: 1) 106 controls over 35 years of age: (a) of whom 65 are continuing smokers, (b) 29 smokers who have discontinued the habit for periods greater than 2 years, (c) 7 who have discontinued for a period of less than 2 years, (d) 3 who have discontinued, then resumed smoking; 2) 23 controls under 35 years of age; 3) 16 cases of lung cancer; 4) 37 non-control smokers, non alcoholics; 5) 61 alcoholics; 6) 8 controls of cancer other than lung; and7) 6 cases of non smoking alcoholics. Statistical analyses are not contemplated until at least data on 75 cases of lung carcinoma are compiled.

Study is being tentatively coordinated with addition of questions and cases from the Fox Chase Cancer Center, Philadelphia, PA, under the auspices of Claus and Marjorie Bahnsen, Ph.D.'s. We plan to have within 15 months for analysis: 1) the 75 cases of lung cancer, 2) 100 control smokers over 35 of over 10 pack years of cigarettes, 3) 10 control non-smokers (over 35 of under 10 pack years), 4) 100 controls of individuals under 35 years of age admitted the General Medical wards in a VA Hospital, 5) 100 alcoholics admitted for treatment on a long-term alcoholic program, 6) 100 alcoholics admitted to a General Medical ward, 7) 35 cases of non smoking alcoholics, 8) 35 cases of non pulmonary cancer. Childhood experiences, occupational hazard will be submitted to intergroup statistical analyses for significant differences.

SUPPORTED BY U.S. Veterans Admin., Dept. of Medicine & Surgery funds n.a.

2.1395,

FAMILIAL INCIDENCE AND MULTIPLE MANIFESTATIONS OF MEDULLARY CARCINOMA OF THE THYROID

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The purpose of this study continues to be to evaluate all family members of patients with diagnosed medullary carcinoma of the thyroid. This evaluation includes a) clinical evaluation, b) serum calcitonin by radioimmunoassay before and after calcium infusion, c) serum parathyroid hormone by radioimmunoassay, d) urinary catecholamine determination. In any patients in whom abnormalities are found, appropriate therapy will be carried out. In those subjects in whom the studies are normal, repeat studies will be done at 6 to 12 month intervals. In this way, this study should a) lead to early diagnosis and treatment of patients with medullary carcinoma of the thyroid before clinical manifestations are apparent, and b) yield additional information about the incidence, inheritance and natural history of this disease.

During the past year, 8 additional new patients suspected of medullary carcinoma of the thyroid have been evaluated, but the studies were normal in all of these patients. The one patient who was identified as a strong suspect for medullary carcinoma of the thyroid last year is in Europe and is not yet available for reevaluation. This patient will be more thoroughly investigated and family members will be evaluated as soon as she returns to this area.

This study continues.

SUPPORTED BY U.S. Veterans Admin., Dept. of Medicine & Surgery funds n.a.

2.1396,

MORBIDITY AND EFFICACY OF INFLUENZA VIRUS VACCINE IN HIGH RISK INDIVIDUALS

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Three hundred four volunteers were initially enrolled from amongst the patient-members of the Domiciliary and the patients of the Medical Service at the VA Medical Center in Martinsburg. Ninety-four were later eliminated from the study, leaving a total study population of 210. One hundred sixty-five high risk patients accepted vaccination with commercially obtained, inactivated influenza vaccine (1975-76 bivalent vaccine) and constituted in the final experimental Group I. Group II was comprised of 30 high risk subjects who refused vaccin. Groups I and II were shown to be of comparable composition by age and indices of disease. There was no significant difference between the vaccinated and unvaccinated groups in the frequency of acute respiratory illnesses as determined by the 'new respiratory illness' reports completed by the physician assistants.

Conclusions are pending because the Bureau of Biologics, Food and Drug Administration, has not released the results of the serological studies. Therefore this project, started in 1975, is being terminated.

SUPPORTED BY U.S. Veterans Admin., Dept. of Medicine & Surgery funds n.a.

2.1397,

MULTIPLE SCLEROSIS IN A MIGRANT POPULATION

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We studied a unique population consisting of the offspring of Vietnamese mothers and French fathers who were born in Vietnam and bought to France to be raised. All but 72 of 3451 such individuals completed background and neurologic questionnaires. All with 'positive' answers on the latter were examined neurologically. The 3379 respondents had a median year of birth of 1948, a median year of arrival in France of 1957, and they had been resident in France a median of 18 years before interview in 1975. Twenty-five persons recorded positive answers to neurologic symptoms, and six others reported a history of seizures alone. A total of 16 had reported seizures: 7 with infantile febrile fits; 9 with afebrile seizure disorders.

Three cases of exacerbating-remitting MS were discovered, as well as three persons in whom MS could be suspected: one cervical myelopathy, one progressive paraparesis, one bilateral optic neuropathy. The three MS provided a crude prevalence rate for an 18-year cumulative risk) of 89 per 100,000. Their age-specific prevalence rate was 169 per 100,000 population age 20-29. Each measure was similar to such rates for Denmark and had lower 95% confidence limits that clearly exceeded expectations for Vietnam. This is further evidence that the risk of MS can be increased by migration in childhood from low to high risk regions.

SUPPORTED BY U.S. Veterans Admin., Dept. of Medicine & Surgery funds n.a.

2.1398,

EPIDEMIOLOGIC STUDY OF MULTIPLE SCLEROSIS IN U.S. MILITARY-VETERAN POPULATION

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Five thousand and three hundred five World War II and Korean conflict veterans who have been compensated by the Veterans Administration for multiple sclerosis (MS) were matched to controls on the basis of age, date of entry into military service, and branch of service. Case/control ratios for white males, white females, and black males were 1.04, 1.86, and 0.45, respectively. The coterminous 48 states, divided into three tiers on the basis of latitude, exhibited the well-known north-south gradient in risk: For all races and both sexes, case/control ratios were 1.41, 1.00, and 0.53 for the North, Middle, and South tiers. Both white females and black males showed this same north-to-south variation in risk. The case/control ratio for males of races other than black or white was 0.23, with possible deficits in risk for American Indians and Japanese-Americans. Filipinos and Hawaiian Japanese were significantly low-risk groups. These findings suggest that both a racial and a possibly genetic predisposition, as well as a geographically determined differential exposure to an environmental agent, are related to the risk of MS.

Migration between birth and entry into service is being studied. Migrants are defined as individuals born in one of the three north-to-south tiers who entered service from a different tier. For white males of WW II born and residing in the same tier, case-control ratios were 1.41 north, 1.04 middle, and .56 south. Northern-born migrants entering from middle and southern tiers had lower ratios and southern-born migrants entering from middle and northern tiers had higher ratios. Thus the risk of MS is clearly altered by site of residence before onset.

BIBLIOGRAPHIC REFERENCES: Kurtzke, J.F., Beebe, G.W. and Norman, J.E., Jr.: Epidemiology of multiple sclerosis in U.S. veterans: 1. Race, sex, and geographic distribution. Neurology 29: 1228-1235, 1979.

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2.1399,

THE DIFFERENTIAL DIAGNOSIS OF ORGANIC BRAIN SYNDROME

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A total number of 190 patients with organic mental disease have now been extensively evaluated. The experience gained in examining these patients has contributed greatly to the work of one of the investigators (B.S.) in editing the section on Organic Mental Disorders of the Diagnostic and Statistical Manual of Mental disorders, Third edition (American Psychiatric Association).

Work is nearing completion on the constuction of a shorter examination protocol, or 'organic profile' designed to serve as a research tool to aid in the identification of patients with specifically defined organic mental disorders. Preliminary results show this to be quite accurate in identifying patients with senile and presenile dementia (of the Alzheimer type). In addition, it is also useful in identifying several other common organic mental syndromes. In the second phase of this work, the test will be validated.

We are continuing our neuropsychological study of praxis in dementia as well as clinical studies characterizing the mental disorders associated with chronic alcoholism. Finally, having identified a fairly large number of patients with Alzheimer's disease, we are performing sequential examinations of these patients to study the natural course of the disease and we are also collecting demographic and other epidemiologic data.

SUPPORTED BY U.S. Veterans Admin., Dept. of Medicine & Surgery funds n.a.

2.1400,

AMERICAN HEALTH FOUNDATION STUDIES

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Tobacco-related cancers, myocardial infarction, emphysema and COPD continue to constitute a major source of death and disability in the U.S.. And yet these deaths and morbidity are largely preventable because of their association with tobacco usage. Results indicate that the risk of developing these diseases increases with quantity smoked, duration of the habit and, for lung and larynx cancer, with non-filter cigarette smoking. Risk of mouth, larynx and esophogus cancer among smokers increases with quantity of alcohol consumed. Larger amounts smoked and lesser cessation rates are noted among lower socioeconomic groups suggesting that these groups will bear an ever increasing proportion of the burden of tobacco-related cancers.

Risk factors for gastrointestinal tract cancers continue to be identified and monitored. These include certain lifestyle variables associated with dietary habits, as well as alcohol consumption. To date,

2,000 interviews have been obtained: 40% colon cancer cases, 25% gastric cancer cases, and 35% rectal cancer cases and matched controls. An association between large bowel polyps and the future development of colon cancer is being suggested by our data and we are continuing our efforts directed at discovering a possible common etiologic factor.
SUPPORTED BY U.S. Veterans Admin., Dept. of Medicine & Surgery funds n.a.

2.1401,

ALCOHOL DRINKING PATTERNS IN VETERANS

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This project has collected data on the alcohol drinking patterns in three groups of veterans: a) veterans applying for admission to the VA Medical Center, b) veterans in the Alcohol Dependency Treatment Program, and c) veterans applying for assistance at the VA Regional Office in Milwaukee.

Differences in the quantity, frequency, and variability of alcohol consumed will be compared. In addition, the medical conditions of these veterans will be examined for their relationship to the drinking variables.
SUPPORTED BY U.S. Veterans Admin., Dept. of Medicine & Surgery funds n.a.

2.1402,

THIRTY-YEAR CLINICAL FOLLOW-UP OF SELECTED DEMYELINATING DISEASES

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Beginning in 1956 we studied intensively a group of all 762 white men diagnosed as MS and all 183 diagnosed as optic neuritis (ON) during military service in the US Army during World War II (see project 'Natural History of MS' #1 completed in 1977). We classified only about 2/3 of the former group as MS, and only 1/8 of the ON had come down with MS by the mid-1960's.

In 1973 we initiated a follow-up of these 945 men, to include neurologic and ophthalmologic examinations of the 624 living survivors (funded by the National MS Society). Intake ceased in July 1977. All cases with conflicting data on diagnoses or clinical or pathologic (autopsy) findings have been reviewed, and all information has been encoded and placed on computer tapes. Major goals are to define (1) diagnostic criteria for MS (2) survival in MS (3) progression rates of ON to MS (4) early predictors of late course of MS.

No results are as yet available.
SUPPORTED BY U.S. Veterans Admin., Dept. of Medicine & Surgery funds n.a.

2.1403,

FALLS OCCURRING IN HOSPITALIZED PATIENTS - STUDY OF INCIDENCE

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The pattern of falls occurring in an acute care VA facility was studied as falls among patients is the most common form of hospital accidents. Ninety-six falls occurred over a period of 3 months, giving a rate of about one fall per every 100 admissions. This incidence is the same as that of a general community hospital (Manyam, N.V.B. and MacKinnon, H.H., Nova Scotia Med. Bull. 52:23-25, 1973). Most falls occurred during the first week of admission, especially the first 3 days. Falls occurred mostly during 'care hours' ie., between 6 A.M. and 2 P.M. Being confused and/or going to bathroom remained the major reason for patients to get out of bed that resulted in a fall. Seventy-nine patients had a single fall; 13 patients fell twice; 3 had fallen thrice, while one patient fell 6 times. The incidence of falls were highest on Thursdays and lowest on Fridays. Sixty percent of falls resulted in non injuries; 5% of falls resulted in pain, but no detectable injury; 28% resulted in erythema, contusion or abrasion; 3% resulted in laceration requiring suture and two patients suffered fracture of a major bone. No deaths occurred within 24 hours following a fall.

The data indicates that the pattern of falls in an acute care VA facility is identical to that of a community hospital except that in the VA facility, most falls occurred during 'awake hours' rather than during 'sleep hours.'
SUPPORTED BY U.S. Veterans Admin., Dept. of Medicine & Surgery funds n.a.

2.1404,

IMMUNOHISTOPATHOLOGIC STUDY OF LEISHMANIA TROPICA AND TRYPANOSOMA CRUZI - IMMUNOGLOBULIN STUDIES IN PATIENTS WITH CHAGAS' DISEASE

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The epidemiological survey of toxoplasmosis is now being prepared for submission to journal publication.

Studies have shown that antibody-coated bacteria in the urine are indicative of upper urinary tract infection. Applying this finding as hypothesis to pulmonary infection it was postulated that since sputum normally contains saprophytic bacteria and at times pathogenic bacteria that are not causing infection that if antibody-coated bacteria were detectable that these might prove to be cause of pulmonary infection. IgA is the immunoglobulin principally secreted by the respiratory epithelium. Thus sputum smears could be stained using fluorescein labelled antihuman IgA globulin to determine if a correlation could be made between those found on smear and subsequently cultured. Sputum smears were stained using standard immunofluorescent techniques. Sixteen unstained and 10 gram-stained smears were tested. The results indicated that gram-stained smears are poor samples for immunofluorescent staining. Previously non-gram-stained smears revealed a large amount of background IgA which did not permit a specific localization of bacteria. This is due to the fact that the secretions contain IgA which is produced in response to antigenic challenge. Further studies are now in progress to determine if the material containing the IgA material can be separated from the bacteria. Additionally, studies are being initiated to determine if specific species antibody may be helpful in elucidating the pathogenic organisms present. Should these be promising a detailed protocol will be submitted for funding consideration.
SUPPORTED BY U.S. Veterans Admin., Dept. of Medicine & Surgery funds n.a.

2.1405,

STUDY OF TRANSMISSION OF HEPATITIS B TO HOUSEHOLD CONTACT

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OBJECTIVES: 1) to determine the frequency of hepatitis B markers in the household contacts of chronic carriers of HBsAg vs. the household contacts of negative controls. 2) to look for epidemiologic clues as to potential routes of transmission. 3) to determine if a chronic carrier is an ongoing source of infection to household contacts.

PLAN: Have all participants fill out an epidemiological questionnaire. Household contacts will be rebled 6 months after their baseline bleeding to determine cero-conversion.

METHODS: Blood samples (20 ml) are obtained from each consenting household contact - index case and index control. Serum samples are analyzed for HBsAg, anti-HBc, anti-HBs and liver enzymes. In addition, each HBsAg positive subject will be evaluated for HBeAg and anti-HBe.

FINDINGS: 422 household contacts of 157 chronic carriers of HBsAg detected at voluntary blood donation were tested. Findings in relation to the e antigen reveal that a significantly greater prevalence of HBV markers was detected in spouses of carriers with HBeAg (70%,7/10) than in spouses of carriers with anti-HBe (32%, 12/38, p equals 0.03). 41% (9/22) of all contacts of carriers with HBeAg had an HBV marker compared to 33% (73/221) of contacts of carriers negative for both HBeAg and anti-HBe and 25% (44/176) of contacts of carriers with anti-HBe: these differences are not statistically significant. In conclusion, HBeAg in carriers was associated with a significantly greater prevalence of HBV markers among spouses.
SUPPORTED BY U.S. Veterans Admin., Dept. of Medicine & Surgery funds n.a.

2.1406,

HEPATITIS BS ANTIGEN POSITIVE HEALTH WORKERS

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OBJECTIVE: To determine those factors which may serve as markers of transmissibility in health care workers who are chronic carriers of HBsAg and to attempt to define those health care workers who represent special risks to their environment.

PLAN: To study the families of health care workers who are chronic carriers of presumed intrafamilial transmission.

METHODS: The status of liver involvement will be determined by liver function tests and liver biopsy, but only when clinically indicated. Sera will be evaluated for HBsAg, subtype of HBsAg, HBeAg, anti-HBe, anti-HBc and anti-HBs. The health workers precise role in relation to patients will be carefully identified, especially in regard to the performance of penetrating procedures on patients.

FINDINGS: Too few chronic HBsAg carrier health workers were identified to carry out the study.
SUPPORTED BY U.S. Veterans Admin., Dept. of Medicine & Surgery funds n.a.

2.1407,

ROLE OF ESTROGENS AS A FACTOR IN CANCERS OF HEAD AND NECK

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OBJECTIVE: To determine presence of specific estradiol receptor proteins in squamous cell tumors of head and neck as related to hepatopathology (alcoholism). The method chosen was a thin layer gel filtration assay (TLG) deemed suitable because high affinity of binding of (3H)17beta-oestradiol to cytosol has been observed despite the presence of relatively high levels of nonspecific binding components, another advantage being that only a small amount of tissue sample was required (50 mg). Materials were assembled and appropriately tested: (Tris-EDTA) buffer, sonifier for disruption of cells, Sephadex for gel plates, TLG-apparatus, filter paper for transfer of radioactive material and scintillation counter. Expertise was obtained in methodology by performing numerous tests on cow/calf endometrium. Tissue was processed at 0-2 degrees C. The pH of Tris-EDTA buffer was adjusted to 7.4. Nafoxidine was used for controls. Sephadex G-150 proved suitable. Inclinations of the plate were tried at various degrees; 25-35 degrees worked well. Radioactivity was recovered from gel plates with paper replicas and scintillation counter was used for determination. Results with endometrial tissue were as anticipated. Two separate cancer tissue specimens were used and significant specific estradiol uptake was recorded.

PLAN: In view of the encouraging results, repeated application of method and utilization of equipment will be carried out to maintain a high level of expertise. Calf endometrium will be used intermittently until 15-20 cancer specimens become available for this project. One half of each cancer specimen will be stored at 0 degrees to minus 5 degrees C. and another half at minus 60 degrees C.
SUPPORTED BY U.S. Veterans Admin., Dept. of Medicine & Surgery funds n.a.

2.1408,

IN VIVO MEASUREMENT OF CADMIUM AND OTHER METAL BY PROMPT-GAMMA NEUTRON ACTIVATION ANALYSIS

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Absolute levels of Cd in the kidney & concentrations of Cd in the liver were measured in vivo in 20 healthy adult males. The Cd contents of their liver & kidney were measured by PGNAA using 238Pu,Be neutron sources. Organ Cd levels of smokers were significantly elevated above those of non-smokers. Average total body burden of Cd in men at age 50 was estimated to be 19.3 mg for non-smokers and 35.5 mg for smokers (36.7 pack/yr smoking index). Biological halftime for Cd in the body was estimated to be 15.7 yr (10-33 yr). Cigarette smoking was estimated to result in the absorption of 1.9 ug of Cd per pack. No relationship was found between body stores of Cd (liver and kidney) and Cd or Beta-microglobulin levels in urine and blood. Currently, the neutron activation facility is being mounted on a 34 ft. mobile trailer unit. With the support of ILZRO, this unit will be used to monitor levels of Cd in industrial

workers. The relative expense and the sophisticated expertise required to mount such a program may limit the availability of the technique to small scale research-oriented needs, for the future, at least. Nevertheless, it is anticipated that critically important data, particularly on industrially exposed workers, will provide a better basis for determining critical concentrations and for the setting or revision of standards for industrial and environmental Cd pollution.

SUPPORTED BY U.S. Veterans Admin., Dept. of Medicine & Surgery funds n.a.

2.1409,

INCIDENCE AND PROGNOSIS OF CANCER IN ALCOHOLICS

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The purpose of this project was to determine the incidence and prognosis of cancer in alcoholics. It has been suggested by previous studies that cancer incidence is higher in alcoholics, especially in certain locations of the body. This investigator has a clinical impression that cancer in alcoholics also has the worse prognosis.

As planned, the records of all patients admitted to the Biloxi V. A. Medical Center for five years, 1968 to 1973, with diagnosis of a malignancy and alcoholism were sought. Thirty such patients were identified, but with diligent effort ten of the records could not be located. Because of this, no valid conclusions can be drawn from the information obtained. The information will be retained for possible future use.

SUPPORTED BY U.S. Veterans Admin., Dept. of Medicine & Surgery funds n.a.

2.1410,

HLA B27 RELATED ARTHROPATHIES - GENETICS VERSUS ENVIRONMENT

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A rheumatologic questionnaire was developed and validated by use in three patient populations: a) patients with HLA B27 positive ankylosing spondylitis, b) B27 negative patients with mechanical spinal disease and c) control subjects. Five questions were shown to be highly sensitive and selective in distinguishing inflammatory from mechanical spinal pain; 1) insidious onset of back pain, 2) age of onset below 40 years, 3) persistence of pain for at least three months, 4) association with morning stiffness and 4) improvement with exercise.

This questionnaire is now being sent to some 200 first degree relatives of 100 patients with ankylosing spondylitis, 100 patients with Reiter's syndrome and other seronegative spondylarthritides. Clinical, radiological and HLA assessment is being performed on individuals who have an apparent inflammatory spondylarthropathy.

BIBLIOGRAPHIC REFERENCES: A. Calin, J. Porta, D. Schurman, J.F. Fries. Comparing HLA B27 and an appropriate history: A new look at an old perspective. INSERM, HLA and Disease. p. 22, 1976. A. Calin, J. Porta, D. Schurman, J.F. Fries. A clinical history as a screening test for ankylosing spondylitis. JAMA, in press, 1977.

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2.1411,

SPONTANEOUS BACTERIAL PERITONITIS

A.S. Barritt, U.S. Veterans Admin., Dept. of Medicine & Surgery, Medical Center, Gastroenterology Section, *Salem, Virginia* 24153 (099-40-9819)

This project was conceived to look prospectively at patients with cirrhosis of the liver and determine the incidence of a specific complication - spontaneous bacterial peritonitis. The only procedure involved is an abdominal paracentesis and there have been no complications in the 50 patients entered so far. The incidence of peritonitis is 6% to date.

Original plans were to include at least 50 patients. Because the incidence of peritonitis has increased in the second year of the study, I plan to continue to a total of 100 patients. There were 0 cases of peritonitis in 20 patients during the first year and 3 cases in 30 patients during the second year.

SUPPORTED BY U.S. Veterans Admin., Dept. of Medicine & Surgery funds n.a.

2.1412,

AUTOMATIC CARDIOVASCULAR DATA PROCESSING

H.V. Pipberger, U.S. Veterans Admin., Dept. of Medicine & Surgery, Medical Center, *50 Irving St. N.W., Washington, District of Columbia* 20422 (579-52-0549)

Trend analysis of ECGs from patients with Coronary Artery Disease (CAD), Hypertensive Cardiovascular Disease (HCVD) and Chronic Obstructive Pulmonary Disease (COPD) was continued and a total of 1,741 follow-up ECG records were collected during the last year. A risk index for CAD is being developed at the same time, based on a prospective study on CAD in Albany, NY, under the direction of DR. Joseph Doyle. Approximately 1,600 normal subjects above the age of 40 have been examined annually and an ECG record was mailed to the VAMC Washington, D.C., for computer analysis. Up to the present, close to 130 subjects developed a 'cardiac event', defined as myocardial infarct and/or cardiac death. Pre-event ECG records of these subjects were compared with serial records from subjects who did not develop an event. Highly significant differences were found. It is planned now to combine the predictive information derived from the ECG with other risk indicators such as cholesterol, hypertension etc., in order to arrive at a single risk index.

The data collection from children at seven medical schools is proceeding satisfactorily. Records from 4,116 normals and 3,334 abnormals are available now. Of the latter 2,116 had cardiac catheterization, thus providing objective evidence for the diagnosis of cardiac abnormalities. Once sufficiently large samples of normal and abnormal records are obtained, diagnostic classifications will be performed on the basis of multivariate analysis.

Exercise electrocardiograms have been collected from 300 normals and 513 patients with CAD. The data collection has been completed and computer programs for data analysis are being developed.

SUPPORTED BY U.S. Veterans Admin., Dept. of Medicine & Surgery funds n.a.

2.1413,

A LONGITUDINAL AND CROSS SECTIONAL STUDY OF ORAL HEALTH IN HEALTHY VETERANS

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PROJECT OBJECTIVES: (1) Determine the incidence, distribution, changes, and interrelationships of oral variables used to indicate oral health, oral disease, and oral functional status; (2) Obtain descriptive observations, and patterns of association for the oral variables, both with one another and with variables measured in the Normative Aging Study (NAS); (3) Gather a detailed description and analysis of the effect of age on oral tissues and functions as well as elucidate the natural history of oral diseases.

PLAN: This oro-facial study includes six series of examinations or procedures: 1) Interim health history; 2) Oro-facial examinations; 3) Tests of masticatory function and survey of dietary habits; 4) Biochemical analyses of stimulated whole and parotid saliva; 5) Intra-oral and cephalometric radiographs, standardized photographs and study models of the teeth; 6) Oral cytological examination.

METHOD: Details of the procedures for recording these examinations have been described previously. All data are encoded on magnetic tape and more than 1,250 items are available for interdisciplinary evaluation with the biomedical and psychosocial data continuously evolved from the parent (NAS) study and other affiliated programs.

CLINICAL RELATIONSHIP: Age and four of the six periodontal disease variables (plaque, pocket depth, bone loss, and tooth mobility) were significantly different for persons with a removable partial denture. These differences continued to exist even after adjustment was made for age, calculus and plaque differences. Examination of persons with intact, partially compromised, and comprised dentition indicated that masticatory function, as measured by performance tests, did not significantly alter with age. A statistically significant interrelationship existed between the sodium chloride taste threshold and the amount of table salt used. There was a significant correlation between age and the sodium chloride taste threshold, as well as between age and salt use.

SUPPORTED BY U.S. Veterans Admin., Dept. of Medicine & Surgery funds n.a.

2.1414,

AN EPIDEMIOLOGICAL SURVEY OF SYMPTOMS IN DEPRESSION

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PURPOSE: Depression as a diagnostic entity consists of signs and symptoms, which if based on organic changes in the central nervous system should manifest similar psychopathology regardless of country or culture. Several previous reports generated from this investigation showed that by applying a standard measurement of rating using an operational definition of depression as a psychiatric disorder, we were able to show that patients having similar severity of depression in different countries of the world (as assessed by interviewer-clinician), have similar depression ratings when self-rated.

RESULTS: Data generated from the USA has been exchanged with a collaborator in Australia, Dr. Don Byrne, and validity and reliability studies of the depression rating scale have been established in Australia.

SUPPORTED BY U.S. Veterans Admin., Dept. of Medicine & Surgery funds n.a.

2.1415,

GEOGRAPHIC NEUROPATHOLOGY FROM MORTALITY DATA

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This is a multifaceted project in neuroepidemiology whose content and progress are best defined from the publications. Study continues.

Publications (all Kurtzke, J.F. unless otherwise stated): (50) Epidemiology of spinal cord injury. Neurol Neurocir Psiquiatr (Mexico) 18 (suppl): 157-191, 1977. (51) An atlas of clinical neurology. Ann Int Med 86: 373-374, 1977. (52) Principles of neurology. Am Scient 66: 241-242, 1978. (53) Brain's diseases of the nervous system. Ann Int Med 88: 273, 1978. (54) ICD 9: A regression. Am J Epidem 109: 383-393, 1979. (55) Kurtzke J.F., et al.: Clinical prevention of stroke. In: Sahs A.L., Hartman E.C., (ed): Fundamentals of Stroke Care. DHEW Publ. No. (HRA) 76-14016, US Govt. PO, Washington, 1976. pp. 14-32. (56) Discussion of neurologic complications of alcohol abuse -epidemiologic aspects. In: Schoenberg B.S. (ed): Neurologic Epidemiology: Principles and Clinical Applications. Raven Press, NY, 1978, pp 616-617. (57) Foley, J.M., Toole, J.F., Barnett, H.J.M., Kurtzke, J.F.: Symposium on therapeutic controversies: Transient ischemic attacks. Trans Am. Neurol. Assoc. 103: 64-87, 1978. (58) Huntington's Disease: Mortality and morbidity data from outside the United States. In: Chase, T.N., Wexler, N.S., Barbeau, A. (ed): Huntington's Disease. Raven Press, N.Y. 1979, pp. 13-25. (59) A critique of the Canadian TIA study. Ann Neurol 5: 597-599, 1979.

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2.1416,

ASBESTOS BODIES IN ORGANS OTHER THAN LUNG IN OCCUPATIONALLY EXPOSED SUBJECTS

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It has been generally thought that asbestos bodies are only found in the lung. Recent reports of the finding of asbestos bodies in the brain could have some particular significance in carcinogenesis in occupationally exposed workers.

With the cooperation of Dr. Alfred Conston of Somerset Medical Center, Somerville, New Jersey, we identified 39 subjects who had died with mesothelioma, asbestosis, or pleural plaques mentioned on the autopsy report at the hospital in 1970. Tissue samples from all available organs obtained at autopsy were prepared, ashed and studied microscopically for asbestos bodies in accordance with procedures previously developed at this laboratory. The analysis has been completed and accepted for publication in CHEST. In subjects occupationally exposed to asbestos, large amounts of asbestos bodies were found in lungs, and in most of these cases, asbestos bodies were found in many of the other organs examined. In 18 of the 39 cases with only pleural plaques found at autopsy, fewer asbestos bodies were found in lungs. The number of other organs

with one or more asbestos bodies ranged from 32% to 62% of the sites examined.

SUPPORTED BY U.S. Veterans Admin., Dept. of Medicine & Surgery funds n.a.

2.1417,

PERIPHERAL LUNG CANCERS ARISING IN SCARS

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It has been our impression that scar cancers of the lung have been seen more frequently at autopsy in recent years than in the past.

To test this hypothesis, we studied the autopsy protocols and reviewed the slides for 1,186 cases of lung cancer over a 21 year period. A total of 89 peripheral cancers related to scars were found, constituting 1% of all autopsies and 7% of lung cancers. The proportion increased from less than 2% in 1955-1959, to 16% in 1970-1975. Seventy-two percent of the scar cancers were adenocarcinoma. No relationship was found between amount of smoking and scar cancer. The paper was published in CANCER 43:636-642, 1979.

SUPPORTED BY U.S. Veterans Admin., Dept. of Medicine & Surgery funds n.a.

2.1418,

VAOPC PSYCHIATRIC DIAGNOSTIC AND FOLLOW-UP PROJECT - PHASE I

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PROJECT OBJECTIVES: To investigate the long-term course of non-psychotic psychiatric disorders and to study determinants of early mortality.

PLAN: To expand the sample size and to develop means of assessing smoking and alcohol use history among both living and deceased subjects.

METHODS: Record, review and design of interview protocols.

CLINICAL RELATIONSHIP: The project should lead to improved prognostic assessment of non-psychotic disorders, and should help outline genetic and familial factors.

SUPPORTED BY U.S. Veterans Admin., Dept. of Medicine & Surgery funds n.a.

2.1419,

MULTIPLE SCLEROSIS IN THE FAROES

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From 1920 to July 1977 there have been 25 cases of MS among native-born residents of the Faroe Islands. Age at onset average 26 years and the sex ratio was equal. Clinical features were typical of other series; 22 were exacerbating-remitting and 3 were progressive from onset.

All cases but one began between 1943 and 1960; one began in 1970. The 24 cases by year of onset follow a log-normal distribution and thus meet criteria for a point-source epidemic. All patients had been born by 1940. The early-onset cases (1943-1949) were in patients age 11-45 in 1940, and 8/10 late onset (1952-1960) were age 10 or less in 1940. Cumulative risk of MS in 1940 was 8.7 per 10,000. British troops in large numbers occupied the Faroes for five years from April 1940. During the war all but three patients lived where troops were stationed and these three also had contact with the British.

With continued support from the National MS Society and the Danish MS Society we are continuing clinical surveillance. Detailed 30-page questionnaire has been administered to patients, relatives, neighbors, and distant controls. HLA-typing and serum antibody levels have been done on the same groups. Death certificates for all Faroese 1900-1977 have been recoded to 8th ISC. British war diaries have been obtained.

BIBLIOGRAPHIC REFERENCES: Kurtzke J.F., Hyllested K: Multiple sclerosis in the Faroe Island: 1. Clinical and epidemiological features. Ann. Neurol. 5: 6-21, 1979.

SUPPORTED BY U.S. Veterans Admin., Dept. of Medicine & Surgery funds n.a.

2.1420,

HEPATITIS B CARRIER STATE AND THE SURGICAL PATIENT

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Two nonconsecutive surveys were undertaken to determine if surgeons are at undue risk at this facility to the carrier of hepatitis-B-surface antigen. History, general lab studies, and serology for hepatitis B were studied and correlations developed. The study does suggest that the surgeon is a risk; high incidence of transfusion history in patients; high incidence of hepatitis-B-surface antibody and a significant presence of hepatitis-B-surface antigen in patients. Neither History or general lab studies gave away the presence of the potential hepatitis carrier state.

SUPPORTED BY U.S. Veterans Admin., Dept. of Medicine & Surgery funds n.a.

2.1421,

THE EPIDEMIOLOGY OF MULTIPLE MYELOMA

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This is a retrospective and prospective case control approach to the investigation of the epidemiology of multiple myeloma. Studies focus on occupation with particular emphasis on radiation and on details of socio-economic class and medical history. Approximately two-thirds of the data concerning the retrospective studied cases have been abstracted, as have about 15% of the control data. The expected number of cases have been interviewed prospectively, but only 1/6 of the intended controls have been completed. A number of interesting tentative findings have thus far been derived from the data. These include: 1) A four-fold increased risk of multiple myeloma in first order relatives 2) Familial aggregation of multiple myeloma and demyelinating disease syndromes resembling multiple sclerosis. 3) Possible association between multiple myeloma and occupational low level radiation. 4) No apparent association between multiple myeloma and high socioeconomic status or diseases of immunity, allergic disorders, or chronic infections.

The study is continuing with the expectation that the required number of cases in control abstracts will be completed within the next year and one half.

SUPPORTED BY U.S. Veterans Admin., Dept. of Medicine & Surgery funds n.a.

2.1422,

HEPATITIS B VIRUS INFECTION IN AN ONCOLOGY UNIT

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The intent of this study is to define the incidence and prevalence of Hepatitis B Virus markers in the staff assigned to the Oncology ward. Other scientific studies have already identified Oncology ward staff and patients as being in a high risk area. We would like to show evidence of type B hepatitis and to take steps toward limiting the transmission of of the virus. All staff have been assured that their right of confidentiality will be protected. This is necessary to protect indviduals against unreasonable actions such as endangering their jobs and/or preventing upward mobolity. There are 86 persons entered into the study which is proceeding without complications. There are no preliminary conclusions to be drawn because the nature and design of the study must be continued until completion before an analysis of the data can be made.

SUPPORTED BY U.S. Veterans Admin., Dept. of Medicine & Surgery funds n.a.

2.1423,

INVESTIGATIONS CONCERNING THE ETIOLOGY OF 'IDIOPATHIC' ACHALASIA

M. Mellow, U.S. Veterans Admin., Dept. of Medicine & Surgery, Medical Center, *50 Irving St. N.W., Washington, District of Columbia* 20422 (145-34-6675)

Thus far, 13 patients have been entered into our research study, entitled 'Investigations Concerning the Etiology of 'Idiopathic' Achalasia'. As expected, since the study simply entails venipuncture, no complications have occurred. No defect in general immunologic status or presence of autoantibodies have been observed thus far. Data relating to presence of anti-viral antibodies and HL-A typing has not been analyzed as yet. Since patients entered into study have had varying radical and socioeconomic backgrounds, factors which may influence relative prevalance of anti-viral antibodies (socioeconomic) as well as HL-A type (racial background) it is necessary that more patients be entered into study for meaningful statistical analysis.

SUPPORTED BY U.S. Veterans Admin., Dept. of Medicine & Surgery funds n.a.

2.1424,

STUDY OF TRANSIENT GASTRIC HYPOCHLORHYDRIA

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These experiments are designed to study spontaneous hypochlorhydria and gastritis. We are continuing to search for the cause of this phenomenon. We have developed a pepsinogen assay and will utilize this blood test to search for sporatic cases of hypochlorhydria. Preliminary studies have suggested that serum pepsinogen concentration increases as patients develop hypochlorhydria. Therefore, this test can be used to screen a large number of people. In addition, we will evaluate the epidemiology of this condition and will measure gastric acid secretion, serum gastrin concentration, and intrinsic factor concentration.

BIBLIOGRAPHIC REFERENCES: Ramsey, EJ, Carey, KV, Peterson, WL, et al: Epidemic Gastritis with Hypochlorhydria. Gastroenterology 76:1449-1457, 1979.

SUPPORTED BY U.S. Veterans Admin., Dept. of Medicine & Surgery funds n.a.

2.1425,

RELATIONSHIP OF HERPESVIRUSES TO CARCINOMA OF THE PROSTATE

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To date, over 100 patients with benign prostatic hypertrophy or carcinoma of the prostate have been evaluated in relationship to herpes simplex virus and carcinoma of the prostate. The data to date suggest that there is no relationship of herpes simplex virus to carcinoma. Additional patients will be required to confirm this impression.

SUPPORTED BY U.S. Veterans Admin., Dept. of Medicine & Surgery funds n.a.

2.1426,

IDIOPATHIC IGM DEFICIENCY AS A PREDISPOSING FACTOR FOR BACTEREMIA

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The present study was undertaken to determine (1) if patients with bacteremia have a greater prevalence of IgM deficiency than matched controls, (2) if the IgM deficiency is transient or stable, and (3) if IgM produced by patients with IgM deficiency is specific for the organism causing their bacteremia. In the last year 41 patients with bacteremia and 36 matched controls were entered into the study. To date IgG, IgA, and IgM concentrations have been determined for all patients. Agglutination antibody, IgM antibody, and IgM antibody titers to the infecting organism of the patients with bacteremia have been determined. Analysis of the data showed no difference between the patients with bacteremia and the matched controls.

SUPPORTED BY U.S. Veterans Admin., Dept. of Medicine & Surgery funds n.a.

2.1427,

HEARING PROFILES OF A DOMICILED VETERAN POPULATION

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The primary purpose of this study was to: 1. Determine the hearing profile of a domiciled veteran population. 2. Compare this profile with that found in a similar non-veteran population. 3. Identify those domiciled veterans with significant hearing loss.

To accomplish this, Audiology and Speech Pathology Service, VAMC, Martinsburg, WV, administered an

audiologic test battery to 358 consecutive Domiciliary patient-members at the time of their annual physical examination.

Computer Science services at WV University were utilized for analysis of the data.

Evaluation of the data reveals a steady decline in pure tone thresholds, speech reception thresholds, and speech discrimination ability with an increase in age. This finding is consistent with other published studies which have been concerned with the relationship between reduced auditory acuity and advancing age.

Comparison of mean pure tone thresholds for the total population studied (N equals 358, average age 60 years) with those reported in a Public Health Survery (1962) suggests increased severity of hearing loss in a domiciled veteran population. The significance of noise exposure in a veteran population is discussed. Of the 358 patient-members tested, 7% (or 25) had speech reception thresholds of 30 decibels or poorer in the better ear; 12% (or 45) had discrimination ability of 80% or poorer in the better ear.

SUPPORTED BY U.S. Veterans Admin., Dept. of Medicine & Surgery funds n.a.

2.1428,

AN EPIDEMIOLOGIC STUDY OF AMYOTROPHIC LATERAL SCLEROSIS AND OTHER MOTOR NEURON DISEASES

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Deaths coded to amyotrophic lateral sclerosis (ALS) for the years 1963-1967 among U. S. males were matched against military files to identify 504 World War II veterans. Military controls for these 504 men were matched on year of birth, date of entry into military service, and branch of service. Hospital records of 37 representative deaths coded as ALS among veterans were reviewed and 36 were accepted as definite ALS. Military records were abstracted for information about preservice demographic and other factors, the physical examination for entry into service, and the medical history and factors characterizing the military career during World War II.

There was a deficit of blacks with ALS which did not attain statistical significance (P equals .08). Several differences in preservice occupations were found: truck drivers and 'operatives' were in excess. There was no significant difference between ALS cases and controls in aggregate scores on sports activity before service although baseball was more often listed by the ALS cases than by controls. The ALS patients significantly more often gave histories of trauma or surgical operations before service, and during service had a significant excess of hospitalizations for trauma and in particular for fractures of the limbs.

Still in process is analysis of a hospital case (ALS)-control (brain tumor) questionnaire, and a hospital case series of ALS. Study continues.

SUPPORTED BY U.S. Veterans Admin., Dept. of Medicine & Surgery funds n.a.

2.1429,

COOPERATIVE STUDY ON ANTIHYPERTENSIVE AGENTS AND MORBIDITY

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Cooperative Studies: A. Although Studies 83 (Prazosin vs. hydralazine) and 96 (propranolol vs. oxprenolol) have been completed, data analysis has been delayed at Hines Data processing center. These problems are being resolved. B. Study 104 (ticrynafen vs. hydrochlorothiazide). The report will appear soon in the New England Journal of Medicine. Ticrynafen is effective as a natriuretic agent and uricosuric drug. C. Study 127 (hydrochlorothiazide vs. propranolol). This study is proceeding satisfactorily. It will continue until June 30, 1980. D. Study 129. (low dose reserpine). This study is progressing satisfactorily. It compares varying doses of reserpine from 0.25 down to 0.05 mg per day in an effort to determine the lowest effective dose. E. Study 136 (Treatment of mild hypertension in the aged). a. large scale study involving 14 centers, one year of intake and 5 years of follow-up with 1200 randomized patients age 60 and above. Study has been approved by CESAC but funding is at present uncertain because of budgetary considerations.

SUPPORTED BY U.S. Veterans Admin., Dept. of Medicine & Surgery funds n.a.

2.1430,

EFFECT OF URANIUM ON THE TRACHEOBRONCHIAL TREE

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It has been established from epidemiologic studies of uranium miners and asbestos workers that the combination of cigarette smoking and heavy exposure to an occupational carcinogen can significantly increase the risk of lung cancer as compared with smokers without such occupational exposures. It has also been found that the remaining tracheobronchial tree in patients with lung cancer had extensive histological changes compatible with exposures to a carcinogenic agent. These changes include extensive basal cell hyperplasia with cells with atypical nuclei, loss of cilia, carcinoma in situ and early primary invasive cancers presumably not related to the main tumor mass.

We have recently completed a study designed to evaluate the changes in uranium miners compared to non-miners. One hundred and five uranium miners who died of lung cancer were matched on age and smoking habits to non-miners. A total of 28,928 slides were examined. Carcinoma in situ was found in 96 percent of slides in miners and 92 percent of non-miners. Degree 2 and 3 atypias in carcinoma in situ were more commonly found in the miners. A paper reporting results has been published in CANCER 42:483-489, 1978. The data indicate that the synergistic effect of cigarette smoking and uranium exposure increases the risk of lung cancer and that other sites of tissue alteration leading to tumor development are frequently present in the lung.

We are continuing to collect and examine the lungs received from Grand Junction, Colorado, and Butte, Montana, - 383 to date.

SUPPORTED BY U.S. Veterans Admin., Dept. of Medicine & Surgery funds n.a.

2.1431,

SACCHARIN AND BLADDER CANCER

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It has been suggested from results of some animal studies and one retrospective epidemiologic study that sacchrain use increases the risk of bladder cancer. We felt we could test this hypothesis by studying the changes in the epithelium of the bladder in a large number of autopsies. Saccharin users will be matched for smoking habits and occupational exposures with non-saccharin user controls.

A protocol from sectioning the bladder has been made - about 60 slides will be available from step sections of the bladder. A form for obtaining histories of saccharin use, smoking habits, and occupational and residence histories from relatives has been designed and tested.

Specimens have been collected from a large number of hospitals in upstate New York and in other parts of the country. To date we have collected 582 bladders.

SUPPORTED BY U.S. Veterans Admin., Dept. of Medicine & Surgery funds n.a.

2.1432,

APPLICATION OF CYTOGENETICS TO MANAGEMENT OF PSYCHIATRIC PATIENTS

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The Psychogenetics Unit has been engaged in a variety of research endeavors. These include: 1. The effects of cannabinoids on human chromosomes. A prospective study of the chromosomal effects of orally administered delta 9-THC, the major psychoactive component of marihuana, cannabinol, cannabidiol, and placebo was carried out. Utilizating both the conventional method of chromosome analysis (i.e., breaks and structural rearrangements) and the sister chromatid exchange technique, a more sensitive indicator of chromosome damage, no increase in chromosome damage was detected over the duration of the study. 2. A double-blind study to assess the effects of BL-3912A in geriatric patients. B1-3912A is an amphetamine like compound but a weak psychostimulant and without the undesirable side effects. 3. Serum immunoglobulin (Ig) levels and cognitive performance in the impaired elderly. The investigation of the interrelationshp between serum Ig levels and intellectual functioning is continuing and larger sample sizes are being collected. 4. Chromosome changes with age and the relationship to intellectual functioning. Continued chromosome evaluation of patients on the Geriatric Psychiatry Ward. Chromosome banding procedures are also being utilized. 5. Glial cell chromosomes. To further extend the chromosome loss and intellectual functioning relationship detected utilizing leukocyte cultures, we are attempting to culture glial cells (tissue obtained at autopsy) for the purpose of replicating the leukocyte chromosome findings. 6. Coding and analysis of life-history information from a 30-year longitudinal study of aging twins. Data on health, stress, family history, education, nutrition, and many other variables are being classified and keypunched to permit multivariate analyses. The results will supplement prior publications from this data set on intellectual functioning, chromosome changes, and psychiatric disorders.

SUPPORTED BY U.S. Veterans Admin., Dept. of Medicine & Surgery funds n.a.

2.1433,

SMOKING AND DIABETIC RETINOPATHY

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Diabetic retinopathy is one of the principal causes of blindness in the United States. A recent publication has suggested that cigarette smoking causes an increase in incidence of retinopathy in diabetics. The experimental approach in the cited paper is not completely sound and no investigation of individuals with mild diabetic retinopathy was performed. We propose to investigate the question in a rigorous manner to attempt to give a definitive answer to this important problem. The project seems to be well within the scope of the Tobacco and Health Institute since it will confirm or deny the connection between smoking and a significant disease.

SUPPORTED BY U.S. Veterans Admin., Dept. of Medicine & Surgery funds n.a.

2.1434,

A COMPARISON OF VARIOUS ALCOHOLISM SURVEY INSTRUMENTS AND AN INITIAL ESTIMATE OF THE PREVALENCE OF ALCOHOLISM IN THE PROVIDENCE VA HOSPITAL

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This Hospital has applied for funds for an Alcohol Treatment Program for Fiscal 1979. If this is funded, it will be necessary to know the true prevalence of alcoholism amongst the patient population and to have a system for screening all patients for alcoholism. A number of alcoholism survey instruments are available - both questionnaires and biochemical measures; but there is insufficient published information available to chose between them for the present purpose.

In this project a random sample of 100 inpatients and 100 outpatients will be asked to fill out questionnaires and provide samples for biochemical measurement. They will also be assessed clinically by the principal investigator as to whether the patient is alcoholic according to the criteria of National Council on Alcoholism. This information will be processed to find which instrument or combination of instruments best distinguishes the alcoholics from the non-alcoholics. The data will also allow an initial estimate of the true prevalence of alcoholism.

Subjects will be asked to: A. Fill out three self-report questionnaires relating to their drinking behavior (CAGE, Michigan Alcoholism Screening Test, and Alcoholic Stages Index Subscales) B. Give samples of: blood (35 ml) to measure serum gammaglutamyl transpeptidase, alpha amino-n-butyric acid/leucine ratio and mean corpuscular volume; urine for measurements of urinary coproporphyrin; breath for an estimate of blood alcohol level. C. Undergo a clinical assessment for criteria of alcoholism.

SUPPORTED BY U.S. Veterans Admin., Dept. of Medicine & Surgery funds n.a.

2.1435,

INCIDENCE OF AVASCULAR NECROSIS IN PATIENTS ADMITTED TO AN ACUTE ALCOHOLIC TREATMENT CENTER

R.D. Lynch, U.S. Veterans Admin., Dept. of Medicine & Surgery, Medical Center, *Wrightsboro Rd., Augusta, Georgia* 30904 (238-74-1188)

There has been difficulty in obtaining adequate x-rays of patients admitted to the Alcohol Treatment

Unit. The technician who was involved with this recently is a sophomore medical student and is not with us any longer because of school commitments. Therefore, the protocol as shown was instituted to make a routine frog leg lateral of the pelvis with all admissions and a brief questionnaire summary. This should allow us to collect the data and continue our incidence study.

The initial 200 patients involved in this study showed a surprisingly low incidence of avascular necrosis. One man with avascular necrosis had already had total hip surgery on the opposite side so he was known to have had avascular necrosis. The second man with some limitation upon physical examination had questionable avascular necrosis.

The initial incidence is much lower than anticipated and was indication for continuation of this study.

SUPPORTED BY U.S. Veterans Admin., Dept. of Medicine & Surgery funds n.a.

2.1436,

COOPERATIVE STUDY OF THE PATHOGENICITY OF THE SICKLE CELL TRAIT AND G-6-PD DEFICIENCY

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The results of the first phase of this study have been published (N. Eng. J. Med. 300:1001-1005, 1979). Data on the future medical history of these patients will be assembled in regular intervals and, therefore, this study will remain active. Moreover, the accumulated material has been and will be used for further studies e.g. measurement of racial admixture, influence of alpha-thalassemia on the proportion of Hb S in individuals with the sickle cell trait and others. Analysis of the data on the proportion of Hb S has been completed and is being prepared for publication. Definite bimodal distribution of this proportion has been detected with approximately 12-15% of this population having a percentage of Hb S less than 35%. Although the information on the MCV of the erythrocytes is not optimal, there is a definite tendency for this population to have a lower MCV justifying the postulate that there is a high incidence of alpha-thalassemia trait in this group.

SUPPORTED BY U.S. Veterans Admin., Dept. of Medicine & Surgery funds n.a.

2.1437,

A STUDY OF THE INCIDENCE OF INFECTION IN CLEAN UNSHAVEN INCISIONS

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The reports of Altmeir and Cruse indicate that, although esthetically undesirable, it may be safer not to shave the patient's peri operative skin even though Cruse showed that not shaving the operative site decreased infection by half (a study of 3,649 cases) prior to surgery. Since this concept represents a significant departure from currently accepted practice it would seem to merit further investigation. For this reason, a blinded controlled series of patients subjected to general, cardiovascular and thoracic surgery are being studied to see if a statistically significant difference in incident of incision infection can be demonstrated between patients shaven immediately before and patients not shaven before surgery.

SUPPORTED BY U.S. Veterans Admin., Dept. of Medicine & Surgery funds n.a.

2.1438,

STUDIES IN INFECTIOUS DISEASES - VIRAL RESPIRATORY DISEASES

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The epidemiology of Influenza among patients in the WSVAH and Medical Center personnel was investigated. Influenza A (H3N2) caused an abrupt epidemic among persons over 25 years of age. In younger ambulatory people a new strain (during the past 20 years) caused some cases of milder respiratory disease. The simultaneous circulation of two distinct serotypes of Influenza A in the same season is unique. The older population with immunity to the new emerging strain (H1N1) continued to show acute Influenza with a strain closely related to that of recent years (H3N2).

The transmission of Influenza A among mice by natural cage exposure of one infected mouse to 4 or 5 cagemates, usually sibs, showed only occasional transmission detected by virus recovery from the lungs. The system was developed to test the effect of anti Influenza drugs on viral transmission. However, the model was too erratic in the results.

SUPPORTED BY U.S. Veterans Admin., Dept. of Medicine & Surgery $0

2.1439,

HISTOLOGIC CLASSIFICATION OF LUNG CANCER IN PERSONS EXPOSED TO ASBESTOS

O. Auerbach, U.S. Veterans Admin., Dept. of Medicine & Surgery, Medical Center, *Tremont Ave. & S. Centre St., East Orange, New Jersey* 07019 (083-36-0408)

Studies of uranium miners who died of lung cancer have shown a pattern of histologic types different from the pattern demonstrated in non-miners who die of lung cancer. Although there have been some studies of histologic types of lung cancer in asbestos workers, these studies were conducted on small series only and did not make use of the WHO classification of tumor type.

With the cooperation of Dr. Conston of Somerset Medical Center, Somerville, New Jersey, we have collected tissue specimens (autopsy and surgical specimens) from all subjects diagnosed with lung cancer in a 25 year period. Asbestos exposed and non-exposed persons were included. Smoking, occupational and residence histories were obtained from families of the deceased. These subjects were matched on age and smoking history with persons who died of lung cancer in the Veterans Administration Medical Center in East Orange, N.J. Cases will be read in random order.

SUPPORTED BY U.S. Veterans Admin., Dept. of Medicine & Surgery funds n.a.

2.1440,

NOTES ON THE ETIOLOGY OF MULTIPLE SCLEROSIS

J.F. Kurtzke, U.S. Veterans Admin., Dept. of Medicine & Surgery, Medical Center, Neurology Service, *50 Irving St. N.W., Washington, District of Columbia* 20422 (133-16-2851)

Further work on migrant studies stresses the need for expectations of MS risk by age at entry, duration of residence, and age at observation (study/prevalence date). Data have been presented that a cohort of a disease-free population, all ages, would incur only 12 percent its own lifetime risk of MS after 5 years, and only 1/2 this risk even after 20 years. Analysis of time-course of the occurrence of MS in Iceland suggests that an epidemic of MS took place there too. This work is in progress.

BIBLIOGRAPHIC REFERENCES: Bobowick, AR, Kurtzke, JF, Brody, JA, et al: Twin study of multiple sclerosis: An epidemiologic inquiry. Neurology 28: 978-987, 1978.

SUPPORTED BY U.S. Veterans Admin., Dept. of Medicine & Surgery funds n.a.

2.1441,

STUDIES OF THE EPIDEMIOLOGY, PATHOGENESIS AND PREVENTION OF NEONATAL BACTERIAL DISEASES

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OBJECTIVES: The principal aims of the proposed studies are four-fold: 1. To rapidly identify infants with bacterial disease. 2. To gain further insight into the epidemiology and pathogenesis of neonatal bacterial infections. 3. To define the pharmacokinetics of antibiotics in low birthweight (less than 1500 grams), premature infants in order to assure safety and efficacy of these drugs. 4. To evaluate the effect of prophylactic antibiotics on microbial colonization and disease rates in newborn infants.

APPROACH: We propose seven areas of investigation that are designed to provide information on: (1) the epidemiology and pathogenesis of neonatal bacterial diseases, particularly those caused by the groups B and D streptococci; (2) techniques of rapidly identifying infants with bacterial infections; (3) the possible causes of 'clinical sepsis' in neonates who have sterile blood cultures; (4) the pharmacokinetics of aminoglycosides in infants less than 1500 grams at birth and (5) chemoprophylaxis of early onset group B streptococcal disease.

CURRENT PLANS AND/OR PROGRESS: We are currently assessing different methods to diagnose early-onset bacterial disease of newborns. The tests being evaluated are white blood cell and differential count, C-reactive protein, erythrocyte sedimentation rate, buffy coat smear and gastric aspirate analysis. Further, we have enrolled approximately 10,000 newborn infants into a prospective, randomized, controlled study of penicillin prophylaxis (versus topical tetracycline ophthalmic ointment) for prevention of gonococcal conjunctivitis and of early onset group B streptococcol disease. We plan to continue this project for a minimum of 20,000 deliveries. The other projects (listed under Approach) will be initiated in July-August, 1979.

SUPPORTED BY United Cerebral Palsy Research & Education Foundation Inc. $36,772

2.1442,

PREVALENCE OF ACTINIC CHEILITIS AMONG THE RURAL POPULATION IN THE SOUTH OF CHILE

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OBJECTIVES: To establish the prevalence of actinic cheilitis in the farming population during the summer months and compare it to the prevalence during the winter. To determine the relationship of this lesion with hypermelanogenesis of the cheeks, the possible co-existence of the two lesions and/or the sequence of appearance of the lesions. To establish the relationship of hyperpigmentation with some factors such as ingestion of wine or apple alcohol (apple 'chicha'). At the same time, the prevalence of other lesions of the oral mucosa (especially precancerous lesions: leukoplasia, erythroplasia), lichen planus and recurrent oral aphtae will be determined in the same population.

APPROACH: Odontology students in their last semesters of study are provided with basic knowledge regarding the mentioned lesions followed by training specific to the region under study. The students are assigned to perform a house-to-house survey of all inhabitants over 15 years of age on certain islands in the Chiloe Archipelago. The islands have been selected based on ethnic, social, cultural and economic considerations.

PROGRESS: To date 860 surveys have been completed. They are being processed at the Computer Center of the School of Engineering, University of Chile. The survey questionnaires are based on a World Health Organization questionnaire that has been modified for use specifically within this region.

SUPPORTED BY Universidad de Chile funds n.a.

2.1443,

CLINICAL STUDIES OF OCCUPATIONAL BRONCHIAL ASTHMA

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These studies are an attempt to improve the definition of mechanisms and identification of etiologic agents causing occupational asthma. Data are obtained from humans exposed in laboratory inhalation studies or in the work environment. Laboratory concentrations are below the threshold limit values. A number of specific agents have been studied including isocyanates (toluene diisocyanate), various wood dusts (western red cedar, quillaja bark), phthalic anhydride, hexahydrophthalic anhydride, and other chemicals.

Studies include detailed immunologic and physiologic investigations such as bronchial provocation inhalation studies using various concentrations. Information on both immunologic and nonimmunologic factors is obtained.

SUPPORTED BY University of Cincinnati funds n.a.

2.1444,

BRAIN INJURIES AND PROTECTIVE SPORTS EQUIPMENT

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This is a continuing study of the basic mechanics of head injuries, based on the premise that the neurosurgeon diagnosing and treating head injuries is in a better position for making his diagnosis and for determining the course of the treatment needed, if he knows the mechanism by which the injury was produced and the area of the brain most likely to be affected by that mechanism.

These studies have now been broadened to include the evaluation of protective sports equipment, with

particular emphasis on protective helmets. The national operating Committee on Standards for Athletic Equipment has issued a set of specifications for football helmets and the NCAA now requires that helmets which meet these specifications be used in games played under the jurisdiction of NCAA.

Unfortunately the acceptance or rejection criteria in the NOCSAE specifications are based on data published several years ago. These data are given in the form of a curve of acceleration versus duration of acceleration. The curve is known in the industry as the Wayne State University Tolerance Curve. Most authorities will probably agree that this curve leaves something to be desired as an injury criterion. Nevertheless, since it seems to be the best that is available it is used. The standard testing procedure based on the WSU Tolerance Curve provides essentially a go - no go decision with little indication of the comparative performances of different helmets. The objectives of this research are to develop procedures for making comparative evaluations, and to correlate these evaluations with injuries actually observed on the football field and elsewhere. It should be possible, in time, to determine what conditions produce concussion, and how helmet construction affects those conditions.

Our preliminary test results indicate that there are noticeable differences in helmet performance and there is some correlation between the make of the helmet and the incidence of head injuries.

SUPPORTED BY University of Texas funds n.a.

2.1445,

PESTICIDE MONITORING

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OBJECTIVE: Assist the Human Effects Monitoring Branch, Office of Pesticide Programs, U.S. Environmental Protection agency, in determining the magnitude of human exposure to pesticides, providing expert consultant service to review, analyse, and validate pesticide risk and benefit data, conducting epidemiologic studies of various exposed population groups, devised means of recognition and diagnosis of pesticide effects in man.

APPROACH: Maintaining an inventory of pesticide usage in the study area (Utah) and use patterns; make human blood, milk or other tissue analyses in collaboration with the national monitoring program; establishing a group of certified consultants and coordinating their data review; development of methods suitable for population and environmental monitoring; developing special studies of pesticides health effects; and participation in Pesticide Incident investigations as needed in the study area and elsewhere on request of the OPP.

PROGRESS:

SUPPORTED BY Utah State Government funds n.a.

2.1446,

THE ANAEROBIC FLORA OF MAN AND ANIMALS IN DISEASE AND HEALTH

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OBJECTIVE: Provide basic information about the anaerobic bacteria of man and animals, particularly as they relate to tissue infection, metabolic disease, and natural health state.

APPROACH: Isolate and characterize the anaerobic bacteria from infections and normal flora. Study bacterial metabolic systems, genetic and antigenic composition, nutritional requirements, and host-microbial as well as microbial-microbial interactions.

PROGRESS: Studies by 9 faculty and 10 graduate students demonstrate: An H(2)-uptake hydrogenase isolated from N(2)-fixing Clostridium pasteurianum which appears to regulate the efficiency of N(2) fixation in this bacterial species. The reticulo-stimulatory substance that has anti-tumor activity and is produced by Propionibacterium acnes appears to be polysaccharide and is probably associated with the cell wall. The neotype strains of the rumen bacteria Bacteroides amylophilus and Bacteroides succinogenes have been designated and described. Improved procedures for isolating and for in vitro labeling of bacterial DNA for bacterial DNA-DNA homology studies have been developed. A procedure was developed for pure culture of methanogenic bacteria using formate as the energy source. It allows determination of optimum conditions for methanogenesis. An essential enzyme for formate utilization in Methanobacterium formicicum electron transport has been partially purified. A growth medium for antibiotic susceptibility testing of anaerobic bacteria was developed and adopted as the U.S. standard, and Clostridium difficile toxin that is apparently related to antibiotic induced fatal diarrhea has been isolated. Three previously unreported and undescribed anaerobic bacteria are among the most frequently isolated species that occur in high numbers in human periodontal infections, indicating they may be of significance in the etiology of the disease. Twenty-one publications and 15 abstracts for scientific meetings.

SUPPORTED BY Virginia State Government funds n.a.

2.1447,

CAUSAL FACTORS IN NEGLECT AND BATTERING - A PROSPECTIVE STUDY

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The purpose of this study is to determine the possibility of identifying, before the birth of a child, those mothers who will subsequently abuse or neglect their children and to specify the characteristics which distinguish parents who abuse or neglect their children from those who do not. A further aim of this research is to determine whether the provision of early and extended contact between the mother and her newborn infant during the lying in period can prevent later parenting disorders. The study, begun in 1975, has included physical and behavioral assessment of the newborn, infant-mother interaction, the incidence of parenting disorders and the collection of medical data. Preliminary findings give evidence that a flaw in the synchrony of infant-mother interaction from the first day or two after birth is predictive of high-risk mothers, and that extended contact between mother and infant can be significant in preventing subsequent abuse and neglect of the child.

SUPPORTED BY William T. Grant Foundation $11,000

2.1448,

WILDLIFE RESERVOIRS OF ARBOVIRUSES

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OBJECTIVE: Determine the occurrence and epidemiological significance of LaCrosse virus variants, and the relationship of these variants to mosquito vectors and wildlife hosts.

APPROACH: LaCrosse viruses will be isolated from wildlife hosts and mosquito vectors inn SW Wisconsin. These isolates will be tested to determine if plaque, mouse virulent (or attenuated), temperature sensitive, thermal stable or antigenic variants occur. These variants will be tested for their ability to infect wildlife hosts and to be transmitted by Aedes triseriatus, the natural vector.

PROGRESS: The role of medium-sized forest mammals in LaCrosse (LAC) virus epidemiology is being evaluated. LAC virus-infected mosquitos Aedes triseriatus infected red foxes. The foxes became infected and developed a viremia of 4-5 days duration and of sufficient amplitude to infect susceptible mosquitos which, in turn, transmitted the virus to susceptible chipmunks, a common forest host of this virus. Thus it appears that the red fox can potentially serve as a reservoir and dessiminator of LAC virus. Sentinel foxes placed in an endemic area became infected, indicating that transmission to foxes does occur commonly in nature. Experiments with captive raccoons revealed no viremia and it appears unlikely that they play a role as LAC virus reservoirs. It was shown that the snowshoe hare is capable of developing a significant viremia following experimental infection with Powassan (POW) virus. However, within the boreal forest in Northeastern Alberta, infection of snowshoe hares by POW virus was relatively uncommon during the period of our study. Our field studies did indicate that deer mice in this area were commonly infected with Modoc (MOD) virus. This virus also infects humans and we have evidence of antibiodies in local Indian population in the area. Ecological changes associated with mining of the Alberta tarsands appeared to increase deer mouse populations and the potential risk for increase of Modoc virus transmission in the area.

SUPPORTED BY Wisconsin State Government funds n.a.

2.1449,

CASE-CONTROL STUDY OF NEOPLASIA AND STEROID CONTRACEPTIVES

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OBJECTIVE: To assess the carcinogenic risks of steroidal contraceptives.

APPROACH: A case-control study will be in progress for the next five years including every new patient with histologically confirmed cervical, endometrial and ovarian carcinoma. Two controls of the same age, socioeconomic level and origin will be chosen to answer the same questionnaire on contraceptive history as the women with carcinoma.

SUPPORTED BY World Health Org. funds n.a.

2.1450,

CANCER MORBIDITY IN NEW ZEALAND IN RELATION TO OCCUPATION

T. Kjellstrom, Auckland University, Dept. of Community Health, *P.O. Box 2175, Auckland, New Zealand* (D-IARC-79-425)

The study, which will be based on new cases registered at the New Zealand National Cancer Registry during 1972-74, will describe differences in cancer morbidity between occupational groups of adult males in New Zealand. The findings will be examined in relation to earlier studies and to possible differences in the working environment of the occupational groups.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1451,

LEUKEMIA IN KENYA

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This is both a retrospective and prospective study, covering the years 1971-1980, to establish the epidemiological and biological characteristics of leukemia in Kenyan Africans. It involves the study of patients, clinically, hematologically and at autopsy, at the national referral hospital, at six provincial hospitals and two district hospitals.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1452,

FREQUENCY OF NEOPLASTIC CONDITIONS IN A UNIVERSITY STUDENT POPULATION

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The Students' Health Service provides, in conjunction with the Hadassah University Hospital, a comprehensive health service. Diagnoses and important symptoms are classified in accordance with the ICD (A), with the assistance of a computer. Students, currently about 7,000, are of both sexes from a wide variety of countries of origin, the vast majority being Jewish. The computer print-out includes, among others, register of all diagnosed cases of neoplastic disease in the age groups. The data base sheets in the patients' files provide background information. Quite a few cases of melanoma and squamous carcinoma of the skin have been recorded.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1453,

NATIONAL REGISTRY OF ORAL PRECANCEROUS CONDITIONS

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Preliminary studies indicate that as in oral carcinoma, there is predominance of Indian patients (72 percent) with oral precancerous conditions (OPC). OPC also seem to be closely related to oral habits. The peak age incidence was between 51-60 years (40 percent). The distribution of OPC was: (1) homogeneous leukoplakia (51.2 percent), (2) lichen planus (16.1 percent), (3) oral submucous fibrosis (15.2 percent), (4) speckled leukoplakia (11.9 percent), (5) erythroplakia (2.8 percent) and (6) smoker's keratosis (2.8 percent). Seventeen patients (8.8 percent) had two OPC. Indian females forming the largest part of this group (59 percent). Of these 17 patients, 76.5 percent had submucous fibrosis (SMF) and leukoplakia.

In Malaysia so far no case of SMF has been reported in Chinese or Malayan males. The WHO premalignancy index (PMI) score distribution was as follows: (a) 21.4 percent, (b) 31.7 percent, (c) 37.2 percent, and (d) 9.7 percent. The most common sites for OPC were (1) buccal mucosa (65 percent), (2) tongue (13 percent) and (3) labial commissures (9 percent). The labial commissures (85 percent), tongue (47 percent) and the buccal mucosa (43 percent) had the most ominous precancerous histological features. Similarly, the most ominous precancerous histological features (PMI) scores of (c) and (d) seen in the various OPC were: (1) erythroplakia (75 percent), (2) speckled leukoplakia (65 percent), (3) SMF (56 percent) and (4) homogeneous leukoplakia (48 percent); SMF is an important precancerous condition in the Indians. The cause of SMF is unknown and there is also no known treatment for this condition. This limited study so far indicates that oral lichen planus, smoker's keratosis, and white spongy naevus of the floor of the mouth do not appear to be precancerous conditions in Malaysians as they have been reported to be in population studies elsewhere. The differences could be largely due to the different patterns of oral habits.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1454,

LEUKEMIA IN ATOMIC BOMB SURVIVORS AND CONTROLS, HIROSHIMA AND NAGASAKI

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The aim of this study is to examine radiation leukemogenesis in atomic bomb survivors paying attention to dose-response curve by gamma and neutron dose and the relationship between incidence rate, latency period, age at exposure and dose. The occurrence of multiple myeloma is also being studied. A preliminary paper was published in the Journal of Radiation Research, 19(3): 262-82, 1978.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1455,

RELATIONSHIP BETWEEN LEUKEMIA AND EXPOSURE TO DIAGNOSTIC RADIATION

T. Majle, National Inst. of Hygiene, Dept. of Radiation Protection & Radiobiology, *24 Chocimska St., 00791 Warsaw 36, Poland* (D-IARC-79-458)

The Tri-State Leukemia Study in U.S.A., 1962-1963, showed an excess of leukemias in adult males associated with an increased frequency of x-ray examinations. The purpose of the present study is to validate the results of the Tri-State Leukemia Study and to estimate exposure and dose of x-rays in 1,000 leukemia patients and in 1,000 controls chosen by random sampling from the Polish population. A retrospective survey provides information on the number and kind of x-ray examinations during the past 20 years. Information obtained from patients and controls is confirmed in hospitals, polyclinic records and archives. Exposure and dose of x-rays will be compared in both groups. A pilot study in Warsaw of 225 leukemia cases and 419 controls was completed in 1978. Some of the results show that the radiation load in leukemia patients may be higher than in relevant control groups. The results in children seem to indicate that children with leukemia were subjected to a higher number of x-ray examinations than the controls.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1456,

CAUSES OF DEATH IN THE DIFFERENT QUARTERS OF GENOA

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The city of Genoa (816,872 inhabitants) is subdivided into 25 quarters. The socioeconomic and environmental situation of these quarters is very heterogeneous and there are different levels of air pollution. The 20,000 deaths which occurred in the years 1970-71 are being analyzed by the quarter of residence, the cause of death and the last occupation. The purpose of this investigation is to define possible relations between environment (different levels of air pollution), occupation and cause of death, with particular reference to cancer of the respiratory tract.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1457,

CASE-CONTROL STUDY ON URINARY BLADDER CANCER

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A random sample of 100 persons with urinary bladder cancer, all resident in the Genoa District, reported to the cancer registry is being compared with 200 persons of the same sex and age group affected by different diseases (excluding cancers and other diseases of the respiratory system, cancer of the upper alimentary tract, myocardial infarction, diseases of the urinary system and certain occupational diseases), admitted to the same hospital. Emphasis is placed on occupation and smoking habits. The objective of this study is to uncover possible associations between occupational exposure to chemical carcinogens and urinary bladder cancer.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1458,

AETIOLOGICAL ASSOCIATION OF BREAST CANCER AND HASHIMOTO'S THYROIDITIS

N. Maruchi, University of Tokyo, Faculty of Medicine, Dept. of Health Administration, *7-3-1 Hongo, Bunkyo-ku, Tokyo 113, Tokyo, Japan* (D-IARC-78-361)

Our recent study in Japan on the possible associations between breast cancer and Hashimoto's thyroiditis indicated that Hashimoto's thyroiditis could be one of the risk factors for breast cancer, though similar studies at the Mayo Clinic carried out by the author showed no association between the two diseases. In order to examine this discrepancy, several lines of inquiry including expansion of a prospective study of patients with Hashimoto's thyroiditis, examination of epidemiological specificity for the patients with Hashimoto's thyroiditis, and an autopsy study are now being conducted.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1459,

EPIDEMIOLOGY OF LIVER CANCER IN YAMANASHI PREFECTURE

N. Maruchi, University of Tokyo, Faculty of Medicine, Dept. of Health Administration, *7-3-1 Hongo, Bunkyo-ku, Tokyo 113, Tokyo, Japan* (D-IARC-79-393)

The incidence of liver cancer in Japan is believed to be one of the highest in the developed countries of the world. While the mortality from this disease in Japan is comparatively higher in the western regions, the rate in Yamanashi Prefecture located in the central highlands of Honshu is very much higher. We are now developing epidemiological studies in collaboration with local investigators to search for specific aetiological factors. Preliminary correlation studies show a significant association of Schistosoma japonicum prevalence and liver cirrhosis, but not with primary liver cancer. A case-control study of patients with liver cancer and cirrhosis is now in progress.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1460,

MORTALITY STUDY OF VINYL CHLORIDE WORKERS

K. Nakamura, National Inst. of Industrial Health, Dept. of Industrial Epidemiology, *2051 Kizuki Sumiyosityo, Kawasaki, Kanagawa, Japan* (D-IARC-79-350)

A mortality study is being undertaken for about 10,000 workers who are or were engaged in vinyl chloride (monomer and polymer) manufacturing processes in Japan to ascertain the relationship between exposure to vinyl chloride monomer and liver angiosarcoma. Ascertainment of deaths is obtained by a family registry system and causes of death are determined from death certificates and clinical records. So far, one case of liver angiosarcoma has been confirmed.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1461,

MORTALITY STUDY OF SYNTHETIC GRAPHITE ELECTRODE MANUFACTURING WORKERS

K. Nakamura, National Inst. of Industrial Health, Dept. of Industrial Epidemiology, *2051 Kizuki Sumiyosityo, Kawasaki, Kanagawa, Japan* (D-IARC-79-351)

Studies of mortality among coke oven workers indicate that the excess of respiratory cancer is related to exposure to coal tar effluents. In the production of synthetic graphite electrodes, coal tar pitch is used as a binder for cokes (petroleum and coal). A cohort study has been carried out for the 5,025 workers who had or have been employed in all 14 electrode manufacturing plants in Japan. For the retired and employees who have left the industry, ascertainment of death is obtained from the family registry system in Japan and death certificate information is collected from the District Legal Affairs Bureau. By the end of 1974, 63 deaths from malignant neoplasms had occurred in the cohort, including 7 respiratory cancers. Follow-up continues prospectively.

SUPPORTED BY (No Supporting Organizaticn Reported funds n.a.

2.1462,

HODGKIN'S DISEASE IN NIGERIAN AND AMERICAN CHILDREN

E.G. Olisa, University of Ibadan, *Bauchi Rd., Jos, Nigeria* (D-IARC-79-438)

The main objective of this present work is to study the histological classification of Hodgkin's disease in American and Nigerian children. The study will be based on material collected from Ibadan University Hospital and Murtal Mohammed Hospital, Jos, both in Nigeria, and the few cases obtained from the Howard University Hospital and Childrens Hospital in Washington, D.C. An attempt will be made to study the natural history of this disease, particularly histological relation to other granulomatous infections, such as tuberculosis and leprosy.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1463,

CHILDHOOD LEUKEMIA IN NORWAY, 1963-1977

P.J. Moe, Universitetet i Trondheim, Dept. of Paediatrics, *7000 Trondheim, Norway, Norway* (D-IARC-79-443)

All cases of childhood leukemia diagnosed in Norway during the period 1963-1977 were collected by contacting hospitals, particularly all pediatric departments, and previously all departments of internal medicine. Information has also been obtained from the National Cancer Registry as cancer registration is compulsory in Norway. Information was obtained as to the type of leukemia, year of diagnosis and survival time. The first part of this study has already been published: Childhood leukemia in Norway from 1963-1974 with special emphasis on own material (Acta Paediatr. Scand. 65:529-533, 1976). The aim of the second part of this study is to register all current cases of childhood leukemia with emphasis on cell type, treatment regimen, results of therapy, and possible sequelae of the use of a high dose of methotrexate for almost all cases of acute lymphocytic leukemia diagnosed in Norway after 1975.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1464,

SPORADIC RETINOBLASTOMA IN RELATION TO PARENTAL AGE AND SEASONAL VARIATION

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Follow-up investigations of progeny of survivors of sporadic retinoblastoma revealed that they comprise two etiologically distinct groups, hereditary and non-hereditary. All bilateral cases belong to the hereditary group and they are due to dominant germinal mutations, while the majority (90-95%) of sporadic unilateral cases are non-hereditary, where the cause appears to be the same mutational event in the somatic (retinoblast) cells. Although a few investigations (including ours) suggest that paternal age may affect the occurrence of sporadic bilateral but not unilateral cases, the evidence is as yet not very convincing. We intend to clarify this point, together with the possible effect of seasonal variation upon the prosumed somatic mutations. Data concerning about 400 sporadic cases of retinoblastoma which occurred in 1970-1975 in Japan have already been analyzed, and new cases (approximately 100 per year) will be collected over the next several years.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1465,

SEROEPIDEMIOLOGICAL STUDIES OF HERPESVIRUS TYPE-2 AND CARCINOMA OF THE CERVIX IN ISRAEL

S. Leventon Kriss, Ministry of Health, Central Virus Lab., *P.O. Box 8255, Tel Aviv, Israel* (D-IARC-79-307)

The relationship between genital herpetic infection and squamous cell carcinoma of the uterine cervix has been substantiated by sero-epidemiological studies and by evidence of virus persistence in cervical tumor cells. Most studies proving the association between cervical carcinoma and HSV-2 were done in populations with high risk rates for this malignancy. Jewish women are at low risk for this disease. It was, therefore, considered interesting to compare the Jewish population studies with those in other demographic groups, namely Christians and Muslims in Israel.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1466,

CANCER IN THE IGBOS OF NIGERIA

W.I. Onuigbo, Medical Foundation, *8 Nsukka Ln., Uwani, P.M.B. 1098, Enugu, Nigeria* (D-IARC-79-433)

This ongoing study of the relative frequency and the characteristics of cancer cases biopsied in different hospitals serving the Igbos of Nigeria and examined at a central laboratory has resulted in the following publications: Relevance of race in management of testicular tumours (Brit. Med. J.1: 22-23, 1977); Biopsy study of hepatocarcinomas in Nigerian Igbos (Acta Hepato-Gastroenterol. 24: 24-26, 1977); Comparative study of bowel lymphosarcoma in childhood (Med. J. Australia 1; 886, 1977); Cancer of the oral cavity in Nigerian Igbos (J. Oto-Rhino-Laryngol. 39; 247-250, 1977); Clinical awareness of vulvo-vaginal metastases in choriocarcinoma (Nigerian Med. J. 8; 270-271, 1978) and Jaw tumours in Nigerian Igbos (Brit. J. Oral Surg. 15: 223-226, 1978). Work continues.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1467,

PERSONALITY VARIABLES AND STRESS EXPOSURE IN CARCINOMA OF THE UTERINE CERVIX

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The objective of the study is the collection of standardized psycho-anamnestic data and psychometric evaluations on a large population of patients affected by carcinoma of the uterine cervix. Controls comprise women with non-neoplastic lesions of the cervix, a group with various psychometric disorders and 'normals', largely composed of nurses and relatives of patients in the same age range and social class as the carcinoma group. The hypothesis is that there are differences in mortidity rate according to factors like life stress events, stress induced by the social environment, and, more generally, factors inducing anxiety and depression.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1468,

ASPECTS OF CANCER OF THE UTERINE CERVIX IN JAMAICA

V. Persaud, University of the West Indies, Dept. of Anatomical Pathology, *Kingston 7, Jamaica* (D-IARC-79-340)

The crude incidence of cervix cancer (39.4 per 100,000 per annum) in Jamaica is among the highest in the world. The university departments of pathology, social and preventive medicine and obsterics and gynecology have been undertaking studies on the incidence, aetiology, early detection and morphology of uterine cervix cancer in Jamaica. Incidence figures are obtained from the Jamaica Cancer Registry, Dept. of Pathology, U.W.I., for a well-defined metropolitan population with adequate diagnostic facilities. Early detection by cytology screening in family planning clinics has shown a prevalence of 5.7 per 1,000 women whereas the rate in a low-income, high-risk, general population of 'well' women was 18.0 per 1,000. This discrepancy appeared to be due to the fact that the family planning women were of low parity (para 0-3) and therefore were not at high risk of developing cervix cancer since both groups were matched for age, race and socioeconomic background. A retrospective interview study was carried out on 300 histologically proven cases of cervical carcinoma and 390 'well' controls matched for age, race, and social class. The controls were drawn from a low-income, high-risk general population of women who were cytologically negative for cervix cancer. The questions asked concerned their marital status, number of pregnancies, age at first pregnancy and first coitus, number of coital partners and the circumcision status of these partners and sexual hygiene. The statistically significant factors were grand multiparity, promiscuity, poor sexual hygiene and early age at first coitus and first pregnancy. Studies on the epidemiology and early detection of cervix cancer in Jamaica are still progress.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1469,

PROSPECTIVE STUDY ON THE EPIDEMIOLOGY OF GESTATIONAL TROPHOBLASTIC DISEASE IN THE NETHERLANDS

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In 1975 in Holland there were 179,155 births in a population of 13.8 millions. The total number of pregnancies is estimated to have been 250,000. Central registration of all cases of gestational trophoblastic neoplasm started in 1976. The frequency of molar pregnancies is unknown. The main objectives of the present study are to obtain information about the epidemiology of gestational trophoblastic neoplasms in the Netherlands and to improve the prognosis of choriocarcinoma by early therapy. All cases of molar pregnancy in Holland will be registered and human chorionic gonadotropin determinations on all cases of trophoblastic neoplasm will be centralized in the Radioimmunoassay Laboratory in Nijmegen.

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2.1470,

STUDY OF RETINOBLASTOMA IN JAPAN AS A POSSIBLE POPULATION MONITORING SYSTEM FOR ENVIRONMENTAL MUTAGENS

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Because an increasing number of environmental mutagens have been detected by laboratory screening methods, the need to monitor human population directly for mutational risk has been emphasized by many geneticists. Recent studies by Knudson give hope that certain malignant neoplasms might be used to assess somatic mutation rates. According to Knudson, the age at first diagnosis of these diseases may be related to the annual somatic mutation rate. Thus the data on the age at first diagnosis of unilateral and bilateral retinoblastoma have been collected throughout Japan. Since 1975 the data have been obtained by a nationwide registry of the disease in cooperation with the Ophthalmology Society of Japan. A first report suggesting an increase of mutation rate in Japan has been published (Mutation Research 30, 137, 1975). The study continues.

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2.1471,

CARCINOMA OF THE LUNG IN ICELAND - EPIDEMIOLOGICAL AND CLINICAL STUDY

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The incidence of carcinoma of the lung has been increasing over the last two decades, and there is a definite correlation with the increased sale of cigarettes which occurred some twenty years earlier. Tobacco consumption of Icelanders increased more than hundredfold during the years 1910-1949. In the period 1931-1954 only 34 cases of lung cancer were recorded, whereas during the periods 1955-1964 and 1965-1972, respectively 156 and 224 patients with lung cancer were reported. There is a preponderance of large cell carcinomas and small cell anaplastic carcinomas in this series, epidermoid carcinoma comprising only about 20%. Smoking habits are known for 75% of the patients admitted to the department of thoracic surgery: 90% of the patients with epidermoid carcinoma had been heavy smokers (20 or more cigarettes a day) for ten or more years; 80% over twenty years. The corresponding figures for the other histological types are: Small cell anaplastic carcinoma 77%; 70% over twenty years; adenocarcinoma 36%; large cell carcinoma 69%; 64% over twenty years. Only 3.5% of the patients with epidermoid carcinoma had never smoked, whereas 36% of the patients with adenocarcinoma had never smoked. In the group of patients with large cell carcinoma and small cell anaplastic carcinoma there was not a single patient who had never smoked.

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2.1472,

THE EFFECT OF CHANGING DIETARY HABITS ON ESTROGEN PROFILES IN GREECE

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Diet is one of the factors that may be responsible for the different incidence of breast cancer in urban and rural areas of Greece. If estrogen fractions are important in the aetiology of breast cancer, then diet should have an effect on the estrogen profiles. Urine and blood samples were collected from about 120 student nurses who came to Athens from rural areas to study nursing. Since the diet in the School for Nurses is different from that in the rural areas of Greece, third year students should be different from first year students with respect to estrogen profiles. Blood lipids were also measured because their relation to diet seems established.

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2.1473,

PARITY AND ESTROGEN PROFILES

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To account for the major features of the epidemiology of breast cancer, a hypothesis has been developed linking breast cancer risk to estrogen metabolism. The hypothesis postulates that women who, during the early years of reproductive life, metabolize a low proportion of their estrogen to estriol are at high risk of breast cancer during the remainder of their lives (Lancet 1: 604-606, 1969). Since age at first pregnancy is an important risk factor for cancer of the breast, a relation between parity and estrogen profiles should be expected according to this hypothesis.

APPROACH: Urine or blood samples are being collected from 150 primiparae and 150 nulliparae 15-29 years old. Estrogen profiles, other hormone metabolites and several biochemical parameters are being measured in Melbourne, Boston or Athens.

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2.1474,

ESTROGEN PROFILES IN WOMEN OF URBAN AND RURAL AREAS OF GREECE

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The incidence of breast cancer is considerably higher in the rural areas of Greece than in Athens. According to this hypothesis, young women in rural areas should have more favourable urinary estrogen profiles than women living in Athens. Urine samples were collected from about 120 young women, residents of Athens and of a rural area in southern Greece, and estrogen fractions and other hormone metabolites were measured in Melbourne or in Boston.

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2.1475,

STOMACH AND OTHER CANCERS IN POZNAN

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Following preliminary investigations to determine whether all cases of cancer have been notified as required by law, it is proposed to examine in greater detail the characteristics of cases of gastric cancer diagnosed in Poznan (population 500,000) in 1967-

1976, in particular age, sex, social class and conditions of work.

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2.1476,

PROSPECTIVE STUDY IN RELATION TO OCCUPATIONAL EXPOSURE TO VINYL CHLORIDE

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Vinyl chloride (VC), under normal temperatures and pressures of gas, can easily be polymerized to polyvinyl chloride (PVC), a white solid material. Apart from fire and explosion risk and a quickly appreciated narcotic effect, acro-osteolysis and soft tissue changes have also been described. Following an epidemiological study by Maltoni in 1974, reporting a cluster of cases of angiosarcoma of the liver in men who had previously worked as cleaners of reactors, a prospective study on VC-workers in this polymerization plant has been set up, comprising the tracing of medical data on previous VC-workers and a biannual physical and biochemical investigation of the present VC-population. Findings are related to the degree of VC-exposure as measured either by personal monitoring or fixed point air sampling.

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2.1477,

HERPES VIRUSES IN CHILDHOOD CANCER

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Groups of children with various tumor types are being tested by the indirect immunofluorescence test for the presence of antibodies to Epstein-Barr virus (EBV), cytomegalovirus (CMV), herpes type 1 and 2 and varicelia-zoster (VZ) in order to obtain information on primary infections and on frequency of reactivation or reinfection with these viruses in sick as well as healthy children. Correlation analysis of serological profile with age, sex, ethnic origin and clinical data will be carried out.

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2.1478,

CANCEROUS DISEASES OF THE LARGE BOWEL

K. Schwarz, University of Otago, Christchurch Clinical School, Dept. of Community & Preventive Medicine, *Hagley Ave., Christchurch, New Zealand* (D-IARC-79-426)

The aim of the study is to define the epidemiology of cancers in Christchurch and Canterbury against the background of the epidemiology of these cancers throughout New Zealand, and to identify the individuals and groups at risk from this group of cancers. The following factors are being investigated: demography, signs and symptoms, investigations, family and contact history, other colonic pathology and general medical conditions, pathology, postoperative course and hospitalization and surgical aspects.

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2.1479,

INTERNATIONAL CANCER MORTALITY STATISTICS

M. Segi, Segi Inst. of Cancer Epidemiology, *Yomeicho 2-5, Mizuho-Ku, Nagoya 467, Aichi, Japan* (D-IARC-78-342)

In our previous publications, statistics of cancer mortality in 24 countries were compiled from data provided directly from the central bureaus of statistics in 24 countries. Currently, we compile and analyse the statistics of international cancer mortality using the data printed in the World Health Statistics Annuals published by WHO.

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2.1480,

JAPANESE CANCER MORTALITY STATISTICS

M. Segi, Segi Inst. of Cancer Epidemiology, *Yomeicho 2-5, Mizuho-Ku, Nagoya 467, Aichi, Japan* (D-IARC-79-369)

The chronological and geographical statistics of cancer mortality in Japan are now being compiled and analyzed.

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2.1481,

MALIGNANT NEOPLASMS IN TUBERCULOSIS PATIENTS

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A unique opportunity of having two population-based registries under one roof was used for a preliminary investigation of tuberculosis and lung carcinoma which suggested that tuberculosis patients are at a higher risk of developing lung cancer. Possible causes for the high risk were discussed: scar carcinoma, the effect of large amounts of radiation (diagnostic procedures) and the carcinogenic effect of anti-tuberculosis drugs. If radiation is a cause of higher risk, the bulk of the resulting lung carcinomas will have appeared by now, as diagnostic and therapeutic procedures have changed. On the other hand, anti-tuberculosis drugs, especially isoniazid, which has been shown to have carcinogenic effects in animals, have now been in use for a probably sufficient length of time to show their specific carcinogenic effects, not necessarily limited to lung cancer, in tuberculosis patients. The purpose of the study is to re-examine the risk of tuberculosis patients of developing lung and other cancers and to look for differences in the cancer experience of tuberculosis patients according to changes in diagnostic and treatment policies. This is a record linkage study based on the Israel Cancer Registry and the Israel Tuberculosis Registry, supplemented by information from hospital and regional chest clinic records. The Tuberculosis Registry has approximately 55,000 names, starting in 1948, and also includes patients diagnosed before this date. The information on the tuberculosis patients will be extracted from individual records, from the Tuberculosis Registry, hospitals and chest clinics. Information on validation of diagnosis of tuberculosis, date of diagnosis of tuberculosis, localization of the tuberculous process, type and periods of anti-tuberculosis therapy, anatomical site and histology of cancer, date of diagnosis of cancer, activity of the tuberculosis at the time of the diagnosis of the tuberculosis and at the date of diagnosis of the cancer and cause of death will be sought.

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2.1482,

EPIDEMIOLOGICAL STUDY OF ACUTE CHILDHOOD LEUKAEMIA IN RELATION TO SEASONAL DISTRIBUTION, CLUSTERING, FREQUENCY OF CHLOROMA, G-6-PD

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Retrospective studies of acute childhood leukaemia in Greece have shown an increased occurrence of new cases during the spring months and a significant yearly variation in the percentage of non-lymphoblastic forms. The main objectives of the present study are: (1) Characterization of the seasonal distribution of acute lymphoblastic leukaemia (ALL) and acute non-lymphoblastic forms; (2) search for clustering of cases in space and time and clustering in time of cases with ALL which have a leukocyte count over 20,000 per cmm; (3) determination of the frequency of occurrence of the chloromatous form of acute leukaemia (this variant is increased in Africa and Turkey); (4) estimation of frequency of leukaemias, lymphomas, neuroblastomas and other malignant tumours among hospital admissions and of glucose-6-phosphate dehydrogenase (G-6-PD) deficiency and beta-thalassaemia trait among children with acute leukaemia (Do these traits confer increased resistance against acute leukaemia?).

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2.1483,

LEUKEMIA INCIDENCE AMONG WORKERS CHRONICALLY EXPOSED TO SOLVENTS AND CHEMICALS

M.B. Aksoy, Istanbul Universitesi, School of Medicine, Dept. of Internal Medicine, *Bayezit, Istanbul, Turkey* (D-IARC-79-558)

The development of leukemia among shoe factory workers, particularly those chronically exposed to benzene, is being examined. follow-up study covering 2-17 years has been carried out on 44 pancytopenic patients who had been subjected to high concentrations of benzene (150-650 ppm) in adhesives for periods ranging from four months to 15 years. The average benzene content of the adhesives was 50%. Leukemia developed in six of the 44 pancytopenic patients, showing evidence of a leukemogenic effect of benzene in man (Blood, 52, 285-92. 1978). Follow-up continues. A study on the occurrence of malignancies among workers exposed to vinyl chloride monomer in a petrochemical plant at Yarimca, Izmit, began in 1978. Futher studies among workers in textile indstries, where solvents and chemicals are used, and in asbestos and cement pipe factories will be undertaken during 1979 and 1980.

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2.1484,

HISTORICAL DATA BASE FOR ONE COMPANY IN THE PETROLEUM INDUSTRY

M.R. Alderson, Inst. of Cancer Research, Division of Epidemiology, *Clifton Ave., Sutton SM2 5PX, England, United Kingdom* (D-IARC-79-692)

This project will set up a comprehensive file to examine future queries about the influence of work in a particular process upon mortality from specific diseases. Specific job histories will be obtained for all individuals who have worked at two large refineries for more than one year since these refineries were established. A comprehensive job history will be abstracted and the file will accumulate at the same time data on the plants and processes at each of the refineries including designation of the major variation in the raw materials, intermediaries, and products from each process. Individuals leaving the industry will be traced and the intention is to provide death details for all individuals who have died. This file of data will be primarily used as a computer-based retrieval system to check specific queries about health-risks from various processes. The primary approach will be to relate observed mortality to expected mortality taking into account age, sex, calendar period, and location in the country.

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2.1485,

LUNG CANCER IN CHROMATE WORKERS

M.R. Alderson, Inst. of Cancer Research, Division of Epidemiology, *Clifton Ave., Sutton SM2 5PX, England, United Kingdom* (D-IARC-79-691)

This study will examine the relative risk of lung cancer in process workers in the bichromate industry, taking account of factory of employment, calendar period, and duration of employment. A group of workers initially studied in the 1950's will be followed, together with those workers who have since entered three factories in the United Kingdom. All workers leaving this industry will be traced to provide 30 yeer follow-up for some workers. Limited data will be available on the specific tasks carried out by individual workers.

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2.1486,

FILTER TIP CIGARETTE SMOKING

M.R. Alderson, Inst. of Cancer Research, Division of Epidemiology, *Clifton Ave., Sutton SM2 5PX, England, United Kingdom* (D-IARC-79-690)

This study will examine the influence of filter tip cigarette smoking in comparison with plain cigarettes upon the relative risk of lung cancer, chronic bronchitis, ischemic heart disease, and cerebrovascular disease. Two hundred patients of each sex in the age groups 35-, 45-, 55-, and 65-74 for the four diseases are being studied and equal numbers of controls will be interviewed at ten major centers treating these conditions throughout England. The data collected by trained interviewers will include information on long-term smoking patterns, place of

residence, occupation, and other confounding factors.
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2.1487,
COLLATION OF ROUTINE STATISTICS
M.R. Alderson, Inst. of Cancer Research, Division of Epidemiology, *Clifton Ave., Sutton SM2 5PX, England, United Kingdom* (D-IARC-79-693)
This project will collate, analyse, present and interpret routine mortality and morbidity statistics for England and Wales and selected other countries to provide (1) specific statistics required for particular studies carried out by the divisions of epidemiology, and (2) a background to consideration of the epidemiology and health care problems of cancer. Use will be made of national mortality (annual statistics, and decennial supplements on occupational and area mortality); incidence data (including unpublished analyses of occupation); hospital treatment data (from the hospital inpatient inquiry); workload and facilities (from health and personal social service statistics). Equivalent material from other national offices of vital statistics, WHO and IARC will be examined for selected countries. Many of the issues being considered require data from a non-malignant disease (e.g., time trends in stomach cancer in relation to large bowel cancer, peptic ulcer and other alimentary disease); statistics for about 30 non-malignant diseases will therefore be included in the project.
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2.1488,
AETIOLOGICAL FACTORS IN BREAST CANCER
M.R. Alderson, Inst. of Cancer Research, Division of Epidemiology, *Clifton Ave., Sutton SM2 5PX, England, United Kingdom* (D-IARC-79-694)
This project will explore the relationship between history of psychiatric illness, social and emotional adjustment, and exposure and reaction to defined 'life crises' and the relative risk of breast cancer. Women attending an early diagnosis unit will be interviewed and, thus, data will be available on those subsequently found to have breast cancer compared with those with benign and no overt breast lesions. Additional data will be collected from other control patients attending the hospital.
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2.1489,
MORTALITY OF MILLERS AND BAKERS
M.R. Alderson, Inst. of Cancer Research, Division of Epidemiology, *Clifton Ave., Sutton SM2 5PX, England, United Kingdom* (D-IARC-79-687)
This study will examine the mortality of a group of grain millers followed from 1961-1976 and compare their causes of death with those of bakers and the general population over this period. The 1961 census will be used to identify all individuals in the general category of food processors and the specific category of bakers and pastry cooks. These records will be examined by Office of Population Census and Survey staff to identify those who recorded their occupation as grain miller at the time of the census, together with the records for male bakers and pastry cooks. These individuals will be traced through the National Health Service Central Register to identify those who have died and obtain the cause of death.
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2.1490,
MORTALITY OF HAIR DYERS AND TINTERS
M.R. Alderson, Inst. of Cancer Research, Division of Epidemiology, *Clifton Ave., Sutton SM2 5PX, England, United Kingdom* (D-IARC-79-689)
This study will examine the mortality of a group of hair dyers and tinters followed from 1961 to 1976 and compare their causes of death. Census data will be used to identify a sample of all hairdressers throughout England and Wales; the staff from the Office of Population Census and Survey will identify individuals specifically describing themselves as hair dyers and tinters at the time of the census. These individuals will be traced through the National Health Service Central Register and for those that have died the cause of death will be released. The all-cause mortality, mortality from malignant disease and from other diseases will be examined.
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1491,
FOLLOW-UP OF PATIENTS TREATED FOR MALIGNANT DISEASE
M.R. Alderson, Inst. of Cancer Research, Division of Epidemiology, *Clifton Ave., Sutton SM2 5PX, England, United Kingdom* (D-IARC-79-688)
This study will follow large groups of patients treated by radiation to identify those dying from a second malignancy and also follow adolescents and young adults treated with increasingly powerful schedules to quantify the mortality from second malignancies and to check whether there is any evidence of a carcinogenic or teratogenic effect following conception. For both these groups of patients the original medical records will be abstracted; this will include detailed data on initial and subsequent treatment. Where patients have been followed until death, the cause of death will be obtained, whilst those known to be alive will be included, particular effort being made to trace patients presently lost to follow-up. Survivors from adolescence will be interviewed when they have reached child-bearing age, and a marital history will be obtained including data on any conception that occurs. Information about miscarriage, stillbirth, or children born with congenital abnormalities will be sought; live-born children will be followed to identify the incidence of malignancy.
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2.1492,
INFLAMMATORY BOWEL DISEASES AND CANCER
R.N. Allan, General Hospital of Birmingham, *Steelhouse Ln., Birmingham B4 6NH, England, United Kingdom* (D-IARC-79-568)
A survey is in progress to monitor the appearance of cancer in a hospital-based series of patients with chronic inflammatory bowel diseases (Crohn's Disease, coeliac disease and ulcerative colitis). The patients have been under continuous surveillance for periods of up to 30 years and the development of subsequent cancers has been recorded. The number of tumors which might be expected to occur in the series is computed from person-years of observation together with cancer incidence rates based on data from the Birmingham Regional Cancer Registry.
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1493,
INFECTION WITH HEPATITIS B VIRUS IN RELATION TO HEPATOCELLULAR CARCINOMA
A.C. Bayley, University of Zambia, School of Medicine, Dept. of Surgery, *P.O. Box 2379, Lusaka, Zambia* (D-IARC-79-1092)
Hepatocellular carcinoma is the most common tumour of Zambian men. A recent study of 19 patients treated in Lusaka and of 40 control villagers living in the Eastern Province showed that all patients and 63% of controls showed serological evidence of past infection with hepatitis B virus (HBV), usually antibody to surface antigen. The objectives of this study are: (1) To record the prevalence of HB surface antigen (HBsAG) antibody to this antigen, and antibody to core antigen in the serum of selected Zambians of all age groups; (2) to investigate serial blood samples from apparently healthy individuals with serological evidence of past or present infection with HBV; (3) to examine cord blood at birth for evidence of exposure to HBV and to follow up the babies of HBsAG-positive mothers to determine if and when serological evidence of infection develops; (4) to investigate the pattern of antibody production to surface and core antigens following exposure to infection at work (surgeons) and by transfusion (children); (5) to compare the prevalence of HBsAG and antibody to core and surface antigens in persons in villages where hepatoma has and has not been observed in the last five years; (6) to identify men with a high risk of developing hepatocellular carcinoma for regular screening. Control villages and 'hepatoma' villages have been selected close to a well established mission hospital. It is planned to attempt to obtain three serum samples from each of 500 individuals over the age of three years during a period of two consecutive years.
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2.1494,
MORTALITY PATTERN OF NICKEL PLATING WORKERS
D.C. Burges, Employment Medical Advisory Service, *Broad Rd., Birmingham B15 1DL, England, United Kingdom* (D-IARC-79-569)
A population of some 900 workers at a nickel plating factory is being studied with the assistance of the Office of Population Censuses and Surveys which will provide death certificates, to test whether there is any carcinogenic risk, particularly lung cancer, involved in decorative electrolytic nickel plating, in view of the fact that nickel has been reported as a carcinogen in other nickel industries, principally the refining of nickel. This is a 'historic-prospective' study.
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1495,
LOCAL CAUSES IN THE ETIOLOGY OF HEAD AND NECK CANCER
E.C. Inal, Ankara Oncology Hospital, *Imrahor Caddesi, Incesu, Ankara, Turkey* (D-IARC-79-553)
Local causes in the etiology of head and neck cancers (i.e., buccal mucosa, tongue, gingiva, floor of mouth, oropharynx, hypopharynx, tonsils, larynx and upper esophagus, excluding nasopharynx) are being studied. Information is sought on use of alcohol, tobacco, cleaning of teeth, kind of food taken, preferred foods, temperature at which food and drinks are taken, habit of biting the tongue or buccal mucosa and the habit of taking foreign bodies in the mouth (some drugs are retained in the mouth for a long time).
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1496,
PREVALENCE OF ASBESTOSIS, PLEURAL CHANGES AND MALIGNANT NEOPLASMS IN BLACK EX-MINERS AND FEMALE COBBERS
W.O. Harrison, South African Medical Research Council, National Research Inst. for Occupational Diseases, Dept. of Occupational Medicine, *Joubert St. Ext., Johannesburg 2001, Transvaal, South Africa* (D-IARC-79-485)
In 1973 the National Research Institution for Occupational Diseases was approached to determine the state of health of ex-employees of the asbestos mining industries, especially those using Cape crocidolite. Based at the St. Michael's Hospital at Bathlaros, near Kuruman, in the North West Cape Province, a small clinic was established, staffed by a doctor, nurse and a driver who knew the country and were well known in it. With the assistance of the Bureau of Census and Statistics mining company records were investigated. By August 1977 some 1500 ex-employees had been traced. At present attention is concentrated on investigating a cohort of ex- and current employees exposed during 1957-1962.
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1497,
EPIDEMIOLOGY OF LIVER CANCER IN DODOMA REGION
P.R. Hiza, University of Dar es Salaam, School of Medicine, Dept. of Surgery, *P.O. Box 20693, Dar es Salaam, Tanzania* (S-IARC-79-542)
Data from the Tanzania Cancer Registry show that the relative frequency of hepatocellular carcinoma in the Dodoma Region of Central Tanzania is higher than elsewhere in the country. Infectious hepatitis is endemic in the same region and the principal tribe has a high consumption of peanuts. These factors will be studied.
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2.1498,
EPIDEMIOLOGY AND PATHOLOGY OF CANCER IN MALAWI
M.S. Hutt, University of London, St. Thomas Hospital Medical School, Dept. of Morbid Anatomy, *Lambeth Palace Rd., London SE1 7EH, England, United Kingdom* (D-IARC-79-627)
All pathological specimens from Malawi for the last 10 years have been examined in St. Thomas' Hospital Unit of Geographical Pathology. Analyses of the

epidemiological features of Kaposi's sarcoma and of precancerous and cancerous lesions of the conjunctiva have been completed; studies of salivary gland neoplasms, malignant histiocytosis and solitary myeloma are under way.

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2.1499,

A STUDY OF THE RELATIONSHIP OF MALIGNANT DISEASE IN CHILDHOOD TO OTHER DISORDERS AND CHARACTERISTICS

I. Leck, Christie Hospital & Holt Radium Inst., Regional Cancer Epidem Unit, *Wilmslow Rd., Withington, Manchester M20 9BX, England, United Kingdom* (D-IARC-78-595)

The study is based on the records of the University of Manchester Children's Tumor Registry which include: (1) extensive clinical, pathological, familial and demographic data on cases of neoplasms that have been presented since 1954 in a population of approximately one million children under 15 years of age in northwest England, and (2) some comparable data for matched controls. This material is being analyzed with reference to: (1) incidence of childhood neoplasms by histological type, site, age at onset and sex; (2) distribution of cases in space and time; (3) possible variations in incidence with personal and family circumstances including incidents during the relevant pregnancy; (4) associated pathology in the children and their relatives; (5) health of long-term survivors and their progeny.

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2.1500,

DEMOGRAPHIC CANCER STUDIES IN NORTHERN SWEDEN

L.G. Larsson, Regionsjukhuset, Dept. of Oncology, *58185 Linkoping, Sweden* (D-IARC-79-525)

Northern Sweden exhibits some interesting features for geographical and epidemiological cancer studies as it contains several well separated and, from the socioeconomic and industrial point of view, different regions. There exist towns with a very low degree of industrialization, others being heavily industrialized, large rural areas and some rather specific industrial sites such as the mining districts in Norrbotten and Vaesterbotten. The study is based on morbidity and mortality data from the Swedish Cancer Registry and the Swedish Death Registry and will cover the years 1959-1971. The first part of the project involves calculation of age-adjusted incidences for different cancer sites for comparison by small geographic regions (towns, communes, parishes) in the three most northern counties (Vaesternorrland, Vaesterbotten and Norrbotten). Commune-based age-adjusted incidence rates have so far been calculated for lung cancer and female breast cancer. In both cases significant differences between communes were found which now are the subject of further studies. Incidence data for other cancers will also be produced. The findings concerning female breast cancer have been published in Swedish (Swedish Society of Medical Radiology. Proc. no.8, 1977) and will soon appear in more detailed form in English (Acta Radiol. Ther.). The findings concerning male lung cancer and female breast cancer will soon be published in Nordic Council for Artic Medical Research, report 21. An atlas containing data for all more frequent cancer types will probably be published during 1979. Work continues.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1501,

MORTALITY CHANGES AMONG ASBESTOS MILL WORKERS AND MINERS

F. Kogan, Sverdlovsk Research Inst. of Hygiene of Labor & Occup. Dis., Dept. of Industrial Hygiene in Mining & Metallurgy, *Repin 2, Sverdlovsk 620014, Russian, Union of Soviet Soc. Republics* (D-IARC-79-1082)

During the 1960's and 1970's the dust in mills in the asbestos industry significantly decreased. The objective of this study is to ascertain the influence of the improved work hygiene conditions on the level of cancer mortality.

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2.1502,

FREQUENCY OF SELECTED CANCERS - USE OF A COMPUTERIZED RETRIEVAL SYSTEM

W. Isarangkul Na Ayuthya, Mahidol University, School of Medicine, Dept. of Pathology, *Bangkok, Thailand* 7 (D-IARC-79-544)

The frequency and age distribution of the female reproductive tract cancers are being studied as part of the utilization of a computerized tumor data base designed to permit instant retrieval of selected diagnoses. This project, in the past, handled only material from Ramathibodi Hospital, but has now been extended to cover material submitted from elsewhere in Thailand. So far all the tumor data from 1974 to 1977 have been processed. After the processing of the 1978 data is completed the annual frequency and age distribution of cancers of all sites from 1974 to 1978 will be studied with an emphasis on the female genital tract cancers. With use of the SNOP coding system the frequencies of specific types of cancers can be studied in addition to the overall frequency of all cancers of a particular site. The distribution of both age and frequency will be obtained automatically.

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2.1503,

RELATIONSHIP BETWEEN CUMULATIVE DUST EXPOSURE AND DEVELOPMENT OF ASBESTOSIS AND PLEURAL CHANGES IN ASBESTOS MINERS

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This survey, one of the projects dealing with exposure to asbestos dust, currently consists of the retrospective and prospective recording of the dust exposure of 2,000 white asbestos miners. Records are updated at intervals by the particular inspector of mines of the area. The cumulative dust exposure records are correlated with X-ray changes or, if death occurs, with the findings at autopsy. The radiological appearances are read by three readers, but checks for inter-observer error are made. Correlation of the pathological changes will start during this year and, where possible, dust will be extracted from the lungs for comparison with the dust exposure records. It has not yet been possible to include black mine workers in the survey although the conversion factors to convert the mine mean into an occupational exposure have been assessed. The employment of migrant labour makes the follow-up of the black worker difficult, but more active steps must be taken to find some way of adding this large group to the survey.

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2.1504,

TUMORS IN CHILDREN - SEX- AND AGE-SPECIFIC INCIDENCE RATES IN RELATION TO HISTOGENESIS

J. Powell, Regional Cancer Registry, *c/o Queen Elizabeth Med. Ctr., Birminghan B15 2TH, England, United Kingdom* (D-IARC-79-572)

Tumors in children differ sharply from those of the adult, particularly in the systems of the body in which they most commonly occur. Examination of sex- and age-specific incidence rates (for single years from birth) indicate the well-known marked variations during the first decade of life, although from age ten onwards the difference between childhood and adult cancer becomes one of quantity rather than quality. A method of classification according to histogenesis has been developed and, since the data are from a population-based registry, variation in the age at onset appears to provide a useful model for studying the relationship between the different types of malignancy and possible aetiological factors, the organs affected depending in some types on the gestational age of exposure.

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2.1505,

EPIDEMIOLOGICAL ANALYSIS OF LARGE BOWEL CANCERS BY SUBSITE DISTRIBUTION - - AGE AND SEX PARAMETERS OF DIAGNOSIS AND SURVIVAL

J. Powell, Regional Cancer Registry, *c/o Queen Elizabeth Med. Ctr., Birminghan B15 2TH, England, United Kingdom* (D-IARC-79-573)

Variations in morbidity between the sexes and at different ages could indicate possible aetiological factors, provided there is no bias due to incomplete registration or inaccurate diagnosis. Registration in the West Midlands has been virtually complete for over fifteen years and the region has a high standard of medical care so that even in patients too advanced for treatment there are facilities for an accurate assessment of the primary site. Moreover, in a population of 5.2 million, over 2,000 cases of large bowel carcinoma are registered each year. Hence, chance variations due to small numbers are minimised. Fortunately a single anatomical site code has been in use for the whole period and the subdivisions are sufficiently fine to permit examination of incidence rates by finer divisions of the colon than is possible with the present ICD code. Preliminary examination of incidence rates by age, sex and site of primary indicates in some cases marked similarities and in others marked differences between different segments of both the colon and rectum.

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2.1506,

SERO-EPIDEMIOLOGICAL STUDY OF HEPATITIS B VIRUS AND ITS ROLE IN THE CAUSATION OF PRIMARY LIVER CANCER

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The aims of this study are to assess the role of hepatitis B virus in the causation of hepatocellular carcinoma, to assess the various subtypes of the virus in Uganda and to determine the rate of infection in relatives of patients with hepatocellular carcinoma.

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2.1507,

MULTIPLE PRIMARY MALIGNANT TUMOR SURVEY

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An analysis of population-based data, collected at the Birmingham Regional Cancer Registry, is being carried out to determine whether there is any evidence of an increased risk of a second primary over that of a first, in terms of either site-specific associations or high-risk groups. The results may help to define aetiological factors in tumour development and to identify individuals 'at risk' who will benefit from increased surveillance. The method of analysis is similar to previous surveys in that an index site is selected, and observed numbers of second primary tumours are compared with expected numbers computed from incidence rates for the regional population. Special consideration has been given to fundamental methodology related to coincidental diagnoses and to the sequence of tumours. The emphasis has been, therefore, on 'site-pair' analysis, that is on investigating each sequence for a pair of sites, in contrast to the conventional approach which considers one index site in relation to all second primary sites. A major survey of bilateral breast cancer over a period of nearly 30 years has been undertaken and the interrelationships between breast and female reproductive sites have been investigated. Current work includes analyses for lung in association with male reproductive sites, and also with bladder. Future projects will include the addition of large bowel tumours to the spectrum of paired analyses.

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2.1508,

CAUSES OF MORTALITY AND DISABILITY IN FERRO-ALLOY WORKERS

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Previous work has shown that the mortality from cancer in workers handling chrome-containing ferro-

alloys is significantly higher than in the general population. These workers had a heavy exposure not only to chrome compounds but also to polycyclic aromatic hydrocarbons (PAH), especially benz(a)pyrene. The present study aims to explore the causes of death and disability among smelters of various ferro-alloys (exposed not to chrome but to PAH), particularly from malignant lymphoma and leukaemia. The follow-up of the cohort began in 1955 and continued until 1974.

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2.1509,

MORTALITY AND CANCER MORBIDITY IN AN AREA SURROUNDING AN ARSENIC EMITTING SMELTERY

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The purpose of the investigation is to determine whether an increased mortality and/or cancer morbidity exists in an area around the Roennskaersverken smelter works in northern Sweden. Founded in 1929, this metallurgical plant, processing mainly non-ferrous metals, has, since the start of operations, used ore with a high arsenic content. This has resulted in pollution of air and water by arsenic as well as by other metals and sulphur dioxide. The investigation is in the form of cohort study. The exposed comprise the population of two parishes in the vicinity of the plant, defined from the National Census in 1960. reference population in the same part of Sweden with a similar degree of urbanization, occupational profile and age distribution was chosen. The causes of death and cancer morbidity for the two populations are to be followed up over a period of 14 years. Results from a pilot study have shown a significantly higher mortality rate for lung cancer in men in the exposed area. However, this increase was no longer significant when the occupationally exposed at Roennskaersverken were excluded. The latter showed a highly significant excess mortality from primary respiratory cancer. The smoking habits in the two populations will be studied using a case-control method.

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2.1510,

PROSPECTIVE AND RETROSPECTIVE COHORT STUDIES OF MORTALITY AND MORBIDITY AMONG SWEDISH CHEMISTRY GRADUATES

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The causes of death among chemists who belonged to a cohort of men who graduated from the School of Chemical Engineering at the Royal Institute of Technology in Stockholm during the years 1930-1960 were studied. The group was followed until the end of 1977. Results to date show a significant increase in cancers, particularly malignant lymphomas and brain and prostate neoplasms in comparison with the causes of death in the general population, as well as in a similar cohort of architects educated at the same school during the same period of time. The study is at present being continued prospectively. The surviving male chemists have been sent a questionnaire concerning exposures and health effects; the participation rate is about 85%.

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2.1511,

THE FREQUENCY OF SKIN CARCINOMA IN THE REGION OF RIJEKA (YUGOSLAVIA)

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The characteristics of 1,016 persons with cancer of the skin treated at Rijeka, Yugoslavia, in 1965-1974 have been analyzed. Representing 18% of all forms of cancer, 953 patients had solitary and 63 multiple lesions. Basal cell carcinoma was diagnosed histologically in 748 instances (67.6%), squamous cell carcinoma in 296 (26.7%) and mixed forms in 62 (5.6%). Basal cell carcinoma was more frequent in women (409), squamous cell carcinoma in men (181) due to a greater frequency of lip neoplasms (80). In 89.9% carcinomas were located on exposed parts of the body and only in 18% on covered parts. The frequency of the disease was highest among housewives (360 or 35.4%) who, in many instances, had migrated to the city from villages. There were a large number of seamen, fishermen (288 or 28.3%), laborers, longshoremen and masons. Farmers repesented only 10.2% or 104 cases. Previous trauma was noted in 314 cases (30.9%). The study continues.

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2.1512,

ECOLOGICAL AND PATHOPHYSIOLOGICAL STUDIES OF PRIMARY LIVER CELL CARCINOMA IN RELATION TO LOCAL THAI FOOD PRODUCTS

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Primary liver cell carcinoma is one of the most common causes of mortality in Thailand especially in the northeast region. The incidence rate is five times that of western countries. The age at diagnosis is generally younger than 40 and the youngest reported case was 11 years old. It is suggested that the cause may be associated with food. Plara is a fermented fish product which is prepared locally and consumed by Thai people throughout Thailand, particularly in the North and Northeast. During the preparation of plara, which is sometimes stored for a period of years, secondary and tertiary amines are probably formed and these amines may react with nitrates or nitrites which are present as contaminants in salt or water to form nitrosamines which are known carcinogens. The main objectives of the present studies are to (1) bioassay by feeding the local food product to animals to observe the toxic effects; (2) investigate, both quantitatively and qualitatively, nitrosamines, nitrates and nitrites in Thai food products and (3) study serum protein patterns and some single protein fractions such as proteinase inhibitor by polyscrylamide gel electrophoresis and immunoelectrophoresis from clinically diagnosed primary liver cell carcinoma cases compared to other hepatic diseases, such as liver cirrhosis, hepatitis and opisthorchiasis in order to better understand the pathophysiology of the disease. At the same time, the studies are designed to determine the geographic, cultural and social relationship of this cancer with the food consumption patterns of the population.

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2.1513,

FIBRE EXPOSURE, MORTALITY AND RADIOGRAPHIC CHANGES IN QUEBEC CHRYSOTILE PRODUCTION INDUSTRY

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OBJECTIVES: (1) With exposure expressed in terms of fibres per ml, averaged over time, and account taken of date of birth, age first employed, duration of employment and smoking habits to determine whether exposure discriminates between (a) men who died from selected causes and others who survived to the same ages; (b) various types of radiological outcome in men aged 45-64, employed 30 years or more. If either is so, the relative risks associated with increasing average fibre concentrations will be eliminated. (2) To determine whether and in what way the subsequent experience of chrysotile asbestos workers is related to the presence or absence in past records of (a) changes observed in routine chest x-rays taken at work, (b) impaired pulmonary function and (c) respiratory symptoms. (3) (a) To determine whether there is any important difference in the chest x-ray appearances by rate and type of change between men without other occupational dust exposure who were employed at least 10 years wholly in companies mining slip fibre or in companies mining cross fibre; (b) to describe quantitatively and qualitatively the dust and fibre exposure experienced by both groups of men.

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2.1514,

STUDY OF EPIDEMIOLOGY, SOCIOLOGY AND GENESIS OF UTERINE CERVICAL CANCER

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The northeast area of Scotland is an ideal area for epidemiological studies being centred round one main city, Aberdeen. It is possible to identify individual women screened no matter how many cervical smears they have, how many different clinics they attend or how often they move within the area. Already a very high percentage of women in the region have had one or more cervical smears. A fall in the incidence of the disease has occurred and is continuing. A marked fall in mortality rates has occurred. There have been no deaths in women under 35 years of age since 1973 during which time the death rates in England and Wales were rising. Studies continue, with special emphasis on the genesis of this disease in young women.

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2.1515,

HIGH RISK GROUPS FOR DYSPLASIA AND CARCINOMA OF THE CERVIX UTERI

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In patients with dysplasia and carcinoma of the cervix uteri, histologically proved, the age at first sexual intercourse, age at first pregnancy and parity is determined and compared with that in patients without cervical pathology to characterise the group of women with a high risk for cervical pathology in the milieu of Barcelona.

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2.1516,

CANCER INCIDENCE IN CAP VERT - SENEGAL

C. Quenum, Universite de Picardy, Faculte de Medicine, Danatomie Pathologique Lab, *12 Rue Frederic Petit, 80036 Amiens, France* (D-IARC-78-151)

This cancer registry aims to determine minimum incidence rates for cancer in the Cap Vert region of Senegal (where Dakar, the capital, is situated).

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2.1517,

EPIDEMIOLOGICAL AND CYTOPATHOLOGICAL STUDY AMONG NATAL BETHEL-CHEWING INDIANS WITH SPECIAL REFERENCE TO SUBMUCOUS FIBROSIS

J.D. Randeria, University of Durban Westville, Cancer Research Inst., *Private Bag X54001, Durban 4000, Natal, South Africa* (D-IARC-79-479)

Oral submucous fibrosis has been reported almost exclusively among Indians, especially betel/tobacco chewers. The lesion is believed to be precancerous. Qualitative and quantitative studies are being made of the Papanicolau-stained buccal smears. Epidemiological data are collected in a questionnaire at interview. Partial results of the study have been published (Proc. VI Perugia Quadrennial International Conference on Cancer. Perguia, June 1977).

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2.1518,

RELATIONSHIP BETWEEN MEASLES AND NEOPLASTIC DISEASE

D. Reid, Ruchill Hospital, Communicable Diseases Unit, *520 Bilsland Dr., Glasgow G20 9NB, Scotland, United Kingdom* (D-IARC-78-531)

To determine if persons admitted to hospital with severe measles several decades ago develop particular forms of neoplastic disease.

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2.1519,

ROYAL NAVAL DOCKYARDS ASBESTOSIS STUDY - MORTALITY PROJECT

C.E. Rossiter, Medical Research Council, Pneumoconiosis Unit, *c/o Llandough Hospital, Penarth CF6 1XW, Wales, United Kingdom* (D-IARC-79-682)

The 40,000 people working in the Royal Naval Dockyards in 1972/73 are being followed to relate their mortality, including mortality from lung cancer and mesothelioma, to history of asbestos exposure. The 7,000 men working in Devonport Dockyard on 1.1.1947 are also being followed to provide earlier indications of the effects of asbestos exposure on mortality. A group of 400 men heavily exposed to

asbestos are being followed up to relate mortality to indices of health measured in 1968.
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2.1520,

FREQUENCY AND TREATMENT OF MYCOSIS FUNGOIDES AND PREMYCOTIC ERUPTIONS

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The objective of the study is to sort out the conditions which may progress to a cutaneous reticulosis and to differentiate them from similar benign conditions; to ascertain the frequency of these conditions (the majority are from the Greater London area, but the investigators also visit a number of other areas in England to collect suitable cases); and to determine the most suitable treatment.
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1521,

HEALTH ASPECTS OF RE-USE OF WASTE WATER FOR HUMAN CONSUMPTION

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The objectives of the research programme are to determine whether there is any relationship between mortality and morbidity from chronic diseases and the degree of contamination with sewage effluent of the source from which a community draws its drinking water supply. The programme involves an epidemiological study forming part of a project being coordinated and partly undertaken by the Water Research Centre. The study involves towns in the U.K. with populations greater than 50,000 in 1965-74. The hypothesis linking cancer mortality and site-specific cancers (gastrointestinal, urinary and others) with the proportion of the population drinking re-used water (as reported from Mississippi) will be examined for the United Kingdom. Other disease outcomes will be investigated to provide a basis for formulating further hypotheses.
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1522,

CASE-CONTROL STUDY OF CERTAIN CANCERS AND EXPOSURE TO VARIOUS INDUSTRIAL ACTIVITIES IN A TOWN

A. Sjoeberg, Boliden Aktiebolag, Chemicals Division, *25100 Helsingborg, Sweden* (D-IARC-79-503)

Many malignant diseases have a far higher urban than rural incidence. Possible associations between the incidence of certain cancers and exposure to various industrial activities will be investigated and the proportion of morbidity attributable to such industrial sources elucidated. All cancer cases recorded for the town of Helsingborg (population about 80,000) in the Swedish National Cancer Register for the years 1958 to 1971 will be used for a case-control study. Two controls will be sought for each case with respect to sex, age and place of abode. Exposure is defined as previous occupation in some factory or factories or other defined activity. Employment rolls from, for example, inorganic chemical works, a rubber factory, a pharmaceutical laboratory, a shipyard or the local hospital will be studied. The exposure criteria will be as specific as possible. Resident industrial medical officers will cooperate in the project.
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2.1523,

CORRELATIONS BETWEEN MORPHOLOGY AND EPIDEMIOLOGY OF BREAST CANCER

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Within a clearly defined area and population (four Swedish counties) 181 breast cancer cases occurred during five months. For 179 of these patients epidemiological and morphological data were obtained. Epidemiological data were recorded in the same way for 179 exactly age-matched controls. Tumors were also characterized by computerized nuclear morphometry (CNM) of the cell populations in addition to conventional morphology, resulting in an objective measure of atypia, the CNM value. Conventional histopathological classification resulted in the definition of six subgroups: 62% in a 'not otherwise specified' category, 17% low differentiation (Ackerman group IV), 7% lobular, 5% mucinous, 3% papillary, 2% medullary and the rest inoperable cases (2%) or 'rare tumors' (4%). Patient-control comparison showed no significant difference in age at menarche, first birth or menopause, number of children, height, weight, obesity or frequency of diabetes or hypertension. These results differ from most earlier reports, possibly because controls were selected from the whole female population, not hospitalized patients. A family history of cancer and earlier breast disease was significantly more frequent in the patient group. Thyroid hormone level patterns suggested that the altered thyroid function in the patients was most likely due to a change in the peripheral conversion of thyroxine. Patients also had higher serum concentrations of oestrone, androstenedione and testosterone and a lower level of sex-hormone-binding globulin. No obvious differences in the epidemiological characteristics could be discerned between different conventional morphological subgroups. The CNM value was positively correlated to other biological parameters such as mitotic rate in the tumor. It also has a significantly higher reproducibility than subjective systems for classification or grading of breast cancer. Patients undergoing treatment with heart glucosides had a lower CNM value than the others.
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1524,

SILICOSIS AND LUNG CANCER

T. Tantachamrun, Chiang Mai University, School of Medicine, Dept. of Pathology, *Hue Kaeo Rd., Chiang Mai, Thailand* (D-IARC-79-548)

Lung cancer is equally common in men and women in North Thailand.

Our objectives are to study the relationship of lung neoplasms to silicosis and to the histological cell types of these tumors. The surgical and post-mortem histological material will be examined by using the polarizing microscope.
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2.1525,

VITAMIN A CONSUMPTION IN RELATION TO LUNG CANCER

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The aim is to estimate current and historical consumption of vitamin A using the information obtained from a dietary questionnaire administered to a sample of patients with squamous carcinoma of the bronchus and to compare the findings with those obtained from a larger sample of control patients with rheumatism, matched for age and sex.
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1526,

STUDY OF DEMOGRAPHIC AND TOPOGRAPHIC CHARACTERISTICS OF CANCER IN SERBIA, YUGOSLAVIA

D. Vucenic, Inst. of Public Health of the Socialist Republic of Serbia, Dept. of Statistics, *Dr. Subotica St. No. 5, 11000 Belgrade, Yugoslavia* (D-IARC-79-1090)

The frequency of malignant neoplasms within communes and districts in Serbia will be examined according to site, sex, age and other characteristics, such as occupation, category of social insurance, etc.
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2.1527,

AN INVESTIGATION INTO THE SO-CALLED PREMALIGNANT LESIONS OF THE ORAL CAVITY

C.W. van Wyk, University of Stellenbosch, Faculty of Dentistry, Dept. of Oral Pathology, *Private Bag 11, Tygerberg 7505, Cape Province, South Africa* (D-IARC-79-491)

The object of the study is to determine the prevalence, the anatomical distribution, the histopathology, the ultrastructure and histochemistry of the so-called premalignant oral lesions (leukoplakias) among different population groups in Cape province (Bantu, colored, white and Asian) paying due regard to habits, social circumstances and geographical distribution. Furthermore, a similar demographic study is being carried out on oral squamous carcinomas among the same people to make comparisons between the premalignant and malignant lesions possible. In addition all other oral mucosal lesions detected during the survey are recorded and their distribution plotted. Specific investigations are undertaken into the etiology of some, especially the atrophic lesions and lesions caused by viral infections.
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1528,

CASE-CONTROL STUDY OF THE POSSIBLE RELATIONSHIP BETWEEN ORAL CONTRACEPTIVES AND CANCERS OF THE BREAST, ENDOMETRIUM AND OVARY

M.P. Vessey, University of Oxford, Social & Community Medicine, *S. Parks Rd., Oxford OX2 6HE, England, United Kingdom* (D-IARC-79-679)

Although a great deal is known about the short- and medium-term hazards of oral contraceptives, there is still a great need to monitor possible carcinogenic effects. In this investigation, women of childbearing age newly presenting with cancers of the reproductive system at any of six London teaching hospitals are interviewed, together with matched controls. The study has been in progress for about seven years and now includes nearly 800 cases of cancer of the breast. Preliminary results concerning the first 90 cases of breast cancer were published in the British Medical Journal in September 1972 and concerning the next 232 cases in the Lancet in April 1975.
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2.1529,

THE DETERMINATION OF HIGH RISK GROUPS FOR BREAST CANCER SCREENING

B.A. Thomas, Midhurst Medical Research Inst., *Midhurst, Sussex, United Kingdom* (D-IARC-79-660)

Women aged 35 and over who have a family history of breast cancer and/or have had no viable pregnancy before that age, and/or have had a previous breast biopsy or cyst aspiration and/or in whom clinical examination is equivocal or difficult in view of nodular breasts are being screened by clinical examination with emphasis on minimal signs and mammography. Women with a clinical abnormality have the standard lateral and cephalocaudal mammographic views; the 'normal' women have single view only with breast compressed in a plane from the axilla to the xiphisternum giving a 45 degree oblique view with excellent visualization of the breast and a radiation exposure of around 0-18 rad. Detection rates are being compared with those from the screening of a similar group of women in Guildford, but using standard mammographic views for all women. To date the cancer rate in asymptomatic women is the same in the two groups. Epidemiological, clinical and mammographic risk factors are being studied.
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1530,

STUDY OF CANCER OF THE LUNG AND STOMACH, AND OF BRONCHITIS MORTALITY IN RELATION TO URBAN FACTORS

R.E. Waller, Medical Research Council, *Fulham Rd., c/o Royal Marsden Hospital, London SW3 6JJ, England, United Kingdom* (D-IARC-79-649)

This is a study based on published mortality data. One of the features of the distribution of lung cancer deaths in recent decades has been the relatively high rate in urban areas, but the pattern is changing gradually and the death rates currently experienced by recent cohorts are not much higher in urban than in rural areas, a change most marked in London. These findings are being considered in relation to the substantial changes in pollution by smoke, as well as changes in smoking habits, and possible biases introduced by selective migration. The data have been accumulated gradually, as they become available, starting with deaths in 1951, and the object is to assess the trends over a 25 year period, arranged on a cohort basis. Data from this study for the Greater London area are also being used in connection with an investigation of lung cancer incidence among London Transport workers, over a similar 25 year period. The experience of the London Transport group as a whole is being compared with

that of the general population, and incidence rates are being calculated for several job categories with a view to exploring the effects of exposure to diesel fumes.
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1531,
HORMONAL FACTORS IN THE ETIOLOGY OF BREAST CANCER
D.Y. Wang, Imperial Cancer Research Fund, Dept. of Clinical Endocrinology, *Lincolns Inn Field, c/o St. Bartholomew Hospital, London WC2A 3PX, England, United Kingdom* (D-IARC-79-650)
Results of a prospective study of the island of Guernsey, obtained in this laboratory, have shown that women who subsequently develop breast cancer have, on the average, a subnormal excretion of urinary androgen metabolites. The investigation now in progress is to examine (1) whether in a prospective study this urinary abnormality is reflected in the general circulating levels of plasma androgens, (2) plasma androgen levels in women with increased risk of breast cancer (e.g., race, familial history, age at first birth, etc.) and (3) the general androgen status in women with established breast cancer.
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1532,
ETIOLOGICAL FACTORS IN BREAST CANCER
A. Zubiri, Regional Oncology Centre, *Joaquin Orus 1, Zaragoza 10, Spain* (D-IARC-79-493)
Breast cancer is the most frequent malignant neoplasm among women in Zaragoza and the surrounding region. We will study such factors as marital status, residence, colour of the hair, eyes, skin, weight, height, blood group, educational level, antecedents of neoplasia, number of pregnancies, lactation and duration in months, previous mammary pathology, hormone treatments. The results will be compared with those obtained in groups of women of the same age who do not suffer from breast cancer.
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1533,
FREQUENCY OF CANCER OF THE UTERINE CERVIX IN DIVORCED AND WIDOWED WOMEN
J. Wakefield, Christie Hospital & Holt Radium Inst., Dept. of Social Research, *Wilmslow Rd., Withington, Manchester M2(9BX, England, United Kingdom* (D-IARC-79-658)
The records of histologically confirmed cancers and computer records of women who have had abnormal smears are being examined. The categories widowed and divorced are not separated on current record forms, and this study attempts by postal questionnaire to distinguish between the two. Preliminary findings, now being checked on a random sample of 1,200 women, suggest that most of the excess morbidity is accounted for by the divorced category.
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1534,
LONG-TERM FOLLOW-UP OF CHILDHOOD CANCER SURVIVORS
G.J. Draper, University of Oxford, Dept. of the Regius Professor of Medicine, *S. Parks Rd., Oxford OX2 6HE, England, United Kingdom* (D-IARC-79-674)
There is considerable concern about possible long-term effects of radiotherapy and chemotherapy used in treating children with cancer including the induction of second primary tumors. It has also been suggested, though at present direct evidence is lacking, that improvements in survival for certain categories of tumor, and the subsequent increase in the number of children born to survivors, will lead to the recognition that there is a genetic component in the aetiology of some of the cancers of childhood comparable to that for retinoblastoma. The Childhood Cancer Research Group is coordinating a collaborative study which will eventually include records of about 6,000 children who have been treated for cancer and survived for at least three years. These survivors will be followed up to determine the incidence of second tumors and also the incidence of abortions, stillbirths, congenital defects and malignant disease among their children. For children treated in Scotland, subsequent hospital admissions, school health records and other medical records are being studied and compared with corresponding records for a sample of controls, using record linkage. Various other long-term effects may be studied for cases from particular centres. It is planned also: (1) To carry out laboratory studies including hematological studies, cytogenetics and possibly measurement of immunoglobulins for some of the cases included in the study and (2) to establish a pathology registry for children in whom second primary tumors occur.
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1535,
THE GENETICS AND EPIDEMIOLOGY OF RETINOBLASTOMA
G.J. Draper, University of Oxford, Dept. of the Regius Professor of Medicine, *S. Parks Rd., Oxford OX2 6HE, England, United Kingdom* (D-IARC-79-673)
The objectives of this study are: (1) To determine the incidence of second primary tumors, particularly osteosarcoma, among children surviving retinoblastoma; (2) to determine whether there is an increased incidence of other cancers, either in general or of certain specific types, among the parents of children with retinoblastoma; (3) to ascertain whether, as for certain congenital defects, the incidence of this disease is related to parental age; and (4) to examine associations between congenital defect, particularly mental retardation, and retinoblastoma. About 500 case of retinoblastoma have been ascertained through hospital, cancer registries and death certificates; epidemiological and familial data are also being collected.
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1536,
CHILDHOOD CANCER REGISTRY
G.J. Draper, University of Oxford, Dept. of the Regius Professor of Medicine, *S. Parks Rd., Oxford OX2 6HE, England, United Kingdom* (D-IARC-79-672)
A registry for childhood neoplasms occurring in England, Scotland and Wales has been established with the following objectives: (1) To obtain estimates of incidence, mortality and survival rates, (2) to provide a basis for epidemiological, genetic and medical care studies, (3) to provide a service to other research workers. Registrations of cancer in children below age 15 and deaths below age 16 are reported to the Childhood Cancer Research Group by the Office of Population Censuses and Surveys, the Information Services Division of the Scottish Health Service, regional cancer registries, and clinicians. This is supplemented by clinical information derived from hospitals and general practitioner records. A classification system particularly appropriate for childhood cancer and based on the International Classification of Diseases for Oncology has been developed. Comprehensive data on incidence, mortality and survival have been analyzed and will be published by the Office of Population Censuses and Surveys. Studies currently in progress include: (1) Comparisons of survival rates for children with leukemia and Wilms' tumor included in MRC clinical trials with those for children not included, (2) the provision of treatment for children with cancer, (3) studies to determine whether there is an increased incidence of cancer in the parents of children with cancer.
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1537,
PROLONGED AND VARIABLE EXPOSURE TO ASBESTOS FIBER
J.C. Cochrane, South African Medical Research Council, National Research Inst. for Occupational Diseases, Dept. of Occupational Medicine, *Joubert St. Ext., Johannesburg 2001, Transvaal, South Africa* (D-IARC-79-480)
Ninety-two senior staff members of a large asbestos/cement company with factories spread over the country are being studied. This company manufactures asbestos/cement products, roof and ceiling sheets, insulation boards, piping and moulded goods and the staff have been exposed to all of these as well as to visits to asbestos mines. Exposure has been estimated as heavy in 17, moderate in 23 and light in 52 persons. Medical examination, including X-ray, carried out in 1973, 1974 and 1976 revealed pleural thickening in 43 and thickening with parenchymal change in 3 persons. Follow-up of the cohort continues.
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1538,
LOCATIONAL CLUSTERS AND OCCUPATIONAL RISK
P.J. Cook, University of Oxford, Dept. of Medicine, *S. Parks Rd., Oxford OX2 6HE, England, United Kingdom* (D-IARC-79-670)
The postal code of each individual in the Southwest (U.K.) Cancer Registry for a retrospective period of fifteen years is to be added to the data already coded by the Office of Population Censuses and Surveys, and the data scanned for evidence of geographical clustering of cases which might point especially to unsuspected occupational risks.
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1539,
CANCER REGISTRATION IN EAST AND CENTRAL AFRICA
P.J. Cook, University of Oxford, Dept. of Medicine, *S. Parks Rd., Oxford OX2 6HE, England, United Kingdom* (D-IARC-79-669)
Data has been collected by regular postal questionnaire to rural hospitals in Uganda, Kenya, Tanzania, Malawi and Zambia, and by establishing a cancer registrar in the major hospitals of Nairobi, Dar es Salaam, Blantyre, Lusaka and Kitwe. The data is in the final stages of analysis; incidence rates have been calculated for the towns and proportional frequencies for the rural areas; comparisons are being made between the patterns of variation for individual cancers and environmental and sociological variables.
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1540,
MORBIDITY AND MORTALITY STUDY OF BENZOTRICHLORIDE WORKERS
M.A. Cooke, Albright & Wilson Ltd., Dept. of Medicine, *P.O. Box 80, Oldbury B69 4LN, England, United Kingdom* (D-IARC-79-701)
OBJECTIVE: To assess incidence of respiratory and other neoplasms in benzotrichloride workers in view of the published work of Sakabe.
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1541,
POSSIBLE CARCINOGENIC HAZARDS OF HAIR DYE USAGE
I.K. Crombie, Regional Cancer Registry, *c/o Queen Elizabeth Med. Ctr., Birminghan B15 2TH, England, United Kingdom* (D-IARC-79-570)
The present project is a feasibility study to determine whether a larger scale investigation could usefully be undertaken. One source of data is by questionnaire to volunteers to record their pattern of usage and to form an index file for linkage with health and mortality records. The second source is from hairdressers and others whose work brings them frequently into contact with hair dyes. Again, their health and mortality records will be related to extent of exposure.
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1542,
WORK UNDERTAKEN BY THE OFFICE OF POPULATION CENSUSES AND SURVEYS, MEDICAL STATISTICS DIVISION
S.P. Donnan, Office of Population Censuses & Surveys, Medical Statistics Div., *10 Kingsway, St. Catherines House, London WC2B 6JP, England, United Kingdom* (D-IARC-78-570)
No summary has been provided to the Smithsonian Science Information Exchange.
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1543,
RETROSPECTIVE STUDY OF RISK FACTORS FOR CANCER, 1968-1978
M.D. Djordjevic, Inst. Ksenofon Sahovic, Cancer Epidemiology, *Pasterova 14, 11000 Belgrade, Yugoslavia* (D-IARC-78-1019)
Breast cancer ranks third in the mortality rates in the Republic of Serbia and the city of Belgrade. Hormone risk factors are being examined by retrospective and prospective study of patients seen at this Institute during the period 1968-1978: (1) Hormone

dysfunction as a risk factor in the development of breast cancer - prospective study. These investigations include inteview and estimation of 17-ketosteroids with histopathological verification of each case. (2) Selected variables such as menopause, menstruation, deliveries, abortions, number of children, lactation, marriage, occupation, blood group -retrospective study. (3) The role of socioeconomic status in the development of breast cancer. (4) Comparison of breast cancer frequency in the subregions of Serbia and Belgrade and monitoring of mortality statistics in Serbia and Belgrade.
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1544,

OESOPHAGEAL CANCER STUDIES IN THE CASPIAN LITTORAL OF IRAN - RESEARCH IN AREAS OF EXTREME DIFFERENCES IN RISK

J. Kmet, University of Tehran, Inst. of Public Health Research, *Tehran, Iran* (D-IARC-79-287)
Work is in progress for detailed studies of the interplay between malnutrition, specific organ and tissue susceptibility and repair and immune response in well defined high and low risk groups. Population genetic patterns will be assessed as well as immunogenetic background. The possible effect on oesophageal tissues of opium tar, an exposure widespread in this and other parts of the country, will be examined. Food is being investigated for fungal contamination and the significance of extraneous seeds in wheat assessed. Post mortem tissue from high incidence areas is being examined and endoscopy offered to a high risk population.
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1545,

SHORT-TERM VARIATION IN PRE-NATAL CANCER RISK

J.F. Bithell, University of Oxford, Dept. of Biomathematics, *S. Parks Rd., Oxford OX2 6HE, England, United Kingdom* (D-IARC-79-667)
An analysis has been undertaken in which all deaths from malignant disease of British children between 1953 and 1971 have been tabulated by month of birth and age at death. Comparative 'expected' numbers have been computed with allowance for survey coverage, cohort size and secular trends. A program has been developed which is designed to correlate these series of observed and expected numbers in an appropriate manner with any time-varying factor of interest. A study of the temporal association with influenza and poliomyelitis incidence has been completed; the data are available for the analysis of any monthly observations that may be of etiological interest or significance.
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1546,

CANCER MORTALITY IN 11,121 MALES BORN 1903-1928 - A COMPONENT OF A YUGOSLAVIAN CARDIOVASCULAR DISEASE STUDY (ABBREV)

D. Kozarevic, Inst. of Chronic Diseases & Gerontology, Dept. of Chronic Diseases, *Slobodana Penezica 35/2, Belgrade, Yugoslavia* (D-IARC-79-1087)
The Yugoslavia Cardiovascular Disease (CD) study was initiated in 1961-1963 in two geographical areas in Yugoslavia (Tuzla and Remetinec). The study population comprised 11,121 males, both urban and rural residents, aged 35-64 at the initial examination in 1964. This population was subsequently re-examined by the same study teams on two occasions, the last time seven years following the initial examination. The methodology and results were compared with those of the Framingham Study, USA (J. Chron. Dis., 29:405-411, 1976 and Am. J. Epidem., 104, 133-140, 1976). Mortality follow-up for the cohort is essentially complete. The centralized mortality register makes it possible, in principle, to identify the death of any specific person occurring within the country. The re-examination of the cohort provided means to check the completeness of this mortality follow-up and update the mortality lists. There is a distinct excess of cancer mortality in the Yugoslavian study population, the age-adjusted rate being 60% higher than in Framingham. The most striking excess is for stomach cancer which accounts for a vastly greater proportion of cancer deaths in Yugoslavia (23.2%) than in Framingham (3.7%). As in other populations, this excess appears to be accompanied by a lower mortality from cancer of the large intestine. If the age-adjusted mortality for cancer is expressed as a percentage of the total age-adjusted mortality, Framingham and United States mortality are very similar whereas cancer mortality in the Yugoslavian study areas is higher than in the country as a whole. There is a strong likelihood that the Yugoslavian CVD study areas have higher than the average cancer mortality for the country. These findings are being further investigated.
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1547,

MORTALITY AND MORBIDITY SURVEY OF THE OCCUPATIONAL RISK OF ETHYLENE-IMINE

A.M. Thiess, Badische Analin & Soda Fabrik Ag, Werksaerztliche Abteilung, *Brunckstrasse 56, 6700 Ludwigshafen, Federal Republic of Germany* (D-IARC-79-224)
This study is to assess cancer incidence in occupational risk groups as suggested by carcinogenic effects of ethylene-imine observed in animal experiments. The chemical workers over-exposed to the substance are followed up for mortality experience (cause of death) and for morbidity (as far as data are available). The follow-up includes careful tracing of persons who either retired or resigned.
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1548,

BRITISH RUBBER MANUFACTURERS' ASSOCIATION HEALTH RESEARCH PROJECT

H.G. Parkes, Regional Cancer Registry, *c/o Queen Elizabeth Med. Ctr., Birminghan B15 2TH, England, United Kingdom* (D-IARC-79-571)
The aim of this study is to examine the health records of workers in the British rubber industry and to compare their mortality experience with that of the general population. All major type companies are included, together with some associated products. The study also compares the experience of three distinct cohorts of entry to the industry - first for those who entered the study between 1946 and 1950, the second between 1951 and 1955, and the third between 1956 and 1960. Although the main aim of the study is to investigate possible excesses of cancer hazards, all causes of death are recorded and certain other groups of causes are being examined. It is hoped to be able to associate any high risk areas with the results of environmental monitoring tests that have been made in the last year or so and with such details as can be obtained of past conditions in each factory. Analysis of the results to date has shown a small, but significant, excess of malignant disease of the stomach and of the lung, particularly in recent entry cohorts. Except for the first entry cohort there is no raised incidence of bladder cancer. This is in line with the banning of the use of 2-naphthylamine in 1949. Detailed studies of the conditions of work in those areas which show an excess of malignant disease in each factory are now being made and a further follow-up of mortality records is being undertaken.
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1549,

SCREENING PROGRAM FOR AN EARLY DIAGNOSIS OF PRIMARY CARCINOMA OF THE LIVER - INVESTIGATION OF INCIDENCE RATES OF PLC AND LIVER CIRRHOSIS

W. Weiss, Krankenanstalt Rudolfstiftung, Dept. of Medicine, *Juchgasse 25, A1030 Vienna, Austria*
OBJECTIVE: Strengthening of our hypothesis that primary liver carcinoma (PLC) ranges among the ten most frequent malignant tumor diseases in Austria.
APPROACH: Prospective study (6 years) to improve the clinical significance of our screening program for obtaining early diagnosis of PLC (alpha-1-fetoprotein (AFP) determination in the serum, two-step liver scintigraphy with 99m-Tc-S-colloid and 67-gallium citrate).
Investigation of the importance of hepatitis-B antigen in the pathogenesis of PLC in Austria.
PROGRESS: Our study started in Jan. 1973, and is planned prospectively to last until Jan. 1979. During the first 4 years we registered 108 patients with PLC in our hospital. Intra vitam diagnostic efficiency increased from 34% to 85%.
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1550,

NON-HODGKIN'S LYMPHOMAS IN CHILDREN

L.I. Schwartz, Hospital de Ninos de Buenos Aires, Dept. of Pathology, *Gallo 1330, 1425 Buenos Aires, Capital Fed, Argentina* (D-IARC-79-4)
From 1965 to 1977 a total of 140 children with non-Hodgkin's lymphomas attended the Oncology Unit of the Children's Hospital de Buenos Aires. A male preponderance was found and the peak age was five years. The most frequent location was the abdomen, in particular the ileocaecal region. The histological pattern in a high percentage of cases was the diffuse poorly differentiated lymphocytic form. The main objectives of future epidemiological research will be detection of primary immunodeficiency disorders and evaluation of the frequency of herpes and/or other virus infections.
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1551,

TIME TRENDS IN ALCOHOL CONSUMPTION AND ALIMENTARY TRACT CANCER MORTALITY IN AUSTRALIA

A.J. McMichael, Commonwealth Scientific & Industrial Research Org., Div. of Human Nutrition, *Kintore Ave., Adelaide, S. Australia 5000, Australia* (D-IARC-79-7)
Australia has a high consumption of alcoholic drinks, by international standards. Further, there has been considerable variation, both in amount and type of drink, during this century. By analysis of sex-age-specific time trends in cancer mortality in this century, in the light of consumption time trends for alcohol and cigarettes, the aetiological contribution of these two factors is being assessed for cancers of the oropharynx, oesophagus, colon, rectum and, particularly, the larynx. Specific attention is being paid to cohort analysis of the data. Case-control studies for cancers of the large bowel and the larynx are now being planned. The large Greek migrant population in Australia holds promise for case-control studies of cancer of the rectum, in view of the low incidence rates reported for Greece.
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1552,

EPIDEMIOLOGICAL STUDY OF CANCER IN ALGERIA 1946-1955 AND 1966-1975

A. Yaker, Centre Hospitalo Universitaire Mustapha, Laboratoire Central dAnatomie Pathologique et de Cytologie, *Algiers, Algeria* (D-IARC-79-1)
Data on histologically diagnosed cases of cancer are collected from pathology laboratories in Algiers, Oran and Constantine which cover the whole country. This includes: histopathological diagnosis; site; age; sex; ethnic group and geographical distribution. The relative frequency will be studied for two ten-year periods. If feasible, minimum incidence rates will be calculated and high risk groups determined as part of planning for a national program of cancer control.
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1553,

RELATIONSHIP BETWEEN BRACKEN INFESTATION AND CANCER MORTALITY IN VICTORIA, AUSTRALIA

R.K. Scragg, Commonwealth Scientific & Industrial Research Org., Div. of Human Nutrition, *Kintore Ave., Adelaide, S. Australia 5000, Australia* (D-IARC-79-9)
Rural Victoria has areas of bracken fern infestation. The mortality from all types of cancer is being compared between the populations living in bracken and non-bracken areas. Prior epidemiological and experimental research has indicated an increased risk of bladder cancer and bowel cancer in association with the ingestion of bracken fern.
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1554,

RELATIONSHIP BETWEEN LEVELS OF NITRATE IN DRINKING WATER AND CANCER MORTALITY

R.K. Scragg, Commonwealth Scientific & Industrial Research Org., Div. of Human Nutrition, Division of Human Nutition, *Kintore Ave., Adelaide, S. Australia 5000, Australia* (D-IARC-79-10)
Environmental nitrates in water, by their bacterial conversion to nitrosamines, are thought to be associ-

ated with an increased mortality from cancer, especially stomach cancer. The Southeast of Australia, in particular the State of Victoria, has communities with high levels of nitrate in their drinking water. The type-specific mortality rates for all cancers are being compared in the high and low water nitrate areas of rural Victoria.
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1555,

SURVEY OF SMOKING RATES AND ATTITUDES TOWARDS SMOKING AMONGST PROFESSIONAL GROUPS

D.J. Hill, Anti Cancer Council of Victoria, *90 Jolimont St., East Melbourne, Victoria 3002, Australia* (D-IARC-79-18)
The objectives of this study are to study the relative patterns of mortality from tobacco smoking-induced diseases amongst medical practitioners, dentists and lawyers in Australia and the smoking rates and attitudes towards tobacco smoking amongst members of these professions in the State of Victoria.
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1556,

DESCRIPTIVE STUDY OF MALIGNANT MELANOMA IN WESTERN AUSTRALIA

B.K. Armstrong, Western Australian Public Health Dept., *60 Beaufort St., Perth, W. Australia 6000, Australia* (D-IARC-79-26)
Preliminary studies indicate that Western Australia has a high incidence of malignant melanoma of the skin. In this investigation detailed demographic, site and histological data are being collected on all cases of melanoma of the skin diagnosed in Western Australia in the years 1975 and 1976 (some 500-600 cases).
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1557,

INCIDENCE OF CANCER IN WESTERN AUSTRALIA

M.M. Lugg, University of Western Australia, *Perth, W. Australia 6009, Australia* (D-IARC-79-28)
Western Australia has a diverse climate over its 1,000,000 square miles of area, and a scattered population of approximately 1,000,000. This population has remained relatively stable, making possible extensive epidemiological analysis, including long term follow-up. Cancer incidence, by site, age, sex, geographic location of patient, work history, and detailed treatment for three months following diagnosis is currently being analyzed.
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1558,

THE EVALUATION OF CENTRAL CANCER REGISTER BASED UPON HOSPITAL, DEATH AND PATHOLOGY STATISTICAL SYSTEMS

M.M. Lugg, University of Western Australia, Dept. of Public Health, *Perth, W. Australia 6009, Australia* (D-IARC-79-29)
Western Australia has a diverse climate over its 1,000,000 square miles of area, and a scattered population of approximately 1,000,000. This population has remained relatively stable, making possible extensive epidemiological analyses, including long term follow-up. The present cancer register uses as data sources hospital discharge summaries, death registrations, pathology reports and radiotherapy attendances for locating patients with cancer. The current study attempts to define how complete the 'case finding' is using these methods.
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1559,

CARCINOMAS OF THE URINARY TRACT AND ASSOCIATION WITH ANALGESIC ABUSE

G. Duggin, Royal Prince Alfred Hospital, Renal Unit, *Missenden Rd., Camperdown, Sydney, N.S.W. 2050, Australia* (D-IARC-79-32)
The aim of the study is to determine the incidence of carcinomas of the urinary tract in patients who abuse analgesics, particularly those containing aspirin, phenacetin, caffeine, paracetamol and salicylamide. Patients studied will be those referred to Royal Prince Alfred Hospital with analgesic-induced renal disease (analgesic nephropathy) or those patients known to abuse analgesics. This group of patients will be followed prospectively to determine the frequency and type of carcinomas of the urinary tract and which analgesic is specifically associated with the development of these carcinomas. It is anticipated that between 50 and 400 such persons will be followed. Controls will be age- and sex-matched patients with comparable renal disease, who do not consume analgesics, attending the same clinic.
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1560,

DYSPLASIA OF THE UTERINE CERVIX

V.F. Oliveira, Ministerio da Saude, Gynecol. Cancer Prev. Service, *295 V. Barcelona, Sao Paulo 09500, Sao Paulo, Brazil* (D-IARC-78-56)
This study of dysplasia of the uterine cervix is based on a follow-up for a period of seven years (1970-1977). Participants were recruited on the basis of cytological results of suspicious malignancy (Papanicolaou Grade III) or biopsy evidence of dysplasia. Associations between dysplasia and skin color, age, onset and frequency of sexual activity, parturition, and type of contraceptives employed and period of use are being examined. The effect of treatment is also being examined.
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1561,

THYROID CANCER AND ENDEMIC GOITER

G. Riccabona, Leopold Franzens Universitat Innsbruck, *Innrain 52, 2 6 Universitatsstrasse, A6020 Innsbruck, Austria* (D-IARC-79-38)
For decades a possible correlation between endemic goiter and thyroid cancer has been discussed. So far only contradictory evidence has been obtained, perhaps due to the fact that epidemiological data from endemic goitre areas in developing countries are insufficient. The present study includes epidemiological data from western Austria (about 90 percent of thyroid cancer cases from this area seen in this department) where extensive studies on the incidence of endemic goiter have also been carried out. These figures will be compared with relevant data from other countries all over the world.
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1562,

SMOKING AND LUNG CANCER

M. Kunze, Universitat Wien, Inst. of Hygiene Social Medicine & Epidemiology, Arbeitgr Sozialmed & Epidemiol, *Kinderspitalgasse 15, 1095 Vienna, Austria* (D-IARC-79-39)
This epidemiological investigation compares lung cancer mortality and tobacco consumption. The nature of the tobacco used as well as chemical content will be examined, and the influence of these various products on observed differences in national lung cancer risks determined. The influence of social and economic factors as well as occupation, education and smoking habits will be ascertained.
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1563,

KIDNEY CANCER AND TOBACCO CONSUMPTION

C. Vutuc, Universitat Wien, Inst. of Hygiene Social Medicine & Epidemiology, Sozialmedizin & Epidemiologie, *Kinderspitalgasse 15, 1095 Vienna, Austria* (D-IARC-79-40)
The aim of this retrospective survey is to determine if smoking causes kidney cancer. The emphasis will be on cancers of the renal pelvis - about 150 such cases will be studied - although cancers of the renal parenchyma will also be included. For each case two matched controls with non-tobacco selected disease will be interviewed. The results of tobacco smoking in both cases and controls will be compared with data from the Austrian population collected in 1972 and 1977.
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1564,

UTERINE CANCER - COMPARATIVE STUDY OF URBAN AND RURAL WOMEN

J.C. Machado, Instituto Brasileira de Cont. Cancer, *Av. Alcantara Machado, Sao Paulo 2576, Sao Paulo, Brazil* (D-IARC-79-54)
The Instituto Brasileiro de Controle do Cancer (IBCC) in collaboration with Fundacao Centro de Pesquisa de Oncologia (FCPO) undertakes a programme for uterine cancer detection and prevention in large female population. Cytological tests are made on all women registered in the programme. Colposcopy and biopsy follow if dysplasia or carcinoma are detected on the first screening. Participants are interviewed and information on socioeconomic status, age, number of children, etc. is collected. The main objective is to make a comparative study of the prevalence of and conditions that contribute to uterine cancer in urban and rural women.
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1565,

INCIDENCE OF BREAST CANCER IN CANADIAN INDIANS AND ESKIMOS CORRELATED WITH THEIR CHANGING LIFE-STYLES

M.S. Beare, Canadian Dept. of National Health & Welfare, Medical Services Branch, *401 Toronto Dominion Tower, Edmonton Centre, Edmonton, Alberta, Canada* (D-IARC-79-60)
Cancer of the breast was considered to be unknown in Canadian Indians and Eskimos 25 years ago. It is still rare in Eskimos but is fairly common in Indians, though probably less common than in the general Canadian population. The question of whether there has been a real change in incidence is being studied, and, if so, whether the change is associated with the marked changes in life-style of the native people in recent years. Of particular interest is whether prolonged breast feeding (of about two years) can be shown to have protected women from breast cancer. Diet is also being examined.
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1566,

CHILDHOOD CANCER REGISTRY AND INVESTIGATION OF THE AETIOLOGY OF CHILDHOOD CANCERS

M.G. Grace, Dr. W.W. Cross Cancer Inst., Biostat Anal & Cancer Registry, *11560 University Ave., Edmonton, Alberta, Canada* T6G 1Z2 (D-IARC-78-67)
A childhood cancer registry will be established to include all children (persons aged less than 20 at the time of diagnosis) in the Alberta Cancer Registry. Information will be collected, whenever possible directly from the patient or family, on the family history of cancer, other diseases, places of residence and schooling, and exposure of parents and child to drugs or noxious chemicals. This data will be compared with information available for the whole province and analyzed for any relationship between these factors and total cancer incidence or cancer of particular sites or types.
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1567,

GEOGRAPHICAL DISTRIBUTION OF MALIGNANT NEOPLASMS OF THE BRAIN IN CANADA

I.C. Neutel, University of Ottawa, Faculty of Medicine, Dept. of Epidemiology & Community Medicine, *1145 Carling Ave., Lady Grey Bldg., Ottawa, Ontario, Canada* K1Z 7K4 (D-IARC-79-85)
Malignant neoplasms of the brain have received very little epidemiological attention in spite of the low survival rate and their occurrence in childhood or early adulthood. A few studies dealt with their general distribution in the United States and Denmark and only one studied the geographical distribution in relation to environmental factors. This project will study the geographical distribution of brain tumours across Canada using both mortality and incidence data by calculating age-adjusted mortality and incidence rates for census divisions. These rates can be related to various environmental variables known for the census divisions. In addition, this study will investigate the occupations recorded for a select group of brain tumour deaths and compare them with a matched group of controls. Of special interest will be occupations likely to involve chemical or radiation exposure. Prenatal radiation has been shown to increase the risk of childhood cancer of the central

nervous system, and the same situation may apply to adult brain cancer.
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1568,
URBAN MORTALITY STUDY
D.T. Wigle, Canadian Dept. of National Health & Welfare, Lab. Centre for Disease Control, *Tunneys Pasture, Ottawa, Ontario, Canada* K1A 0L2 (D-IARC-79-89)
Death certificates for all deaths during 1971 among residents of the ten largest census metropolitan areas in Canada have been searched to identify the census tract of residence (census tracts are small statistical areas established in large urban communities, usually have populations between 2,500 and 8,000, are relatively uniform socio-economically, have permanent boundaries and are as compact as possible). Death rates by sex, age and cancer site will be calculated for census tracts aggregated according to characteristics, such as family income. Correlations between mortality rates and census tract characteristics will be sought.
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1569,
INDUCIBILITY OF ARYL HYDROCARBON HYDROXYLASE IN CULTURED LYMPHOCYTES FROM LUNG CANCER PATIENTS AND CONTROLS
W. Kalow, University of Toronto, Dept. of Pharmacology, *92 College St., Toronto, Ontario, Canada* M5S 1B2 (D-IARC-79-100)
The overall objective of this study is to assess the potential usefulness of the lymphocyte aryl hydroxylase test as a tool for epidemiological studies on genetic susceptibility to chemical carcinogens. The activity and inducibility of AHH in lymphocytes vary widely between subjects. Kellermann and co-workers (1973) suggested a higher susceptibility to lung cancer, caused by carcinogens in cigarette smoke, in subjects with higher inducibility of this enzyme. Since the inducibility of AHH is genetically controlled, some subjects appeared to be genetically predisposed to this type of cancer. However, the test determining the AHH inducibility in lymphocytes was never applied in preventive medicine; there has been criticism of the reproducibility of the method and the implications of the results. Nevertheless, as several recent papers supported a relationship between agents, patients with lung and other types of cancer and healthy volunteers are being studied in respect of the distribution of AHH inducibility. The method is being improved to make it more suitable for testing cancer patients.
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1570,
PROSPECTIVE STUDY ON THE FREQUENCY OF MALFORMATIONS AND SPONTANEOUS ABORTIONS IN NORTHERN MORAVIA
J. Kucerova, Krajaska Hygienicka Stanice, *Partyzanske Nam. 7, Ostrava 72892, Czechoslovakia* (D-IARC-79-125)
The possible link between carcinogenesis and mutagenesis has been stressed during recent years. Because of an increase in malformations detected during 1972-1975 in some highly polluted areas, a prospective study was launched in 1977, with the objectve of analyzing about 10,000 pregnancy records per year to detect possible relationships between birth defects (malformations and spontaneous abortions) and occupational and/or non-occupational exposure of parents to environmental carcinogens.
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1571,
CASE-CONTROL STUDY OF AETIOLOGICAL FACTORS IN HEAD AND NECK CANCER
J.M. Elwood, Cancer Control Agency of British Columbia, Epidemiology Unit, *2656 Heather St., Vancouver, British Columbia, Canada* V5Z 3J3 (D-IARC-79-110)
The objective of the study is to evaluate the association of alcohol, tobacco and occupation to cancer of the head and neck, and to determine whether such exposures are independent or interactive. It is planned to interview all new patients with these tumors seen at the Cancer Control Agency of British Columbia (which includes about 90 percent of new cases in the province) over a 3 1/2 year period, to give a total of about 350 cases. The control group will consist of an age-and sex-matched group of patients with other tumors chosen on the basis of lack of association with the main exposures, for example breast and gynecological cancer in women, chronic lymphomas and multiple myeloma, and prostatic tumors in men. The interview will provide information on a lifetime occupational history and quantification of current and past tobacco and alcohol usage habits.
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1572,
MALIGNANT LYMPHOMA IN COLOMBIA IN RELATION TO EPSTEIN-BARR VIRUS
A. Duenas Lehmann, Universidad del Valle, Dept. of Microbiology, *Apartado Aereo 2188, Cali, Colombia* (D-IARC-79-117)
The objective of this study is to explore the role of Epstein-Barr virus (EBV) in Hodgkin's disease and other malignant lymphomas in Colombia. Serum samples are obtained from patients and appropriate controls, and malignant lymph nodes from biopsy or autopsy. The samples are immediately frozen and stored in low temperatures for periodic shipment to laboratories in the United States for detection of viral markers in both serum and tissues. There is as yet no indication of an association between EBV infection and malignant lymphoma in Colombia, but at least 50 cases will have to be examined before any conclusion can be drawn.
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1573,
LUNG CANCER IN CUBAN WOMEN
O. Joly, Instituto de Oncologia y Radiobiologia, *Calle 29 y E Vedado, Havana 4, Cuba* (D-IARC-79-120)
The objective of this restrospective study is to document lung cancer incidence among Cuban women as a function of smoking habits and other life-style factors. The mortality rate for women living in Cuba is one of the highest in the Western hemisphere. The study incorporates a case-control design, using a neighborhood and hospital control for each lung cancer case. Data will be obtained for types of tobacco used, number of years of smoking, pattern of smoking, drinking habits and demographic information. Central data analyses will be performed at Enviro Control Inc., Rockville, Md. USA.
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1574,
ENDOMETRIAL CARCINOMA
V. Ottis, Inst. for Postgraduate Medical Education, *Limbova 20, Bratislava 80946, Czechoslovakia* (D-IARC-78-110)
Fifty years ago cancer of the endometrium was rare in Slovakia, but has continuously increased since 1955. Previously cancer of the cervix uteri was the most common uterine cancer. At present the ratio of the cancer cervix/endometrium is 1.2:1. Fifty years ago Slovakia was not very industrialized, but during the past 30 years has become so, with all that follows, i.e., longer expectation of life, increased living standards, smaller families and an increasing use of hormone preparations. The relationship between the increase of endometrial cancer and the consequences of the changes in lifestyle enumerated above is being investigated.
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1575,
GEOGRAPHICAL PATTERNS OF CANCERS IN SLOVAKIA
I. Plasko, Slovak Akademie Ved, Inst. of Experimental Oncology, Dept. of Epidemiology, *Ul. Csl. Armady 21, Bratislava 88032, Czechoslovakia* (D-IARC-79-122)
Geographical variations of cancer mortality and morbidity within Slovakia - the eastern part of Czechoslavakia - are being examined. Two five year periods 1968-1972 and 1973-1977 will be compared. The relation to the age, sex, rural, urban and/or industrial areas will be studied. The objective of this investigation will be to collect the basic data for the start of a population-based cancer registry, to evaluate the validity of cancer notification and to establish current geographical patterns of cancer mortality and morbidity as a basis for further analytical studies.
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1576,
GEOCHEMICAL ENVIRONMENT AND OCCURRENCE OF MALIGNANT TUMORS IN SELECTED DISTRICTS OF CZECHOSLOVAKIA
V. Jilek, Inst. of Mineral Raw Materials, Dept. of Technology, *Vitezna 425, Kutna Hora 28403, Czechoslovakia* (D-IARC-79-124)
The chemical composition and radioactivity of drinking waters in selected districts of Czechoslovakia are being studied in relation to the observed differences in the occurrence of malignant tumors. Maps will be made using the data obtained, the amounts of chemical elements ingested by the population calculated and the relation between the geochemical environment and mortality from malignant tumors evaluated statistically. The levels of some trace elements in selected organs of the human body (necropsy material) will be determined by neutron activation analysis and atomic absorption spectrophotometry.
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1577,
INCIDENCE OF CANCER AMONG SELECTED GROUPS IN DENMARK
J. Clemmesen, Finseninstitutet, Danish Cancer Registry, *Strandboulevarden 49, DK2100 Copenhagen, Denmark* (D-IARC-79-129)
A series of studies of cancer risk among selected groups and occupations is being undertaken. These will include the distribution of cancer among hairdressers, and risk of thyroid cancer among patients with thyroid struma, the geographical distribution of leukaemia and Hodgkin's disease in Denmark and a case-control study of cancer of the bladder.
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1578,
MALIGNANT POTENTIAL OF ORAL LICHEN PLANUS
P. Holmstrup, University Hospital, Dept. of Oral Medicine & Oral Surgery, *Rigshospitalet, DK2100 Copenhagen, Denmark*
The objective of this study is to obtain information on the potential for malignant transformation of oral lichen planus lesions over a 15-year period. 700 patients with histologically verified oral lichen planus are being followed. The patients are asked about past and present oral symptoms and smoking habits. The location and type of oral lichen planus lesions are registered and photographed. After the first examination the patients are seen once a year, except those with epithelial dysplasias who are seen every three months. At the follow-up examinations all changes in the lesions are recorded, photographed and, if necessary, biopsied. So far, five patients have been found with a simultaneous occurrence of lichen planus and erythroplakia. The influence of smoking on the lesions will be studied.
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1579,
CASE-CONTROL STUDY ON THE OCCUPATIONAL AETIOLOGY OF PARANASAL SINUS CANCER
S.G. Hernberg, Inst. of Occupational Health, Dept. of Epidemiology & Biometry, *Haartmaninkatu 1, SF00290 Helsinki 29, Finland* (D-IARC-79-149)
This is a pilot study in which all 52 cases of cancer of the paranasal sinuses recorded during 1970-1973 and their age-matched controls have been identified in the Finnish Cancer Registry. After confirming the diagnoses in the hospitals, questionnaires concerning the occupational histories will be sent to the patients or their relatives. The present study will be followed by an Inter-Scandinavian prospective case-control study.
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1580,

AETIOLOGY AND PROGNOSIS OF PLEURAL CALCIFICATION

T.J. Partanen, Inst. of Occupational Health, Dept. of Epidemiology & Biometry, *Haartmaninkatu 1, SF00290 Helsinki 29, Finland* (D-IARC-79-150)

This project concerns the asbestos-related aetiology of pleural calcification and, from the standpoint of cancer, the prognosis of these calcifications. The study of prognosis has been directed mainly toward mortality from neoplasms in a cohort of 608 persons with pleural calcification and 608 persons without such calcification at the start of follow-up. The cohorts were formed in 1972 in connection with compulsory chest radiography of the populations of three communities: one with an anthophyllite mine and mill, another with an asbestos cement plant and a third 'average' urban community. Persons working in these two plants have been identified. The cohorts were matched by age and sex and were between 20 and 74 years of age at that time. By the end of 1976, 18 deaths from neoplasms were observed in the calcification group, and 14 in the reference cohort. For malignant neoplasms of the respiratory tract, the figures were 10 and 8 respectively, and for the neoplasms of the lymphatic and haematopoietic systems, 3 and 0. Follow-up will be extended for at least five more years.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1581,

EPIDEMIOLOGICAL STUDIES OF CANCER IN TWINS

I.V. Rantasalo, Helsingin Yliopisto, Dept. of Public Health Science, *Fabianinkatu 33, SF00290 Helsinki, Finland* (D-IARC-79-151)

The study of twins can illuminate the relative role of different environmental factors in cancer aetiology. The Finnish Twin Registry contains data on some 34,500 adult twins of the same sex. Zygosity was determined by questionnaire in 1975. Record linkage with the Finnish Cancer Registry for cancer incidence prior to 1975 has been carried out. Since data on zygosity for many of the cases in this retrospective study were not available, cancer incidence in twins and risk of cancer among co-twins of cancer cases was compared for twins vs. non-twins using 7,332 singletons as controls. The study will be continued for several years until there are enough cases available to provide data on zygosity. The work already carried out has been used as the basis of publications on this subject.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1582,

REGISTER OF WORKERS OCCUPATIONALLY EXPOSED TO TRICHLOROETHYLENE

S.A. Tola, Inst. of Occupational Health, Dept. of Epidemiology & Biometry, *Haartmaninkatu 1, SF00290 Helsinki 29, Finland* (D-IARC-79-156)

A cohort of 1,881 workers has been identified from the list of workers whose urinary trichloroacetic acid has been measured at the Institute of Occupational Health. The cancer mortality of this group will be studied. Since most of the workers are relatively young (70% less than 50 years old), a prospective follow-up study will be undertaken after registering the exposure level and current vital status of the workers. The data will be analyzed by comparing the observed cancer mortality rates to those expected, as calculated from the national figures. It is also possible to compare the mortality figures with those of other occupational cohorts which are registered at the Institute of Occupational Health (e.g., stone workers, foundry workers, workers exposed to styrene).

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1583,

CASE-CONTROL STUDY OF THE OCCUPATIONAL AETIOLOGY OF CANCER OF THE URINARY BLADDER

S.A. Tola, Inst. of Occupational Health, Dept. of Epidemiology & Biometry, *Haartmaninkatu 1, SF00290 Helsinki 29, Finland* (D-IARC-79-157)

Some 278 cases of cancer of the urinary bladder were reported to the Finnish Cancer Registry during 1975-1976. The diagnosis will be confirmed in the respective hospitals and age-matched controls will be selected from the patients of those hospitals. Questionnaires with special emphasis on occupational history will be sent to cases and controls. The analysis of the data will focus on comparison of occupational histories.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1584,

COMMUNITY EXPOSURES TO VINYL CHLORIDE MONOMER

R. Saracci, Centre International de Recherche sur le Cancer, Epidemiology & Biostatistics Unit, *150 Cours Albert Thomas, 69372 Lyon Cedex 2, France* (D-IARC-79-181)

A study is being undertaken of current (cross-sectional) mortality for the years 1947-1977 in the resident population of a town of 28,800 (1971) in which a large chemical factory is located. This factory has produced, among a variety of other chemicals, vinyl chloride monomer (VC) since about 1953 and discharge into the air occurs. Death certificates of residents are collected and coded (ICD-8) and a time trend analysis, by sex, age and cause of death, is being made in comparison with the corresponding time trends for the country as a whole. In addition, time trends of proportional mortality of age, sex, cause of death and residential history within the town are computed. In parallel, a historical prospective study of families of surviving past and present VC workers and a group of workers at the same chemical factory matched by age and present residence is being conducted. Reproductive history is assessed, with special attention being paid to abortions and malformations, by interview with wives (whenever possible).

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1585,

TIME TRENDS OF PRIMARY LIVER CANCER FROM CANCER REGISTRY DATA

R. Saracci, Centre International de Recherche sur le Cancer, Epidemiol & Biostatistics Unit, *150 Cours Albert Thomas, 69372 Lyon Cedex 2, France* (D-IARC-78-170)

The objective of the study is to assess evolution in time of primary liver cancer on a global basis scale using data extracted from three volumes of 'Cancer Incidence in Five Continents'. Changes in incidence rates in the period 1958-1971 are tabulated together with changes in the proportion that primary liver cancer represents of all cancers, using standardized (world standard) rates for all ages and for the 0-44 age group, for males and females separately. Time comparisons are possible for 37 populations in 30 registries. A number of correlations are also being explored comparing changes in primary liver cancer incidence with the corresponding changes in mortality (whenever available), with gallbladder cancer incidence, with cirrhosis mortality, with alcohol consumption and income.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1586,

RISK OF PRIMARY LUNG CANCER AMONG IRON MINERS

C. Cavelier, Inst. Nacional de Recherche et de Securite, Service de Pathologie Professionelle, *Ave. de Bourgogne, Vandoeuvre-les-Nancy, 54500 Nancy, France* (D-IARC-79-195)

The purpose of this study is to determine whether working in iron mines involves an increased risk of primary lung cancer. A retrospective mortality survey will be carried out in Lorraine on 2,000 miners for whom data from periodic medical examinations are available for a period of 20 years. The adjusted absolute and relative incidence rates for primary lung cancer among miners and surface workers will be compared.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1587,

EVALUATION OF EARLY DETECTION OF CANCER OF THE CERVIX UTERI BY CYTOLOGICAL SCREENING

D. Neuser, Staedtisches Krankenhaus im Friedrichsham, Zytodiagnostisches Zentrallabor, *Leninallie 49, 1017 Berlin, German Democratic Republic* (D-IARC-79-197)

From 1955 to 1969 the situation with respect to cervical carcinoma in Berlin, the capital of the German Democratic Republic, has hardly changed, as morbidity and mortality as well as stage distribution and 5-year survival rate have remained much the same. It is proposed to test whether cytological screening can serve to lower morbidity and mortality. For this purpose, all women from the ages of 20 to 65 living in Berlin will be cytologically examined every two years. Using the National Central Cancer Registry, the relationship of carcinoma in situ to invasive carcinoma, the stage distribution of the invasive cervical carcinomas and morbidity and mortality before, during and after screening will be investigated. The first four years were characterized by a considerable increase of the carcinomas in situ and a shifting of stages in favor of stage Ia and Ib at a coverage rate of 80 percent of the target population.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1588,

GENETICS OF GASTRIC CARCINOMA

J.K. Lehtola, Oulu University Central Hospital, *Kajaanintie 51, 90220 Oulu 22, Finland* (D-IARC-79-160)

The occurrence of gastric carcinoma was evaluated in 2,242 first-degree relatives of 341 probands with gastric carcinoma diagnosed in Finland during 1962-1963 and in 2,301 control relatives of 341 probands, age- and sex-matched, from the general population. The results suggest that the occurrence of gastric carcinoma is higher in the series than in controls. The most apparent difference was with respect to relatives of probands with the diffuse type of gastric carcinoma in whom the occurrence of gastric carcinoma was significantly higher than in their controls. The families with the intestinal type of gastric carcinoma behaved like the controls. The study continues.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1589,

RISK FACTORS OF BREAST CANCER - SCREENING FOR BREAST CANCER

I.H. Soini, Pirkanmaa Cancer Society, Detection CTR & Laboratories, *Haemeenskatu 5 A, 33101 Tampere 10, Finland* (D-IARC-78-150)

All women aged 41-60 (20,644) living in the city of Tampere were invited to undergo a breast cancer screening during the period April 1974-March 1975. Epidemiological data concerning reproductive and hormonal risk factors of breast cancer were obtained at the same time. Evaluation of the effect of this screening program on breast cancer risk is being made through follow-up in the National Population Registries.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1590,

ROLE OF OPIUM PRODUCTS IN THE ETIOLOGY OF ESOPHAGEAL CANCER IN NORTHERN IRAN

N.E. Day, Centre International de Recherche sur le Cancer, Unit of Epidemiology & Biostatistics, *150 Cours Albert Thomas, 69372 Lyon Cedex 2, France*

Opium dross is widely consumed in the area of high esophageal cancer incidence in northern Iran. It has been shown to be mutagenic in the Ames test. A series of studies is under way to identify the components in the dross.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1591,

INTERNATIONAL HISTORICAL PROSPECTIVE STUDY OF HEALTH EFFECTS OF MAN-MADE MINERAL FIBRES IN THE PRODUCER INDUSTRY

R. Saracci, Centre International de Recherche sur le Cancer, Epidemiology & Biostatistics Unit, *150 Cours Albert Thomas, 69372 Lyon Cedex 2, France* (D-IARC-79-180)

The objective of the study is to determine the mortality experience and, whenever possible, the cancer incidence of workers in the man-made mineral fibre (MMMF) production industry. Starting in 1976, factories belonging to the European groups of MMMF manufacturers (CIRFS-EURIMA) were individually visited to identify plants suitable for a historical prospective study, according to the following criteria: (1) No loss or destruction of personnel records; (2) MMMF production process in operation for at least

twenty years; (3) some method of mortality/morbidity follow-up available; (4) nominal fibre-size of some fibres less than five microns. On this basis 13 plants, located in seven countries, were selected for study and data collection at these plants, in which workers exposed to MMMF total approximately 4,500, is starting in 1978. Environmental measurements of airborne MMMF concentrations are being carried out in parallel by a team from the Institute of Occupational Medicine, Edinburgh, U.K. Follow-up of the workers will be the responsibility of national collaborating institutions, and comparisons are to be made between groups of workers with various levels of exposure and between worker populations and general (national or regional) populations. All data will be finally submitted to a central, common analysis.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1592,

EPIDEMIOLOGY OF SKIN CANCER, INCLUDING MALIGNANT MELANOMA, IN TWO FIVE-YEAR PERIODS

H.D. Jung, Kreiskrankenhaus Kreispoliklinik, Hautabteilung, *M. Ostrowskistrasse 69, 209 Templin, German Democratic Republic* (D-IARC-79-199)

On the basis of the legally required registration of malignant tumors of the skin in the German Democratic Republic, two five-year periods are being examined and the incidences compared. The success of therapy will be evaluated.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1593,

CASE-CONTROL STUDY - RELATION BETWEEN CANCER OF THE ENDOMETRIUM AND OESTROGEN INTAKE

H.P. Kewitz, Freie Universitat Berlin, Inst. fuer Klinische Pharmakologie, *Hindenburgdamm 30, 1000 Berlin 45, Federal Republic of Germany* (D-IARC-79-201)

Previous epidemiological retrospective studies have shown that there is some evidence of a positive correlation between oestrogen intake and endometrial cancer. Patients with endometrial cancer are interviewed, their habits of drug intake determined and compared with two control groups.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1594,

FREQUENCY OF BRONCHIAL CARCINOMA IN RURAL AND AIR-POLLUTED AREAS

W.T. Ulmer, Silicosis Research Inst., *Hunscheidtstrasse 12, 4630 Bochum, Federal Republic of Germany* (D-IARC-79-202)

In the last five years all cases of deaths in Bochum, Brilon and Meschede have been investigated. All relatives of persons who died from bronchial carcinoma, liver cirrhosis and apoplexy were visited by a team of investigators and questioned about occupational exposures, main residence and smoking habits of the deceased. Data collection has been completed and statistical analyses are now being carried out.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1595,

DISCRIMINATION OF OCCUPATIONAL AND NON-OCCUPATIONAL MESOTHELIOMAS INCLUDING ANALYSIS OF DUST PARTICLES AND ASBESTOS IN LUNG (ABBREV)

H. Otto, Pathologisches Institut der Staedlischen Kliniken, *Beurhausstr. 40, 4600 Dortmund, Federal Republic of Germany* (D-IARC-79-205)

At the Institute of Pathology of the Clinic at Dortmund, the Hauptverband der Gewerblichen Berufsgenossenschaften has opened a central register for all cases of mesothelioma. The Berufsgenossenschaft will request lung material for analysis from the surgeon.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1596,

STUDY OF OCCUPATIONAL CANCERS

L. Horbach, Friedrich Alexander Universitat zu Erlangen Nurenberg, Institut fuer Medizinische Statistik und Dokumentation, *Waldstr. 6, D8520 Erlangen, Federal Republic of Germany* (D-IARC-79-206)

The aims of this study are: (1) to survey manual workers and other staff employed in chemical and related industries for cancer and (2) to analyze possible aetiological associations between different cancer sites and occupational chemical exposures. In this retrospective study of the years 1950-1968 all ill and/or deceased employees (active or retired) of 10 large firms have been included and for the same time period all other deaths from one of those firms also have been collected. Information has been collected on sex, cause of death, occupation, substance to which exposed and for the cases of cancer: type of neoplasm, age at time of diagnosis and method of diagnosis. For the statistical analysis a multivariate model is being used. In February 1979 a detailed description of the study (more than 400 pages) was presented; it should be discussed in several expert groups in April and in autumn 1979. The study will be published in 1980 in a research report of the DFG.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1597,

THE FREQUENCY AND AGE-DISTRIBUTION OF CONDYLOMATA IN COUNTRIES VARYING MARKEDLY IN RISK OF GENITAL CANCER

R. Schmauz, Christian Albrechts Universitat, Medizinischen Hochschule, Abt. fuer Pathologie, *Ratzeburger Allee 160, 2400 Lubeck, Federal Republic of Germany* (D-IARC-79-225)

Using data from laboratories of histo- and cytopathology the frequency and age-distribution of condylomata acuminata are being determined in countries varying markedly in risk of genital cancer to determine whether a correlation exists. If condylomata acuminata are precancerous condition, these lesions should precede the carcinomas in age-distribution and this question will also be examined.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1598,

EPIDEMIOLOGICAL FACTORS IN URINARY BLADDER CANCER

W.E. Vahlensieck, Universitat Hospital of Urology, *Venusberg, 5300 Bonn, Nordrhein Westfalen, Federal Republic of Germany* (D-IARC-79-203)

Information is being collected from patients with urinary bladder cancer on occupational exposure to carcinogenic factors, contributing geographical factors, eating habits with particular reference to saccharin and cyclamate, tobacco and alcohol consumption, drug abuse and metabolic disorders.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1599,

CAUSE OF BRONCHIAL CARCINOMA

F. Schmidt, Forschungsstelle Praeventive Onkologie, *Maybachstr. 14, 6800 Mannheim, Baden Wuertt., Federal Republic of Germany* (D-IARC-79-227)

For this investigation into the influence of filter cigarettes on bronchial carcinoma rates and the causes of bronchial carcinomas among non-smokers, the characteristics of all bronchial carcinoma cases in 1966-1976 diagnosed in the Mannheim-Heidelberg-Ludwigshafen area will be analyzed using information obtained from questionnaires completed by dependents. The response rate has hitherto been about 50 percent. The proportion of cigarette smokers (cigarettes with and without filters) among patients is compared with the percentage of cigarettes smoked by the general population.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1600,

BURKITT'S TUMOR PROJECT

R.J. Biggar, U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, Viral Oncology Section, *Accra* (D-IARC-78-220)

For more than one decade many aspects of research into Burkitt's lymphoma have been studied at this Center. Tumor specimens are provided to research groups and a serum bank on all patients throughout their illness is maintained. Epidemiological studies have included geopgraphical variation and a longitudinal follow-up of the natural history of Epstein-Barr virus infections. Current studies include HL-A typing of patients and controls to determine if there are groups at greater risk of developing this neoplasm as has been reported for nasopharyngeal cancer.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1601,

RELATION BETWEEN MEAT-CURING BY SMOKE AND FREQUENCY OF STOMACH CANCER

G. Hajdu, (No Performing Organization Reported), *Hungary* (D-IARC-79-240)

In this area (Wend) it is traditional to smoke pork with freshly cut soft woods (alder, together with the fruit of the juniper bush). In such meat the amount of 3,4-benzpyrene is six times higher than in factory-smoked samples and other cocarcinogens have been found in these products. The farmers of Wend eat three to four times more of this meat than the average Hungarian, as do the Wends living in Solvenia near the Hungarian border. The frequency of stomach cancer has hitherto been twice as high among the population of Wend as among other groups living around this area. An educational campaign is expected to lead to a decrease in the frequency of this cancer in Wend.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1602,

CASE-CONTROL STUDY OF BREAST CANCER

Z. Pentek, County Hospital, Dept. of Radiology, *Beri-Balogh Adam 7/23, 7100 Szekszard, Hungary* (D-IARC-79-253)

The aim of the investigation was to estabish the factors most frequently associated with breast cancer, one of the most common female malignancies. In two southern counties of Hungary, 562 breast cancer patients, both urban and rural, were investigated using a computer-adapted questionnaire. The study group consisted of 195 premenopausal, 135 menopausal and 232 postmenopausal women. Replies were compared with those from an age-matched control group selected from 8,000 women screened for breast cancer in the same geographical area. Preliminary analysis shows a twofold excess in breast patients of higher educational level (secondary school or more), blood relatives (mother and/or sister) suffering from breast cancer, nulliparae, first pregnancy after the age of 25, no suckling or feeding a baby from one breast only, menarche before the age of twelve, previous diseases such as struma and former breast operation.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1603,

EPIDEMIOLOGY OF CHILDHOOD TUMORS

P.M. Shah, Gujarat Cancer & Research Inst., Chemotherapy & Medical Unit, *New Civil Hosp. Campus Asarwa, Ahmedabad 380016, Gujarat, India* (D-IARC-79-257)

The aim of this study is to determine the pattern of childhood cancer in Gujarat State. With the effective control of infectious diseases in childhood, malignant disorders in childhood have become an important cause of mortality in pediatric practice. About 150 new cases of pediatric tumors are registered every year at the Gujarat Cancer Research Institute.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1604,

EPIDEMIOLOGY OF LEUKEMIAS AND MALIGNANT LYMPHOMAS IN GUJARAT

P.M. Shah, Gujarat Cancer & Research Inst., Chemotherapy & Medical Unit, *New Civil Hosp. Campus Asarwa, Ahmedabad 380016, Gujarat, India* (D-IARC-79-258)

There are very few epidemiological studies of leukemias and lymphomas available from India. The aim of this study is to evaluate the profile of these disorders in Gujarat State. 35 percent of Hodgkin's disease patients are in the pediatric age group and acute myeloid leukemia is common, whereas chronic lymphatic leukaemia is very rare.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1605,

EPIDEMIOLOGICAL CUM-PREVALENCE STUDY OF CARCINOMA OF CERVIX IN URBAN, RURAL AND TRIBAL AREAS IN INDIAN POPULATION

C.A. Shah, Gujarat Cancer & Research Inst., Dept. of Gynecology, *New Civil Hosp. Campus Asarwa, Ahmedabad 380016, Gujarat, India* (D-IARC-79-259)

Carcinoma of the cervix uteri is the most common cancer in Indian women. Through several studies in other parts of the world, the relationship of this cancer with low socioeconomic group, early onset of sexual activity and child bearing is well known. These factors are now being studied in a prospective study in urban, rural and tribal areas in the state of Gujarat, India. The clinical examination includes cytological smears and histological confirmation of suspected cancer. In the first part of the study some 30,000 women have been studied.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1606,

AN INTERVENTION STUDY OF ORAL CANCER AND PRECANCEROUS LESIONS IN RELATION TO TOBACCO USE IN RURAL INDIAN POPULATIONS

F.S. Mehta, Tata Inst. of Fundamental Research, Basic Dental Research Unit, *Homi Bhabha Rd., Bombay 400005, Maharashtra, India* (D-IARC-79-267)

Through follow-up studies for the last ten years it has been established that tobacco usage in the various forms practiced in different parts of India is definitely associated with oral cancer and precancerous lesions. The incidence of precancerous lesions among those who do not use tobacco in any way was almost zero, whereas the incidence among those who do ranged from 1 to 35 per 1,000 per year, depending upon the form of usage. The next step is to determine whether the association between oral cancer and precancerous lesions and tobacco usage is direct by demonstrating a reduction in the incidence of precancerous lesions when the tobacco usage is discontinued. A sample of 12,000 individuals using tobacco has been examined and interviewed in each of the three rural areas under study. A concentrated program of education, motivation and guidance has been prepared to persuade these villagers to give up tobacco. The villagers are shown a documentary film, especially made for this purpose, in the vicinity of their homes, in the most suitable format formulated after conducting impact studies of the film in each of the three areas. The message is also communicated personally to each of the examined individuals. In addition, the population is subjected to visual, audio and other media support. These individuals are re-examined annually to assess changes in tobacco usage habits, development of new oral precancerous lesions and changes in previously diagnosed lesions.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1607,

MODIFYING EFFECT OF DIET ON UPPER ALIMENTARY TRACT CANCER IN PERSONS WHO CHEW AND SMOKE TOBACCO

P.N. Notani, Cancer Research Inst., Epidemiology Div., *Dr. Ernest Borges Marg, c/o Tata Memorial Ctr., Bombay 400012, Maharashtra, India* (D-IARC-79-270)

Tobacco chewing and smoking habits carry a high risk for oral cancers, yet not all those who chew or smoke heavily get the disease. This indicates a role for other factors which may have a modifying effect on these risks. Preliminary analysis of existing records indicated a reduction in oral cancer risk in persons with tobacco chewing and smoking habits whose diet included eggs, meat or fish (Ind. J. Cancer, 13, 1976). It is intended to devise methods for collection of dietary information, confirm preliminary observations on oral cancer by a case-control study and extend the study to cover pharyngeal and esophageal cancers.

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2.1608,

CANCER REGISTRY IN EASTERN INDIA

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There is no comprehensive cancer registry in Eastern India (West Bengal, Bihar, Assam and Orissa). Cancer patients from these states belonging to various groups with different socio-economic characteristics are referred to cancer hospitals and other hospitals of Calcutta for treatment. A cancer registry has been set up at the Epidemiology Dept. of Chittaranjan National Cancer Research Center, Calcutta, to provide data for studying aetiology, epidemiology, treatment and end results of malignant diseases. The basic objectives of this registry include: (1) study of frequency distribution of different types of cancer in this area; (2) definition of high risk profiles; and (3) determination of trends and aetiological factors.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1609,

EPIDEMIOLOGICAL STUDY OF CARCINOMA OF THE UTERINE CERVIX RELATED TO BATHING HABITS

M.S. Dvivedi, Cancer Hospital, *Indore 452001, Madhya Pradesh, India* (D-IARC-79-274)

It is an established fact that carcinoma of the uterine cervix is more prevalent in low socioeconomic groups even in developed areas. There is a possibility that low socioeconomic groups do not have proper washing facilities in their dwelling places. It is presumed that women who submerge the pelvis in a bath tub might cleanse the vaginal passages more effectively than those who take a shower. In India it is rare to have a bath tub in the bathroom even in the urban population. The usual method of taking a bath is by a bucket and mug. In the rural areas the source of water is either tanks, rivers or rivulets and either the women bathe at their own house using a bucket and a mug or at these other sources of water. In the present study we are studying habits of patients reporting with carcinoma of the uterine cervix for treatment at this center. We are also studying the bathing habits of the husbands of the patients with particular reference to circumcision, retraction of the prepuce during washing and cleaning smegma. This study has been undertaken with a view to studying the status of genital hygiene of patients with carcinoma of the uterine cervix. The non-circumcised husbands are questioned to determine how often they remove the smegma when taking a bath. The distributional pattern of the patients according to these habits may give some indication of causative factors of this disease.

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2.1610,

EPIDEMIOLOGICAL ASPECTS OF CANCER CONTROL - PILOT PROJECT

R.D. Stevens, Arignar Anna Memorial Cancer Inst., Gynaecology, *Railway Rd., Kanchipuram 631501, Tamil Nadu, India* (D-IARC-78-264)

Within the framework of a program for the early detection of precancerous lesions and early cancer of the uterine cervix, oral cavity, and pharynx, by systematic clinical examination, cytology and biopsy, aetiological and epidemiological studies will be undertaken. The prevalence and incidence of these cancers will also be assessed. Knowledge, attitudes and practices relating to cancer are being examined in relation to a large number of factors including age, sex, religion, occupation, income, etc. Questions are asked about diet, personal habits, reproduction associated factors, etc.

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2.1611,

PROSPECTIVE AND RETROSPECTIVE STUDY OF HODGKIN'S DISEASE IN RURAL POPULATION IN EAST JAVA, INDONESIA

K.M. Mertowidjoyo, Universitas Airlangga, Faculty of Medicine, Dept. of Pathology, *Jalan Dharmahusada No. 47, Surabaya, East Java, Indonesia* (D-IARC-79-284)

Children with Hodgkin's Disease in East Java, Indonesia usually come from rural areas, located near the rice fields (paddy) and from a closed community with a low socioeconomic status. The main objectives of the present study are to identify high risk groups among the population and investigate time-space aggregation of Hodgkin's disease in the population.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1612,

NATURAL BACKGROUND RADIATION AND CANCER FREQUENCY IN HUMAN POPULATION GROUPS

S.P. Allwright, University of Dublin Trinity College, St. James Hospital, Dept. of Community Health, *James St., Dublin 8, Ireland*

Studies investigating the relationship between natural radiation and cancer have produced varying and inconclusive results. The objective of this study is to determine type specific age standardized cancer death rates in Ireland in relation to defined areas of high and low background radiation. Regions of probable high and low radiation have been selected on the basis of existing geological data. Radiation levels, both indoor and outdoor, in these areas will be monitored. The unit area for radiation monitoring will be ten sq km, based on the National Reference Grid. Cancer mortality in the regions where radiation has been measured will be determined, also based on the ten sq km unit of area.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1613,

GEOGRAPHICAL DISTRIBUTION OF CANCER MORTALITY IN IRELAND

J.P. Kevany, University of Dublin Trinity College, Dept. of Social Medicine, *Dublin, Ireland*

To determine the spatial distribution of cancer mortality in the population 35 years of age and older and to correlate cancer mortality with natural and man-made environmental variables, standardized mortality rates for each sex and for major cancer categories are computed annually on a continuous basis. Five-year mean frequencies are calculated for each county and subsequently for electoral divisions and for topographical grid units of ten sq.km. Geochemical, soil and water data will be compared with cancer frequencies on the basis of correlation and regression analysis.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1614,

EPIDEMIOLOGICAL FACTORS IN HODGKIN'S DISEASE

J.J. Fennelly, National University of Ireland, University College at Dublin, *Dublin, Ireland* (D-IARC-78-277)

After initial demonstration of the role of immunological factors in the development of familial Hodgkin's Disease, a number of other factors have been examined (Europ. J. Cancer, 13, 549- , 1977). Some 100 patients and 100 controls have now been studied from the point of view of multiple factors, such as familial exposures, exposure to other Hodgkin's Disease patients, lymphoma, and leukemia, in addition to the presence of domestic pets in the household, other viral illnesses such as verrucae, and herpetic infections. BCG vaccination in the various age groups has also been examined. Analysis is now underway.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1615,

CASE-CONTROL STUDY OF SQUAMOUS CARCINOMA OF THE CERVIX UTERI

M. Moriarty, St. Lukes Hospital, Radiotherapy & Clinical Oncology Centre, *Highfield Rd., Rathgar, Dublin 6, Ireland* (D-IARC-79-294)

This case-control study will include 100 patients with invasive cervical cancer, 100 with carcinoma in situ and 100 age-matched controls. Questions will be asked about age, parity, socioeconomic group, marital status, age at first coitus, number of coital partners, age at first pregnancy, etc. The diagnosis of carcinoma in situ will be based on a combination of cytology, colposcopy and histology. A histological diagnosis of severe dysplasia will be considered equivalent to carcinoma in situ. Control subjects will have normal cytology and/or colposcopy.

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2.1616,

CLUSTERS OF CANCER IN FAMILIES

M. Benhur, Israel Center for Registration of Cancer & Allied Diseases, *18 20 King David St., Jerusalem, Israel* (D-IARC-79-296)

Approximately 3,400 members belonging to 1,500 families have been identified in the Israel Cancer Registry. Correlations between selected cancer sites will be investigated, taking into consideration family relationships (spouses, siblings, offspring, etc.) and age at time of diagnosis. The observed data will be compared with those to be expected for the total population using the files of the Israel Cancer Registry.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1617,

EPIDEMIOLOGY OF MESOTHELIOMA IN ISRAEL (1973-80)

C. Lemesch, Ministry of Labour, Div. of Labour Inspection, *P.O. Box 915, Jerusalem, Israel* (D-IARC-79-300)

In this study the occurrence of mesothelioma in Israel is being monitored. During the period 1960-72, only one mesothelioma was noted to have a definite occupational history of exposure to asbestos (Environ. Res. 12: 255-261, 1976) but, considering that the asbestos industry in Israel was established only in the early 1950s and that mesothelioma of occupational origin has been shown to have a relatively long latent period of about 20 years or more, it is possible that more cases of clear occupational origin will appear in the near future.

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2.1618,

PROBLEMS OF ASSESSING PERINATAL NEOPLASIA AND ITS RELATION TO CONGENITAL MALFORMATIONS

R. Steinitz, Israel Center for Registration of Cancer & Allied Diseases, *18 20 King David St., Jerusalem, Israel* (D-IARC-78-288)

Neoplasms diagnosed in the early stages of life are certainly not due to the manifold influences of postnatal environment and, as such, are worthy of special investigation. This pilot study aims at the examination of definitions and methods to reach epidemiological conclusions on the incidence of early neoplasia and the relation to congenital malformations. The principal sources are the Israel Cancer Registry and files of the pathology department.

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2.1619,

BREAST CANCER IN ISRAELI FEMALES OF EASTERN ORIGIN

B. Bertini, Kupat Holim Health Insurance Inst., *Esther Hamalka St. 4, Tel Aviv, Israel* (D-IARC-79-306)

The aim of the proposed investigation is to: (1) Survey the difference in the incidence of breast cancer in seven to ten thousand Israeli women of Oriental communities from five regions of origin: North Africa, Kurdistan, Cochin, Iraq and Yemen. The risk in Yemenites is known to be particularly low. (2) As regards women of each community, determine differences between the immigrant generation and their Israeli-born offspring. (3) Examine the relationship between the different demographic, geographic, cultural, social and economic factors and cancer of the breast, by generation. Hormonal balance will be assessed by biological and cytological methods.

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2.1620,

GEOGRAPHICAL VARIATION OF CANCER INCIDENCE AND MORTALITY

N. Tanaka, Chiba Cancer Center Research Inst., Dept. of Epidemiology, *666-2, Nitona-Cho, Chiba 280, Chiba, Japan* (D-IARC-79-342)

It has been demonstrated that the geographical variation of site specific cancer death rates in cities and districts in Chiba Prefecture is primarily ascribable to urban-rural differences. In order to investigate the causes of such differentiation in cancer incidence, the geographical distribution is now being studied by classifying especially the urbanized areas into much smaller districts.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1621,

EPIDEMIOLOGICAL STUDY ON HOST-ENVIRONMENT INTERACTION IN HUMAN CARCINOGENESIS

N. Tanaka, Chiba Cancer Center Research Inst., Dept. of Epidemiology, *666-2, Nitona-Cho, Chiba 280, Chiba, Japan* (D-IARC-79-341)

This study has been started to examine any interaction between occupational factors and familial cancer history. Since data in both hospital and the cancer registry records are not adequate, they will be collected as part of the study. This will take several more years.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1622,

CASE-CONTROL STUDY OF CANCER OF THE URINARY TRACT IN THE PROVINCE OF TURIN, ITALY

B. Terracini, Universita degli Studi di Torino, Istituto di Anatomia e Istologia Patologica, *Via Santena 7, I10126 Turin, Italy* (D-IARC-79-336)

The age-adjusted incidence rate of bladder cancer (including papillomas) in men living in the city of Turin around 1970 was 21.2 per 100.00 person-years while the corresponding rate for the rest of the Province is 10.8. The absolute number of cases per year is on the order of 120 in the city and 70 in the rest of the Province. A case-control study has been undertaken in order to collect information on smoking experience, alcohol and coffee drinking habits, previous use of artificial sweetners, social class and occupational history throughout life. The latter refers to both occupation titles and the industry in which employed. Social class is estimated based on present or last occupation as well as number of years at school and ratio between number of people living in the family unit and number of rooms. Only residents in the Province are interviewed. The survey is being conducted in three of the eight urological hospital departments of the Province of Turin and only hospital based controls are used. It is planned to extend the study to all urological hospital departments operating in the Province and to add population-based controls for residents in the city of Turin. Preliminary results on 75 cases-hospital control pairs have been submitted for publication.

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2.1623,

EPIDEMIOLOGICAL DATA COLLECTION ON STOMACH CANCER AND ITS PRECURSORS

M. Crespi, Istituto Regina Elena per lo Studio e la Cura dei Tumori, Cancer Detection Center, *viale Regina Elena 295, 00161 Rome, Italy* (D-IARC-79-329)

Stomach cancer cases will be collected prospectively in the centers involved in the project for the next three years. A detailed inquiry on dietary habits, socio-economic status and occupational environment will be performed on each case and in individuals with predisposing conditions and in a control group, both matched for sex and age. The centers involved represent areas with different mortality rates for stomach cancer. New diagnostic techniques for the detection of cancer in early stages and for known predisposing conditions will be tested during this study and a new approach for a network aimed at the collection of high risk individuals, based on cooperation between doctors involved in primary medical care and the reference centers, will be implemented.

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2.1624,

MORTALITY, INCIDENCE AND PREVALENCE AS INDICATORS OF THE MAGNITUDE OF THE CANCER PROBLEM WITHIN AN ITALIAN REGION

V. Mastrandrea, Universita degli Studi di Camerino, Inst. of Hygiene, *62032 Camerino, Italy* (D-IARC-79-318)

Within the Marche region, located in Central Italy, as within most of the country, there is heterogeneity as far as demographic, socio-economic and environmental characteristics are concerned. Taking into account these considerations, the geography of Marche and the findings of a previous study, an investigation will be carried out for the period 1971 to 1981 into the distribution of mortality, incidence and prevalence by individual tumor sites in the coastal, hill and mountain zones of this region which can be respectively considered urban, semi-urban and rural. The three zones may represent an ideal compromise between the need for units small enough to be homogenous for demographic and environmental characteristics that might influence cancer risk and yet large enough to provide stable estimates. Mortality, incidence and prevalence data are abstracted from death certificates from the 246 municipalities of the Marche region and from the clinical record cards available in the 90 hospitals of the same region.

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2.1625,

CARCINOGENICITY OF ASBESTOS DUST

A.F. Donna, General City Hospital of Alessandria, Anatomic & Histologic Pathology Inst, *Via Venezia 18, Alessandria, Italy* (D-IARC-79-315)

Pleural mesothelioma would appear to have a low overall incidence in Italy. In some regions of the country such as Piedmont, Liguria and Friuli, the incidence is significantly increased, being highest in the district of Alessandria in Piedmont. The aim of the study is to confirm the reported high incidence in Alessandria and to clarify the role of asbestos dust through questioning of individuals about work and environmental conditions, as well as through biopsy or necropsy confirmation of diagnosis.

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2.1626,

CANCER MORTALITY AMONG ATOMIC BOMB SURVIVORS IN HIROSHIMA PREFECTURE

M. Kurihara, Hiroshima University, Research Inst. of Nuclear Medicine & Biology, Dept. of Epidemiology & Social Medicine, *2-3 Kasumi 2 Chome, Hiroshima 734, Hiroshima, Japan*

The atomic bomb survivors in Hiroshima Prefecture were estimated in 1975 to be nearly 180,000. Using the data bank containing information about the survivors in our institute, a survey on cancer mortality among the survivors from 1965 onwards is being conducted. This includes comparison with mortality in the general population of all Japan and in the non-exposed population of Hiroshima Prefecture. The mortality statistics for 1968, 1969 and 1970 will be obtained in 1979.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1627,

RELATION OF RADIATION TO GASTRIC CARCINOMA OBSERVED IN AUTOPSY CASES IN A DEFINED POPULATION, HIROSHIMA AND NAGASAKI, 1961-1974

T. Yamamoto, Radiation Effects Research Foundation, Dept. of Pathology, *5-2 Hijiyama Pk., Hiroshima 730, Hiroshima, Japan* (D-IARC-79-345)

Autopsy examinations are performed in a population sample of about 100,000 in Hiroshima and Nagasaki. The frequency of gastric carcinoma in relation to radiation dose, histological type, invasion of the gastric wall, and metastasis is examined to determine the influence of A-bomb irradiation.

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2.1628,

PATHOEPIDEMIOLOGICAL STUDY OF MALIGNANT LYMPHOMA IN KAGOSHIMA PREFECTURE OF JAPAN

E. Sato, Kagoshima University, Faculty of Medicine, Dept. of Pathology, *1208-1 Usuki-Cho, Kagoshima City 890, Kagoshima, Japan* (D-IARC-79-347)

Several recent studies have shown that a considerable number of patients with T-cell leukaemia in Japan are born in Kyushu district, particularly in Kagoshima prefecture. The aim of this study is to explore the histopathological, immunological and epidemiological characteristics of malignant lymphoma in this prefecture. The annual age-adjusted incidence rate based on the 849 biopsy specimens in the file of our institute in the past twelve years is 4.0/100,000 persons for male and 2.1 for female. Histo-

logical review, electron microscopical observation, assessment of lymphocyte subpopulations, HL-A typing and serological analysis are being carried out and correlated with the age, sex and geographical distribution of malignant lymphoma.
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1629,

MORTALITY STUDY OF STEEL WORKERS

K. Nakamura, National Inst. of Industrial Health, Dept. of Industrial Epidemiology, *2051 Kizuki Sumiyosityo, Kawasaki, Kanagawa, Japan* (D-IARC-79-352)
Excesses of respiratory cancer among coke oven workers are considered to be related to the exposure to coal tar effluents. To study whether there are any other carcinogenic risk factors in the environment of iron and steel producing plants, about 300,000 steel workers who had worked for at least 1 year at the beginning of 1973 in one of 127 plants in Japan were registered as members of the study cohort. Ascertainment of deaths will be obtained from the family registry system in Japan and death certificate information will be collected from the District Legal Affairs Bureau. In a preliminary stage, the cohort will be followed up retrospectively to the end of 1976, but follow-up thereafter will be continued.
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1630,

PROSPECTIVE STUDY ON LUNG CANCER IN CHROMIUM PLATING WORKERS

K. Tsuchiya, University of Occupational & Environmental Health, *Yawata Nishi-Ku, Ooaza-Honjo, Kitakyushu 807, Kyushu, Japan* (D-IARC-79-353)
In a retrospective study (Okubo and Tsuchiya, Keio J. Med. Tokyo, 26, 1977) on chromium platers, the authors did not find an increased risk of lung cancer or of cancers of other sites. In order to confirm this finding, a prospective study on the same population is being peformed, which will require at least five years of observation.
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2.1631,

STUDY OF NUTRITION, STEROID METABOLISM AND THE INCIDENCE OF FEMALE CANCER

M. Kodama, Aichi Cancer Center Research Inst., Dept. of Chemotherapy, *81 1159 Kanokoden Tashiro-cho, Chikusa-ku, Nagoya 464, Aichi, Japan* (D-IARC-79-363)
In various ethnic groups the risk for breast cancer is often inversely related to that for cervical cancer. The hormonal environment of the host may somehow be implicated in the induction of these cancers. The relation between the nutritional level, steroid metabolism and the incidence of cervical and breast cancers will be investigated among the inhabitants of urban and rural districts of Japan. The characteristics of patients with such neoplasms will be compared with those of populations with differing cancer risks. The steroid metabolism of each subject will be assessed by estimating the excretions of 14 neutral steroids with 24 hr. urine. Initial results have been published in the Journal of the National Cancer Institute (54:1023-1029, 1975; 54:1275-1282, 1975; 54:41-47, 1977 and 59:49-54, 1977, and 61:35-39, 1978).
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2.1632,

EPIDEMIOLOGICAL STUDY OF BLADDER CANCER

Y. Ohno, Nagoya University, School of Medicine, Dept. of Preventive Medicine, *65 Tsurumai-cho, Showa-ku, Nagoya 466, Aichi ken, Japan* (D-IARC-79-368)
In Japan, the age-adjusted mortality rate for bladder cancer has levelled off in males and there is a possible downward trend for females over the last two decades. These trends were observed despite the recent remarkable increases in potentially hazardous environmental agents. In addition, the proportion of bladder cancer and kidney cancer deaths has been constant, 7:3, over these 20 years. These findings are very suggestive of the aetiological importance of host factors in bladder cancer production. Host factors and several environmental factors are now being investigated accordingly in Metropolitan Nagoya by a case-control study. Along with this investigation, familial cases are compared with non-familial cases in respect to tryptophan metabolism, HL-A types and others. Geographic clusters of bladder cancer deaths by city and county have been tested by a newly developed significance test, based on a Monte Carlo method. The test revealed no significant clusters of either high or low bladder cancer mortality in Japan from 1969-1971.
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1633,

MALIGNANT NEOPLASMS OF THE GALLBLADDER AND BILE DUCTS IN JAPAN

S. Tominaga, Aichi Cancer Center Research Inst., Epidemiology Division, *81 1159 Kanokoden Tashiro-cho, Chikusa-ku, Nagoya 464, Aichi, Japan* (D-IARC-79-372)
This study aims to describe geographical distribution and time trends of malignant neoplasms of the gallbladder and bile ducts in Japan and to discover aetiological factors by relating various environmental factors and other related diseases to mortality from biliary tract cancer. Analysis comparing mortality rates from malignant neoplasms of the gallbladder and bile ducts and food intake by prefecture suggest that dried noodles, pork and fish might be associated with this cancer. Relationships between biliary tract cancer and gallstones and other biliary tract diseases are now under investigation.
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1634,

CANCER INCIDENCE IN OKAYAMA PREFECTURE

K. Nukada, Okayama Prefectural Health Dept., *2-4-6 Uchisange, Okayama City, Japan* (D-IARC-79-374)
In 1952 the Health Dept., Okayama Prefectural government, began to study the incidence rates of cancer in cooperation with the Okayama Prefectural Medical Association. Since then, the situation has been investigated periodically and in 1977 the sixth survey was started. The objective is to ask all the medical facilities in Okayama Prefecture for the numbers of patients treated for malignant neoplasms in the year.
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1635,

TRENDS OF CANCER INCIDENCE AND SURVIVAL OF CANCER PATIENTS IN OSAKA

A. Hanai, Center for Adult Diseases, Dept. of Field Research, *3-3 Nakamichi 1-Chome, Higashinari-ku, Osaka 537, Japan, Japan*
Age-adjusted incidence rates in Osaka have been calculated for each three-year period since the Osaka Cancer Registry started. During these 15 years substantial changes have been observed in the time trends of cancer incidence. The five-year survival rates of cancer cases in the general population were ascertained in Osaka for the first time in Japan. Five-year relative survival rates for cases diagnosed as cancer during 1971-72 were calculated using the registry data linked with the file of all death certificates of Osaka residents during 1971-77. Survival rates varied in different localities within Osaka prefecture. These studies are continuing.
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1636,

STATISTICAL ANALYSIS OF MALIGNANT AND NON-MALIGNANT DISEASES AND ASSOCIATED LESIONS IN 300,000 AUTOPSIES IN JAPAN IN 1958-1974

T. Miyaji, Japanese Inst. of Pathology, *Sozecho 12, Iida Bldg., Osaka 530, Osaka, Japan* (D-IARC-79-379)
Since the registration of autopsies in Japan started in 1958, over 95 percent of autopsies have been listed every year in the Annual of Pathological Autopsy Cases. The data in the republications are being prepared for entry into a computer for statistical analysis. As the autopsy rate in Japan has been about 3 percent, these cases do not reflect accurately the distribution of causes of death in Japan. However, the analysis of 300,000 autopsies will shed some light on the epidemiology of malignant and non-malignant diseases in the country.
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1637,

EPIDEMIOLOGICAL STUDY OF THE NATURAL HISTORY OF STOMACH CANCER

A. Oshima, Center for Adult Diseases, Dept. of Field Research, *3-3 Nakamichi 1-Chome, Higashinari-ku, Osaka 537, Japan, Japan* (D-IARC-79-381)
A prospective study is being conducted to estimate the frequency of the development of cancer in persons found to have gastric ulcer, gastric polyp and chronic gastritis. From a follow-up study of the 1,782 patients diagnosed through a screening program as having gastric ulcer, it was shown that there were 30 cancer cases during the follow-up period (average 5.1 years) in contrast with the expected number of 15.5. About half of the 30 cancer cases, however, were diagnosed as cancer within a year of the diagnosis of gastric ulcer and should have been considered as false negative cases. These data suggest that those patients with a diagnosis of gastric ulcer should be regarded as a high risk group, although a hypothesis of the malignant change of gastric ulcer is not supported. A follow-up study of about 10,000 patients on whom endoscopic biopsy tests were conducted at this Center and whose diagnoses were histologically confirmed is now being prepared.
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1638,

GEOGRAPHICAL STUDY ON HUMAN CANCERS

T. Kubo, Saitama Cancer Center, Dept. of Epidemiology, *818 Komoro, Ina-Machi, Kitaadachi-Gun, Saitama-Ken 362, Japan* (D-IARC-79-382)
The Japanese material is mainly derived from the Saitama prefecture (5 million population), all histological slides from this reference population being filed in our department. Series from other ethnic groups are being collected to derive population-based incidence rates for each histological type of cancer for other selected sites. Pre-cancerous lesions such as metaplasia of the stomach and bronchus, obtained from autopsy material from various countries, are also included in the study program.
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1639,

CARCINOGENICITY OF CHROMATES

Y. Ohsaki, Hokkaido University, School of Medicine, Dept. of Medicine, *N. 13 Unit 8, Kika ku, Sapporo 060, Hokkaido, Japan* (D-IARC-79-383)
The high incidence of lung cancer among chromate workers is well known. Recently, lung cancer in chromate workers was reported by us for the first time in Japan (see Thorax 33:372-74, 1978). A prospective epidemiological survey of chromate workers with special reference to lung pathology is under way. Parallel animal studies administering chromates intrabronchially are being conducted to clarify pathogenesis.
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1640,

IS PERIODIC STOMACH CANCER SCREENING REDUCING MORTALITY FROM STOMACH CANCER

S. Hisamichi, Miyagi Cancer Society, Dept. of Gastroenterology, *Kamisugi 6-chome, Sendai 980, Miyagi Ken, Japan* (D-IARC-79-384)
Among all cancer deaths in Japan, mortality from cancer of the stomach ranks first. The purpose of this study is to elucidate whether periodic screening for stomach cancer, now very common all over Japan (about 4,000,000 examinees per year), is effective in reducing the death rate. Mortality is being studied for both the examined and the non-examined groups.
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1641,

HIGH RISK FACTORS OF STOMACH CANCER

S. Hisamichi, Miyagi Cancer Society, Dept. of Gastroenterology, *Kamisugi 6-chome, Sendai 980, Miyagi Ken, Japan*

High risk factors in Japanese found to have gastric cancer in a mass screening of the general population are being studied, taking age and sex into consideration. Patients with precancerous lesions, such as gastric ulcer, chronic gastritis and polyps, are being followed, as are controls, retrospectively and prospectively.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1642,

CANCER MORTALITY IN GUADALAJARA CITY

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This ongoing investigation of case characteristics is attempting to identify the host factors which might increase susceptibility to the cancers under study in Guadalajara, Jalisco. Guadalajara City contributes approximately 5 percent of the total cases of malignant neoplasms in the country, with an incidence rate of 45.12 per 100,000 inhabitants, as opposed to 36.0 per 100,000 inhabitants in the Mexican Republic. Cancer of the uterus and cervix accounts for 1/5 of malignant neoplasms in women and stomach cancer for 1/6 of the malignant neoplasms in men.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1643,

FREQUENCY OF CANCER OF THE NASOPHARYNX IN YOUNG ARABS IN MOROCCO

J. Bompoint, Centre Anticancereux du Marocco, *c/o Hopital Averroes, Casablanca, Morocco*

Following a study of the role of tobacco in 500 cases of larynx cancer seen at the Cancer Hospital of Casablanca, Morocco, which demonstrated a strong influence of smoking, particularly at an early age (Rev. Laryng. 97: 729-732, 1976), the characteristics of nasopharynx cancer, particularly in young age groups, are being studied.

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2.1644,

CANCER INCIDENCE IN A TELEPHONE WORKER POPULATION

N. Maruchi, University of Tokyo, Faculty of Medicine, Dept. of Health Administration, *7-3-1 Hongo, Bunkyo-ku, Tokyo 113, Tokyo, Japan* (D-IARC-79-391)

A retrospective study of incidence and mortality rates of cancer has been carried out for the period of 1971-1976 among the 50,000 employees of a Tokyo telephone and telegram company. Information about sick leave, hospitalization, health checkups, death, etc., has been collected. Should excess risk for any cancer site be detected, the responsible factors will be studied.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1645,

PROSPECTVE STUDY OF NASOPHARYNGEAL MALIGNANCIES (CARCINOMA AND MALIGNANT LYMPHOMA)

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The incidence of nasopharyngeal carcinoma is generally low in Japan. However, malignant nasopharyngeal lymphoma is more frequently observed than in other countries, the ratio of these malignancies being four carcinomas to one lymphoma. It is proposed to collect the clinical records of these two malignancies throughout Japan, and to assess the descriptive epidemiology as the provincial incidence seems to vary. The anti-viral capsid antigen antibody titre will be measured in both histological types to determine their relation to the Epstein-Barr virus.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1646,

ETIOLOGICAL FACTORS OF HEPATOCELLULAR CARCINOMA IN CHINESE AND ABORIGINES OF WEST MALAYSIA

E. Sumithran, Universitti Malaya, Medical Faculty, Dept. of Pathology, *Pantai Valley, Kuala Lumpur, Malaysia* 2211 (D-IARC-79-406)

Liver cancer is one of the most common malignancies in Malaysia occurring frequently among the Chinese and Orang Asli (aborigines). Necropsy and liver biopsy specimens showing hepatocellular carcinoma are examined by orcein, immunoperoxidase and immunofluorescence for the presence of HBA. Patients with liver cancer are examined for HBs Ag. Each Orang Asli patient admitted to the Gombak Orang Asli Hospital is accompanied by other members of his family. The blood of these persons, who constitute a control group, is examined. Chronic liver disease associated with the hepatitis B antigen seems to be an important factor in the etiology of liver cancer in the Orang Asli. It is proposed to examine the food eaten by the Orang Asli for aflatoxin.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1647,

SEX DIFFERENTIALS IN CANCER MORTALITY AND MORBIDITY

F.H. Foster, New Zealand Dept. of Health, National Health Statistics Centre, New Zealand Cancer Registry, *P.O. Box 6314, Te Aro, Wellington, New Zealand* (D-IARC-79-428)

Statistics of cancer mortality in 39 countries and cancer morbidity in three countries were reviewed to assess current male/female mortality differentials to obtain an indication of the direction and rate of male/female mortality trends between 1958 and 1973 and to compare mortality and morbidity indices so that the degree of similarity between the two could be gauged. Data were supplied by the Unit for Dissemination of Statistical Information, WHO, Geneva.

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2.1648,

SEASONAL INFLUENCE ON HEMATOLOGICAL MALIGNANCIES

J.W. Logan, Wellington Hospital, Dept. of Radiotherapy & Oncology, *Wellington, New Zealand* (D-IARC-79-430)

This study is an extension of a previous survey of death rates by month of year and month of onset with a view to assessing relationship of hematological malignancies, i.e. leukemia, myeloma and malignant lymphoma, to seasons if any exists. The study will cover all of New Zealand.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1649,

EPIDEMIOLOGY OF LIVER CANCER AND AFLATOXIN LEVELS

C. Nwokolo, University of Nigeria, School of Medicine, Dept. of Medicine, *Enugu, Nigeria* (D-IARC-79-432)

The aim of the study is to study the clinical presentation of primary liver cancer in Enugu and environs. The major tool is a detailed questionnaire for every case diagnosed in the Unit examining home habits, etc., since birth. Foodstuffs are being analysed for aflatoxin and factors influencing aflatoxin levels are being examined.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1650,

EPIDEMIOLOGY OF GESTATIONAL TROPHOBLASTIC DISEASES IN IBADAN, NIGERIA

T.A. Junaid, University College Hospital, Dept. of Pathology, *Queen Elizabeth II Rd., Ibadan, Nigeria* (D-IARC-79-435)

Previous studies have confirmed the relatively high frequency of hydatidiform mole and choriocarcinoma in Ibadan, Nigeria and have contributed to their diagnosis and clinical management. The aim of the present study is to collate epidemiological data including correlation of incidence with climatic conditions, time of year, blood group, ethnic groups, use of oral contraceptive and others that may be of aetiologic significance.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1651,

GYNECOLOGICAL NEOPLASMS IN IBADAN, NIGERIA

T.A. Junaid, University College Hospital, Dept. of Pathology, *Queen Elizabeth II Rd., Ibadan, Nigeria* (D-IARC-79-436)

The study investigates the frequency, age distribution and clinicopathological correlations of histological types of tumors of the vulva, vagina, cervix, uterine body, ovaries and fallopian tubes in the cancer registry of the University College Hospital, Ibadan, Nigeria. All tumors will be subjected to histological review and reclassification. The tumors will be classified as suggested in the WHO monographs Nos. 10 and 13 on Histological Typing of Ovarian and Female Genital Tract Tumors.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1652,

MORTALITY FROM CANCER IN POLAND, 1960-1974

J. Kopczynski, Akademia Medyczna w Warszawie, Inst. of Social Medicine, Dept. of Epidemiology, *Oczki 3, 02007 Warsaw, Poland* (D-IARC-78-411)

Age- and sex-specific mortality rates for the most common cancer in Poland have been computed on a yearly basis for the period 1960-1974 in order to assess trends. No definite tendency for all sites of cancer could be detected among women in 1965-1974 when age was allowed for. There was a sharp increase in mortality from malignant neoplasms of the lower respiratory tract, particularly in males; gastric cancer mortality fell consistently in both sexes during the study period, whereas death rates for breast cancer increased markedly; mortality from cancer of the uterus declined moderately during the period; there was an increase in mortality from cancer of the large bowel as well as rectal cancer; mortality from leukaemia rose among people of both sexes over 55 years of age.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1653,

INCIDENCE OF DIFFERENT HISTOLOGICAL TYPES OF STOMACH CANCER IN WARSAW

Z.L. Wronkowski, Instytut Onkologii im Marii Sklodowskiej Curie, Dept. of Cancer Control & Epidemiology, *15 Wawelska St., 00973 Warsaw, Poland* (D-IARC-79-461)

There are conspicuous differences in the incidence of stomach carcinoma in different populations. Stomach cancer still remains a leading malignancy in Poland and the high incidence rates could be caused by changes in diet during the second world war and the post-war period. The main objectives of the present study are to investigate the distribution of two types of stomach carcinoma, i.e. 'intestinal' and 'diffuse', in the population of the city of Warsaw and to analyse the time trends for three decades. The study design is retrospective. All available pathological slides for stomach cancer patients from the city of Warsaw will be collected and reviewed. Age-adjusted rates will be computed.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1654,

CANCER INCIDENCE AMONGST PETROCHEMICAL WORKERS IN WARSAW REGION

Z.L. Wronkowski, Instytut Onkologii im Marii Sklodowskiej Curie, Dept. of Cancer Control & Epidemiology, *15 Wawelska St., 00973 Warsaw, Poland* (D-IARC-79-460)

The purpose of this study is to determine whether incidence of cancer among petrochemical workers differs from the rates in two control groups, i.e., farmers and the general population in the Warsaw region. The population under study consists of all workers of the Petroleum Plant in Plock who started work after January 1, 1965 - approximately 15,000 individuals. A control group of farmers, individually matched by year of birth and sex, will be used. Both groups will be followed up and cancer cases will be ascertained through linkage of records of the study and control groups and those of the Warsaw Tumor

Registry. Data on risk factors for study and control groups will be collected. Age, by individual year, sex and site specific cancer incidence rates will be compared with the expected numbers based on incidence rates in the Warsaw region. Man years of exposure will be calculated for specific cohorts by age and sex so that a dose-response relationship may be tested.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1655,

PROSPECTIVE STUDY OF PATIENTS INJECTED WITH THOROTRAST (PORTUGUESE LONG-TERM SIDE EFFECTS OF THOROTRAST STUDY GROUPS)

J.S. Horta, Universidade de Lisboa, School of Medicine, *Cidade Universitaria, Lisbon 4, Portugal* (D-IARC-98-462)

Since the late 1950's neoplastic and other lesions, found mostly in the liver and bone marrow, have been reported in Portuguese patients who were injected some years earlier with thorotrast (a colloidal suspension of thorium dioxide, used mostly as an intravascular radiological contrast medium). A prospective survey of about 2,000 individuals injected with this agent between 1930 and 1950, together with pathological, clinical and laboratory studies, was started in 1961 by the Portuguese Side Effects of Thorotrast Study Group. A significantly higher risk of death from malignancies (mostly liver tumors and acute leukaemia) has been shown among thorotrast recipients compared with controls. This study is continuing. It is hoped that follow-up of these Portuguese patients will continue until the near extinction of surviving patients (now numbering about 200) so that more data relevant to the possible harmful effects to man of other alpha-emitters, such as plutonium, may be collected. The risk of lung and bone cancer is of particular interest with a suggestive increase in bone sarcoma already reported in the literature.

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2.1656,

EPIDEMIOLOGICAL FACTORS IN GASTRIC CANCER, CLUJ DISTRICT, ROMANIA

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Study of cancer incidence in Cluj district (1974-1975) shows that among males gastric cancer is most prevalent (42.2 per 100,000 per annum) being most widespread in the rural areas (about 73.0). Among females, breast cancer was most prevalent (27.0) followed by cervix uteri (23.8) and stomach (22.1). Previously, the rank order was: 1-cervix uteri, 2-stomach, 3-breast cancer. The correlation between nitrosamines and gastric cancer is being studied, estimating the secondary amines in the traditional foodstuffs and the nitrate and nitrite in drinking water in rural areas.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1657,

CORRELATION BETWEEN CATTLE BREEDING AND HUMAN LEUKEMIA AND LYMPHOMA

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Correlation between regional breed differences in cattle and the incidence of human leukemia and malignant lymphoma may be rewarding. Our work has shown (VIIth Int. Symp. Leukemia Research, Copenhagen, 1975) neutralizing antibodies for a supposed virus leukaemogen in both 'normal' dairy cows and 'healthy' milkers. The main objectives of the present study are to study the relation between: (1) number of cattle per 100,000 population and the incidence of human leukemia-lymphoma; (2) incidence of human leukemia-lymphoma and per capital consumption of dairy products.

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2.1658,

COHORT STUDY ON HEPATITIS B CARRIERS AND LIVER CANCER

W.O. Phoon, University of Singapore, School of Medicine, Dept. of Social Medicine & Public Health, *Sepoy Lines, Singapore 3, Singapore* (D-IARC-79-477)

Liver cancer is one of the most common forms of cancer in Singapore, especially among Chinese males. Seroepidemiological studies have shown that the frequency of exposure to hepatitis B virus (HBV) and the frequency of chronic carriers is much higher among liver cancer patients than among controls. The main objectives of the present study are to identify the carriers and non-carriers of HBV and to measure their risk for developing liver cancer. A group of at least 5,000 Chinese males over 45 years of age will be bled and their sera will be tested for various markers of HBV. Re-bleeding of those patients found to be positive for various markers of HBV will be attempted to confirm their carrier status. The liver cancer cases which develop in this cohort will then be identified by record linkage with the National Cancer Registry in Singapore. In addition, an attempt will be made to study the other epidemiological factors which may have a bearing on the onset of liver cancer. The study design is prospective by nature.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1659,

LYMPHOMAS IN THE AFRICAN

S. Browde, University of the Witwatersrand, Dept. of Radiation Therapy, *Jan Smuts Ave., Johannesburg, Transvaal, South Africa* (D-IARC-78-427)

There is at present no cancer registry in the Transvaal, but all patients of various race groups referred to our department are being investigated as regards age distribution, clinical presentation and histological types. Five-year survival figures are being collected. Comparison between the various racial groups is being made. Distribution of leukemia/lymphoma in the African race group is also being investigated. The age, racial distribution, sex, histological type, site of presentation and response to treatment will be examined and a comparison with white patients will be made.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1660,

ENVIRONMENTAL AND DEMOGRAPHIC STUDIES ON ESOPHAGUS CANCER IN TRANSKEI

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Esophageal cancer shows a marked geographical variation in incidence in the Transkei. Three main lines of investigation are being undertaken: 1) Agricultural associations: the following studies are being conducted on a broad scale in high and low incidence districts; soil profiles and pedalogical classification, soil mineral and trace elements, elements in plants and water and the distribution of mycotoxin in edible produce. 2) Environmental carcinogens: analyses of nitrosamines in prepared food and beer from high and low incidence areas, mycotoxin analyses of prepared and stored food from high and low incidence areas, biological screening program of dietary staples, snuff, beer and home-grown tobacco smoke condensate on rats. 3) Population studies: case-control questionnaire study, a clustering study -geographic, temporal and familial - and detailed ecological studies in cluster and adjacent areas free of esophageal cancer, if any.

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2.1661,

PRIMARY LIVER CANCER RATE AND AFLATOXIN INTAKE IN TRANSKEI

S.J. Van Rensburg, South African Medical Research Council, National Research Inst. for Nutritional Diseases, Division of Nutritional Pathology, *P.O. Box 70, Tygerberg 7505, Cape Province, South Africa* (D-IARC-79-490)

The objective is to establish if the international data on the relationship between liver cancer and aflatoxin intake are also applicable to the Transkei. Prepared food samples are being collected from four districts in Transkei for the chemical analysis of aflatoxins. Cancer incidence will be assessed by simple hospital registration, and, further, by the incidence rates in mineworkers originating from the study area.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1662,

RELATION BETWEEN CANCER INCIDENCE AND ENVIRONMENTAL FACTORS

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The geographical distribution of various types of neoplasms is studied in Sweden. Preliminary data on liver cancers among males demonstrate that the 3 big cities in Sweden have an increased rate in comparison to the remainder of the country. This difference is less pronounced among females. Further analyses are performed to investigate exposure in chemical industry and exposure through alcohol consumption.

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2.1663,

MEDICAL CARE UTILIZATION IN STOCKHOLM - REQUIREMENTS AND REALITY

E. Allander, Inst. of Social Medicine, *S14186 Huddinge, Sweden* (D-IARC-78-448)

The first aim of this study is to develop methods for record linkage between data bases for epidemiological studies. The data bases of special interest are the Swedish Register of Death Certificates and the Stockholm Register of In-patient Care. The second aim is to use these data to study the epidemiology of acute myocardial infarction and fractures on the hip (cancer may be included in the future).

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2.1664,

REGIONAL TUMOR REGISTRY FOR SOUTHERN SWEDEN

T.R. Moeller, University Hospital of Lund, Dept. of Oncology, *E. Blocket, S22185 Lund, Sweden* (D-IARC-79-512)

In the new organization proposed for oncological care in Sweden, it is planned to found seven oncological centers, in each of which a regional tumor registry will be established. These registries not only collect the reports on new cancers in the region but also take part in clinical trials, epidemiological studies and similar activities undertaken in the region. Work is now in progress to establish a regional tumor registry with these functions in the southern part of Sweden.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1665,

RETROSPECTIVE EPIDEMIOLOGICAL STUDY OF HEALTH HAZARDS IN THE RUBBER INDUSTRY

B.E. Holmberg, National Board of Occupational Safety & Health, Occupational Toxicology Section, *P.O. Box 10026, S10026 Stockholm, Sweden* (D-IARC-79-519)

All workers in two large rubber companies employed between January 1, 1930, and December 31, 1972, who worked for more than one year, will constitute the cohort. The cohort will be subdivided according to department: mixing department and other production departments. White collar workers form a control group. These lists of workers will be completed by the personal identification number and compared with the official death registry and the cancer registry.

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2.1666,

SOFT-TISSUE SARCOMAS AND EXPOSURE TO PHENOXY ACIDS - AN EPIDEMIOLOGICAL STUDY

L.Q. Hardell, Regionsjukhuset, Dept. of Oncology, *90185 Umea, Sweden* (D-IARC-79-522)

During 1970-1976, 56 men and 36 women with malignant soft-tissue sarcomas were admitted to the Dept. of Oncology at the Regional Hospital in Umea, Sweden. Forty-four of these men were workers and

7 stated that they had previous relatively heavy exposure to phenoxyacetic acids. These findings have been published in Laekartidningen 74: 2753-2754, 1977. The aim of the present study is a more thorough investigation, performed as a case-control study, of a possible connection between exposure to phenoxyacetic acids, 2,4-D and 2,4,5-T, and malignant soft-tissue sarcomas. The control group will be matched by geographical region, sex and age.
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2.1667,

OCCUPATIONAL DISTRIBUTION AMONG LUNG CANCER PATIENTS COMPARED TO THOSE WITH CHRONIC BRONCHITIS, BRONCHIAL ASTHMA AND SARCOIDOSIS IN BERNE

M. Scherrer, University of Bern, Outpatient Clinic, Dept. of Internal Medicine, *Freiburgstrasse, CH3010 Bern 3012, Switzerland* (D-IARC-79-531)

It is believed that with a highly developed modern industry various carcinogenic substances are produced (synthetic materials, metals etc.). Inhalation of noxious materials at work may, therefore, be a further cause of the development of lung cancer, in addition to smoking. The distribution of different occupational groups among patients with lung cancer and selected pulmonary conditions is being studied in order to find out whether workers in the chemical, synthetic or metal industry are more frequently affected than other occupational groups.
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1668,

MORTALITY STATISTICS

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Statistical data concerning mortality following the List 'A' of the International Classification of Diseases are collected on a world-wide basis, processed, stored and published annually (Volume 1 of the World Health Statistics Annual). Data on cancer mortality according to the three-digit list of ICD are collected and stored in WHO's data bank. Epidemiological and statistical analyses of cancer mortality are periodically published as a special subject in the World Health Statistics Report (WHSTR) e.g. Breast, WHSTR, No 6, 1975; Uterus, WHSTR, No 8, 1975; Digestive Organs and Peritoneum, WHSTR, No 3, 1976; Hodgkin's Disease, WHSTR, No 2, 1977; Lung, WHSTR, No 2, 1977. A project for the development of a comprehensive cancer information subsystem is underway.
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2.1669,

RETROSPECTIVE STUDY OF CANCER MORTALITY RELATED TO PLACE OF RESIDENCE

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It was shown by Blumer (Schweiz. Med. Wschr. 106, 503 (1976)) that cancer mortality was strongly dependent on place of residence. People living in the immediate vicinity of the central road of a city in Switzerland died about 9 times as frequently from cancer as people in remote areas of the same city. In a recalculation of the raw data (Schweiz. Med. Wschr. 107, 312 (1977)) the results were confirmed in that the cancer mortality of the group living near the road was higher by a factor of two than expected on the basis of age-adjusted cancer mortality in Switzerland. It is planned to determine if a similar relationship can be found in other places in Switzerland.
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1670,

CHRONOLOGICAL OBSERVATION OF EPIDEMIOLOGICAL CHARACTERISTICS OF LUNG CANCER IN TAIWAN

S.P. Yang, National Taiwan University, College of Medicine, Dept. of Internal Medicine, *1 Jenai Rd. Section 1, Taipei, Republic of China* (D-IARC-79-540)

A previous study indicates that lung cancer in Taiwan has the following epidemiological characteristics: 1. An increasing rate which is the highest among malignant neoplasms in the past 20 years. 2. A male to female ratio of 2 to 1, which has been the same for the past 30 years. 3. A high frequency of adenocarcinoma even in males (34.3% for males and 58.7% for females). 4. A recent rapid increase which cannot be explained solely by cigarette smoking. In order to determine whether these epidemiological characteristics will change in the future, a time trends study is underway for each five-year interval, analyzing available vital statistics data and clinical material collected from major hospitals islandwide (there is still no islandwide cancer registration system) and comparing the results of the 2nd lung cancer prevalence survey (in conjunction with the 5th tuberculosis prevalence survey) in 1977-1978 with those of the first survey carried out 5 years ago.
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1671,

CANCER EPIDEMIOLOGY IN TANZANIA, EAST AFRICA

U. Henschke, University of Dar es Salaam, School of Medicine, Radiology & Radiotherapy, *P.O. Box 20693, Dar es Salaam, Tanzania* (D-IARC-79-541)

Epidemiological studies, based on the national registry and on the registry of pathological specimens, including case studies of the most frequent cancers in Tanzania (cervix uteri, liver, skin in albinos, and stomach) are envisaged. Investigations of cancers which appear to be unusually frequent in relative terms (Burkitt's lymphoma, Kaposi's sarcoma, retinoblastoma) as well as of the cancers rare in East Africa, but frequent in Europe and North America (lung, colon, breast, pancreas, prostate) are contemplated.
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1672,

MORTALITY FROM CANCER IN RELATION TO OCCUPATIONAL AND SOCIAL CLASS

W.P. Logan, (No Performing Organization Reported), *Switzerland* (D-IARC-79-534)

A historical review of cancer mortality by occupation and social class based on the Decennial Occupational Mortality Supplements of the Registrar General for England and and Wales 1851-1971, is being undertaken. Comparisons with similar data from other countries are being made.
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1673,

INVASIVE CERVICAL CANCER IN GENEVA

L. Raymond, Registre Genevois des Tumeurs, Centre de Cytologie et de Depistage du Cancer, *55 Blv. de la Cluse, 1205 Geneva, Switzerland* (D-IARC-79-535)

This investigation is a restrospective study of the frequency and chronological distribution of cytological examinations of cervical smears in women who developed invasive cervical cancer between 1970 and 1975; cases are compared with controls, i.e., screened women who did not develop invasve cervical carcinoma, matched by age, vital data and nationality. The results of the study will help to determine the optimal interval between successive screenings.
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1674,

MORTALITY FROM CANCER OF THE COLON AND RECTUM IN RELATION TO FOOD SALES

A. Delachaux, Universite de Lausanne, Institut de Medicine Sociale et Preventive, *Bugnon, Case Postale 611, 1011 Lausanne, Switzerland* (D-IARC-79-536)

Standardized mortality ratios for cancers of the colon and rectum show significant differences among the 25 cantons of Switzerland. Data on sales of foodstuffs have been obtained from one of the two major cooperatives. The deaths for the 7 years 1969-1975 and the corresponding populations have been calculated for the same areas as for food sales. The latter will be converted into nutritional content (fibre etc.) and compared with the death rates. A search will be made for similar data in other countries.
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1675,

NEUCHATEL CANCER REGISTRY

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The registry collects data from all cancer cases from the Canton of Neuchatel (population: 170,000), and contains information about socio-economic status, rural or urban origin, symptoms, treatment, as well as histological diagnosis. The sources of information are: pathological, cytological, hematological reports, medical files (hospitals and practicing doctors), autopsies and deaths certificates.
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1676,

BURKITT'S LYMPHOMA PROJECT, MARA REGION, TANZANIA

G.R. Brubaker, Shirati Mission Hospital, *Musoma, Tanzania* (D-IARC-79-543)

The general objective is to study the epidemiology of Burkitt's lymphoma (BL) and, more specifically, to investigate the role of hyper-endemic malaria in BL causation. In order to determine whether hyperendemic malaria is necessary for BL development, a malaria suppression trial is being carried out. Chloroquin tablets are distributed twice monthly to approximately 90,000 children aged 0-10 years in order to reduce malaria to hypoendemic levels. The malaria suppression was initiated in 1977 and will be continued for five years, during which time the incidence of BL will be carefully monitored in the area.
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1677,

EPIDEMIOLOGY OF CANCER OF CERVIX UTERI IN THAILAND

S. Boonyanit, Mahidol University, Siriraj Hospital & Medical School, Dept. of Obstetrics & Gynecology, *2 Prannog Rd., Bangkok 7, Thailand* (D-IARC-78-480)

Cancer of cervix uteri is one of the most common neoplasms in Thailand and is one of the principal causes of death. During the past years cancer of the cervix comprised about 17 percent of all cancer among females. The main objectives of the study of case characteristics are to (1) investigate the relation of age, parity, sexual habits, use of IUD and contraceptive pill, socioeconomic status, menstrual and marital history, race, religion, diet, education, pre-existing pathology and family history of cancer to cancer of cervix; (2) elucidate the relation of personal hygiene, parasitic fungus and viral infection to this disease; (3) determine the reasons for the high proportion of adenocarcinoma of cervix which over the past 15 years has risen from 3 percent to nearly 19 percent, and for the apparent fall in average age of patient over the past ten years.
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1678,

ENDEMIC PLEURO-PERITONEAL DISEASE IN RURAL TURKEY

Y.I. Baris, Hacettepe Universitesi, Faculty of Medicine, Dept. of Chest Diseases, *Ankara, Turkey* (D-IARC-79-550)

The Institute of Mineral Research and Exploration of Turkey has shown that certain regions in Turkey are rich in asbestos. Preliminary studies have shown that there are many villages in Turkey where pleural calcifications (Hacihasan village), both pleural calcifications and pleural and peritoneal mesotheliomas and other malignancies (Tuzkoey) and pleural mesothlioma (Karain village) are common. These villages are located in Central Anatolia; the diseases are familial but not hereditary. Geological studies have shown that there are no deposits of commercial asbestos in the vicinity of these villages, nor any asbestos mines, mills or factories. It is believed that these diseases are non-occupational. Retrospective and prospective epidemiological and clinical studies are being undertaken to solve this problem.
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1679,

AN EPIDEMIOLOGICAL STUDY OF LEUKAEMIA INDUCED BY EXPOSURE TO DIFFERENT CHEMICALS

M.B. Aksoy, Istanbul Universitesi, School of Medicine, Dept. of Internal Medicine, *Bayezit, Istanbul, Turkey* (D-IARC-79-557)

Despite the fact that there is a significant reduction in the incidence of haematopoietic insults, such as apiastic anaemia and leukaemia, after the strict prohibition of the use of benzene as a solvent in Turkey, other chemicals (those used in the textile industry and asbestos) may still be involved in the occurence of leukaemia among the working population. The scope of the present project is to perform an epidemiological study as well as clinical and laboratory investigations directed towards the detection of the incidence and the types of leukaemia produced in those chronically exposed to these chemicals. It is also believed that the detection of the patients involved, while they are still at the pre-leukaemic stage, may be of importance. The cytochemical and immunological alterations likely to be observed in such subjects constitute another interesting aspect of the task. Chromatographical analysis of the chemicals in question will be undertaken.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1680,

PROSPECTIVE STUDY OF BURKITT'S LYMPHOMA, WEST NILE DISTRICT, UGANDA

G. Olwitt, East African Virus Research Inst., *P.O. Box 369, Arua, Uganda* (D-IARC-79-559)

The main objective is to study the aetiological involvement of the Epstein-Barr virus (EBV) in Burkitt's lymphoma (BL). Additional objectives are to study the epidemiology of the EBV and BL in the West Nile district, and the role of hyperendemic malaria in BL causation. cohort of 42,000 children aged 0-8 years was bled in an initial phase from 1972-1974. During the subsequent case detection, fourteen BL cases were diagnosed in the children who were bled. The testing of the 'pre-sera' and appropriate controls showed that viral capsid antigen antibodies to the EBV had already been elevated in the BL candidates up to four years before tumour manifestation (Nature 274, (5673) 756-761, 1978). Other EBV antibody activities (early antigen and Epstein-Barr nuclear antigen) were not elevated in the pre-BL sera and the case detection in the study cohort will continue until 1979 in order to study the mechanism of how EBV infection promotes BL development. The study of BL epidemiology has confirmed that the tumour still shows significant time-space clustering and seasonal variation, thus favouring an infectious aetiology. The epidemiology of the EBV is being studied in number of sample groups which were bled repeatedly during the years 1973-1977. The testing for EBV antibodies in the sera is now progressing at the laboratory at IARC, Lyon. The BL case detection in the West Nile district will continue through 1979. Since the testing of the 14 pre-bled BL sera in 1977, 5 new pre-bled BL cases have been detected and will be tested for anti-EBV activities in 1979. The analysis of the malaria data collected in the longitudinal s'.ey in the West Nile has indicated that malaria parasitaemia declined drastically in the West Nile between 1973 and 1977. The malaria slides are now being re-examined to ensure that this observation is true.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1681,

STUDY OF A BRITISH SHIPYARD POPULATION WITH REGARD TO BRONCHIAL CARCINOMA INCIDENCE IN MEN WITH PLEURAL PLAQUES

J.R. Edge, University of Newcastle Upon Tyne, Postgraduate Department, *6 Kensington Terr., Newcastle Upon Tyne NE1 7RU, United Kingdom* (D-IARC-79-563)

Pleural plaques, both fibrous and calcified, have been widely described in the neighbourhood of asbestos mines and in populations using asbestos industrially. They are commonly thought to be benign lesions merely indicating prior asbestos exposure. The present study concerns a shipyard population of 7,000 men who have been found to have a high prevalence of pleural plaques (one third of the male population as assessed in 100 consecutive unselected autopsies), and a substantial annual incidence of malignant mesothelioma of the pleura. The clinical impression is that the occurrence of bronchial carcinoma in men showing pleural plaques is substantially increased. A group of Barrow shipyard workers with pleural plaques and a matched group of Carlisle workers from different but non-asbestos-exposed occupations are being compared in a long-term mortality study. The results to date suggest an increased incidence of bronchial carcinoma in the men with pleural plaques of approximately five times that found in the control series. It is intended to continue this study for another five years. Further statistical analysis has revealed a bias because of the inclusion of some clinically diagnosed subjects in the Barrow series, compared with the controls, all of whom had routine radiographs. The increase in the incidence of bronchial carcinoma in the plaque group after this has been allowed for is likely to be nearer twofold that the fivefold initially estimated.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1682,

LONG-TERM FOLLOW-UP OF ALL WORKERS EXPOSED TO ASBESTOS IN NORTHERN IRELAND

J.H. Langlands, Belfast City Hospital, Respiratory Investigation Centre, *93 Lisburn Rd., Belfast BT9 7AB, United Kingdom* (D-IARC-79-565)

The objectives are to see how the changing conditions of work with asbestos are affecting the incidence of asbestosis, carcinoma of the lung and mesothelioma and whether preventive measures being taken are effective. This is a continuation of work already published and entails examining all men still at work and all men who have worked with asbestos in the past at 2-3 year intervals. If they develop illnesses or die, every effort is made to document precisely the nature of the illnesses or cause of death.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1683,

ANALYSIS OF DATA FROM THE HANFORD MORTALITY AND MORBIDITY SURVEY (USA)

A.M. Stewart, University of Birmingham, Dept. of Social Medicine, *P.O. Box 363, Birmingham, England, United Kingdom* (D-IARC-79-575)

Factors affecting the probability of workers in the radiation industry dying from malignant disease following occupational exposures to external radiation are being studied.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1684,

INCIDENCE OF SKIN CANCER IN ENGLAND AND WALES AND VARIATION WITH TIME

J.F. Leach, British Aircraft Corp., Aerospace Aircraft Group, *Filton House, Bristol BS9 7AR, England, United Kingdom* (D-IARC-79-579)

The aim of this study is to correlate the annual incidence of skin cancer in selected areas of England and Wales with environmental and sociological changes taking place during the period 1952 to present day.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1685,

CARDIFF CERVICAL CYTOLOGY STUDY

J.B. Landsman, Medical Research Council, Epidemiology Unit, *4 Richmond Rd., Cardiff CF2 3AS, Wales, United Kingdom* (D-IARC-79-582)

The main objective of the Cardiff Cervical Cytology Study is to evaluate screening for cervical cancer. The study is based on a defined population: all women who have ever been married, aged 25-69, resident within the Cardiff City area. The basic design objective was that all eligible women should be screened three times. The defined population was enumerated by house-to-house visiting, and eligible women were offered appointments for a cervical smear test at specially organized clinics. The study began in late 1965 and the first round of visiting the city finished early in 1971. The defined population numbers some 71,000 women of whom 46,000 (65%) accepted the offer of the test. Subsequent to the first smear women were re-called for second and third smears at two to three yearly intervals. Some 38,000 have so far had second smear and over 30,000 have had a third. The study should provide estimates of the prevalence and incidence of the various pathological states, estimates of false negative and false positive error rates. Death and registration rates for invasive cancer in the Cardiff City area are being monitored.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1686,

NATIONAL REGISTRY FOR RADIATION WORKERS

J.A. Reissland, National Radiological Protection Board, Dept. of Physics, *Harwell St., Oxford, England, United Kingdom* (D-IARC-79-584)

The purpose of this study is to investigate by long-term follow-up studies any relationship between occupational exposure to radiation and age-specific causes of death. Any worker who is monitored regularly for exposure to radiation and for whom dose records are kept is entered in the Registry. It is expected to include over 50,000 current workers in addition to those who leave the industry whether by death, retirement or change of job. Once sufficient data on mortality has accumulated, periodic analyses will be carried out with several different control groups chosen from among those workers on the Registry with very low lifetime radiation doses.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1687,

INCIDENCE OF LEUKAEMIA AND LYMPHOMA IN AN EXPLOSIVES FACTORY

C.R. Gillis, Greater Glasgow Area Health Board, Cancer Intelligence Unit, *520 Bilsland Dr., c/o Ruchill Hospital, Glasgow G20 9NB, Scotland, United Kingdom* (D-IARC-79-590)

A cohort of workers at an industrial plant producing explosives has been enumerated. The incidence and mortality of leukaemia and lymphoma amongst the workers in the subsequent ten years is higher than expected when compared with age-matched general population rates over the period. Investigations to identify common features from detailed occupational histories and proximity to potential carcinogenic hazards, together with other suspected aetiological factors which occur outside the work environment, are being carried out.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1688,

CASE-CONTROL STUDY OF SMOKING AND DRINKING HABITS IN LUNG CANCER AND OTHER SMOKING-RELATED DISEASES

C.R. Gillis, Greater Glasgow Area Health Board, Cancer Intelligence Unit, *520 Bilsland Dr., c/o Ruchill Hospital, Glasgow G20 9NB, Scotland, United Kingdom* (D-IARC-79-591)

A case-control study recording detailed histories of smoking, drinking and stress factors is being carried out in Scotland as part of an international comparison to correlate lung cancer incidence with underlying smoking and drinking patterns in the different countries. Local information will be available on smoking and drinking for other known smoking-related diseases and the hypothesis that different components of these habits predispose the individual to different diseases is being investigated.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1689,

CORRELATION OF PATHOLOGICAL TYPES OF OVARIAN NEOPLASMS WITH CHARACTERISTICS OF THE DISEASE

C.R. Gillis, Greater Glasgow Area Health Board, Cancer Intelligence Unit, *520 Bilsland Dr., c/o Ruchill Hospital, Glasgow G20 9NB, Scotland, United Kingdom* (D-IARC-79-529)

All cases of ovarian carcinoma first diagnosed in 1974 and resident in the west of Scotland have been identified. Pathology specimens have been examined by one pathologist. The role of fertility and previous disease in relation to the aetiology of ovarian cancer, and in particular to the individual tumor type, is being investigated by comparison with information collected from appropriate sources. The procedures used to establish diagnosis together with the different types of treatment given have been quantified. The effect of pathological type and staging on survival is being studied.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1690,

EPIDEMIOLOGY OF TESTICULAR TUMOURS IN YORKSHIRE

R.A. Cartwright, Yorkshire Regional Cancer Org., *Leeds LS16 6QB, England, United Kingdom* (D-IARC-79-597)

Testis teratomas are thought to be increasing in frequency in parts of the United Kingdom and two studies have been designed to investigate both this and the results of changes of treatment. Firstly, a retrospective study on the distribution and survival of all types of testicular tumours is being undertaken, with particular attention to differences in the natural history of differing histological types. Secondly, a study with case-matched controls investigating geographical distribution, family and occupational history, as well as chromosomal variation, HL-A types and blood groups, will be undertaken.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1691,

TRENDS IN OVARIAN CANCER IN RELATION TO PATTERNS OF CHILDBEARING

V.S. Beral, University of London, London School of Hygiene & Tropical Medicine, Dept. of Epidemiology & Med Statistics, *Keppel St., London WC1E 7HT, England, United Kingdom* (D-IARC-79-605)

The present study is concerned with the analysis of routinely available mortality and morbidity data on ovarian cancer. The role of different patterns of childbearing on time and cohort trends, social class variation, and international variation in ovarian cancer is being investigated.

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2.1692,

TRENDS IN SKIN CANCER

V.S. Beral, University of London, London School of Hygiene & Tropical Medicine, Dept. of Epidemiology & Med Statistics, *Keppel St., London WC1E 7HT, England, United Kingdom* (D-IARC-79-606)

The incidence of skin cancer, particularly malignant melanoma, is increasing rapidly in most countries. The present study is concerned with the analysis of routinely available mortality and morbidity data on skin cancers. Its aim is to describe those populations in which the increase in incidence has been most marked. The analysis includes (a) time trends, (b) cohort trends, (c) social class variations, and (d) geographic variations in disease incidence. Particular attention is given to regional variations (urban/rural and international) in skin cancer incidence during the past 20 years and the role of changes in atmospheric ozone in explaining the observed disease pattern. Initial examination of the data suggests that some other explanation is required.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1693,

EPIDEMIOLOGICAL STUDIES OF THE RELATIONSHIP BETWEEN RE-USE OF WATER AND HAZARDS TO HEALTH

S.A. Beresford, University of London, Royal Free Hospital School of Medicine, Dept. of Clinical Epidemiology & Social Medicine, *8 Hunter St., London WC1N 1BP, England, United Kingdom* (D-IARC-79-608)

The aim of the studies is to investigate the effects on the health of populations drinking water derived from water sources contaminated with domestic and industrial waste, with particular reference to cancer of the digestive system, and of the genitourinary system. The first stage of the studies is to examine the association between cancer mortality and the source of water supply in terms of the history of pollution and degree of re-use. The hypothesised association arises mainly from the Mississippi River study although other studies have also examined this association. Possible disease outcomes other than cancer will also be investigated to provide a basis for formulating further hypotheses.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1694,

THE EFFECT OF ORAL CONTRACEPTIVES ON MAMMARY TISSUE

J.I. Burn, Charing Cross Hospital, Breast Clinic, *Fulham Palace Rd., London, W6 8RF, England, United Kingdom* (D-IARC-79-610)

This investigation has been in progress for 4 years. It is essentially a clinical study with long-term follow-up of women who are taking a form of oral contraceptive. The study includes clinical examination of the breasts, mammography where appropriate and biopsy excision, also where appropriate. The study is a prospective one, without controls, and it is hoped that it will provide useful long-term information on the effects of oral contraceptives on mammary tissue.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1695,

OESOPHAGEAL CANCER AND ALCOHOL CONSUMPTION IN GREAT BRITAIN

C.E. Chilvers, University of London, London School of Hygiene & Tropical Medicine, Dept. of Epidemiology & Med Statistics, *Keppel St., London WC1E 7HT, England, United Kingdom* (D-IARC-79-612)

Alcohol is one of many factors which have been implicated in the aetiology of oesophageal cancer. This study investigates mortality and morbidity due to oesophageal cancer in Great Britain and attempts to evaluate the evidence for an association with alcohol consumption using routinely collected data.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1696,

GASTRIC CANCER AND NITRATE INGESTION - NITRATE IN DRINKING WATER

P.M. Fraser, University of London, London School of Hygiene & Tropical Medicine, Dept. of Epidemiology & Medical Statistics, *Keppel St., London WC1E 7HT, England, United Kingdom* (D-IARC-79-621)

Evidence is accumulating that populations ingesting large amounts of nitrate have a high mortality from cancer, particularly of the stomach, due to the formation in vivo of carcinogenic nitrosamines. Nitrate levels in some water sources in the eastern regions of England are rising steadily due to extensive use of fertilizer. Mortality from gastric cancer within these regions in 1969-73 is being examined in relation to the nitrate concentration in drinking water 15 to 20 years previously. The objectives of this study are: 1) to establish whether there is an increased risk of gastric cancer in populations exposed to moderately high levels of nitrate in drinking water and 2) to determine a safe level for nitrate in drinking water.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1697,

STUDY OF FERTILIZER MANUFACTURERS

P.M. Fraser, University of London, London School of Hygiene & Tropical Medicine, Dept. of Epidemiology & Medical Statistics, *Keppel St., London WC1E 7HT, England, United Kingdom* (D-IARC-79-622)

The hypothesis that high nitrate ingestion causes cancer is being examined in workers exposed to nitrate-containing dust in the manufacture of fertilizer. A census-based study links occupational data from the 1961 and 1971 censuses of England and Wales to mortality data from the National Health Service Central Register.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1698,

EPIDEMIOLOGY OF LARGE BOWEL CANCER

M.S. Hutt, University of London, St. Thomas Hospital Medical School, Dept. of Morbid Anatomy, *Lambeth Palace Rd., London SE1 7EH, England, United Kingdom* (D-IARC-79-628)

The epidemiology of large bowel cancer is being compared with that of non-malignant 'diseases of affluence' in the context of diet and bowel pathophysiology.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1699,

GLOUCESTERSHIRE STUDY

P.N. Lee, Tobacco Research Council, *Glen House, Stag Pl., London SW1E 5AG, England, United Kingdom* (D-IARC-79-632)

In 1963-1967 information on respiratory symptoms, residential, occupational and medical history, as well as full details of smoking habits, was obtained from 2,377 people in hospitals in Gloucestershire. Those selected formed six groups, namely lung cancer, chronic bronchitis, other chest diseases, cardiac, orthopaedic and other cancer cases. Between 1974 and 1977 an attempt was made to reinterview those still alive and to determine their current smoking habits and respiratory symptoms and to find the cause of death of those who had died. In addition a sample of the living population in Gloucestershire in 1974 was interviewed to determine their smoking habits and respiratory symptoms. The data is now being analysed with four main objectives. Firstly, to determine how the six hospitalized groups differed on factors recorded on the original questionnaire. Secondly, to determine within disorder groups how survival is related to the information recorded originally. Thirdly, to test how representative the survivors are of the living population in Gloucestershire. Fourthly, to investigate changes in symptoms and in smoking habits in the survivors and examine how the progression of the former is related to changes in the latter.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1700,

INCIDENCE OF BREAST CANCER IN WOMEN WHO HAVE HAD A TOTAL COLECTOMY AT AN EARLY AGE

E.H. Rang, University of London, St. Georges Hospital Medical School, Dept. of Surgery, *Cranmer Terr. Tooting, London SW17 0RE, England, United Kingdom* (D-IARC-79-642)

There is a high correlation between the intake of dietary fat and the incidence of cancer of the colon and breast. It has been suggested that the amount of dietary fat affects the composition of the gut flora and the concentration of biliery steroids in the gut and that certain bacteria might be able to produce carcinogens in the colon from these steroids. The production by intestinal bacteria of steroidal oestrogens from the biliary steroids has also been demonstrated and suggests a possible role for these bacteria in breast cancer. The purpose of this study is to test the possibility of a relationship between the production or modification of oestrogenic steroids by gut bacteria and the development of breast cancer by seeing whether there is a decreased incidence of breast cancer in women who have had a total colectomy at an early age. It is hoped to follow up about 2,000 women who had a total colectomy and compare the observed number of breast cancers in the group with the number expected if their colons were retained.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1701,

CONTROLLED TRIAL OF SMOKING CESSATION

G. Rose, University of London, London School of Hygiene & Tropical Medicine, Dept. of Medical Statistics & Epidemiology, *Keppel St., London WC1E 7HT, England, United Kingdom* (D-IARC-79-643)

The effects of smoking cessation on mortality from cardiorespiratory diseases and cancers will be studied. Some 1,400 male cigarette smokers aged 40-64 were randomly allocated to an intervention group (50% gave up cigarettes for 3 years or more) and a control group. All-causes mortality results are to be reported in December 1978 and cause-specific results in (probably) 1980.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1702,

ROYAL COLLEGE OF GENERAL PRACTITIONERS - ORAL CONTRACEPTION STUDY

C.R. Kay, Royal College of General Practitioners, Manchester Research Unit, *8 Barlow Moor Rd., Manchester M20 0TR, England, United Kingdom* (D-IARC-79-654)

This study comprises a long-term prospective survey of the health of a large number (initially 23,000) of oral contraceptive users throughout the United Kingdom. Comparison is made with a control group of

similar size consisting of women who have never used oral contraceptives. Analyses are based on reports from about 1,200 general practitioners. The study began in April 1968.
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1703,
EPIDEMIOLOGICAL ASPECTS OF HODGKIN'S DISEASE IN GREATER MANCHESTER
I. Leck, Christie Hospital & Holt Radium Inst., Epidemiology Unit, *Wilmslow Rd., Withington, Manchester M20 9BX, England, United Kingdom* (D-IARC-79-655)
The hypothesis that Hodgkin's disease is transmissible is being explored in two ways. (1) The importance of a recent report that links such as having attended the same school or work place are no more common between Hodgkin's disease cases than between controls (Smith et al., Lancet 1977, II, 59) is being assessed by seeing whether excesses of such links can be demonstrated between either infectious hepatitis or infectious mononucleosis patients who have been in hospital. (2) Fifteen years cases of Hodgkin's disease in Greater Manchester are being tested for space-time interaction by Knox's method, in order see whether there is any tendency for patients who live close together to develop symptoms either at around the same time or (as might be expected if there was a long incubation period) at intervals of a particular length.
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1704,
ESTIMATION OF INCIDENCE RATES OF CARCINOMA IN SITU OF THE CERVIX UTERI
D. May, University of Manchester, Dept. of Community Medicine, *Oxford Rd., Manchester M13 9PL, England, United Kingdom* (D-IARC-78-598)
Data has been collected, over a ten-year period and for a number of purposes, relating to cytological screening tests for uterine cervical lesions among women in the North Western (Health Authority) Region of England. Under this project, it is intended to estimate incidence rates and prevalence rates of the condition which gives rise to truly positive cytological test results. The approach is by means of a model and social class, of rates of prevalance, incidence, false-positive errors and false-negative errors. Equations derived from this model are applied to the data in order to determine the underlying rates, with further assistance from information based on the histological follow-up of positive cytological results.
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1705,
AN EPIDEMIOLOGICAL STUDY OF STOMACH CANCER IN NORTH STAFFORDSHIRE
C.A. Veys, North Staffordshire Medical Inst., Industrial & Community Health Research Centre, *Hartshill, Stoke on Trent ST4 7NY England, United Kingdom* (D-IARC-79-686)
The mortality from stomach cancer in Stoke-on-Trent is one of the highest recorded in the United Kingdom, but the reasons for this are unknown. Some positive associations between stomach cancer and occupation have been observed, in particular with certain dusty trades; and there is also an association with suspended particulate air pollution. For many years in the past, the North Staffordshire area has been noted for its high level of air pollution, which was predominantly caused by smoke emission from local major industries, especially pottery manufacture. Coal mining also predominates and there are many other dusty occupations. The main objective of the study, which is in two parts, is to examine whether occupational factors (especially dust exposure) play a part in the aetiology of stomach cancer in the Stoke-on-Trent area. The investigation will encompass, firstly a detailed examination (in epidemiological terms) of each case of stomach cancer (both male and female) that occurred in the County Borough District of Stoke-on-Trent within the fifteen year period 1961-1975. In addition, prospective case-control study on each person newly presenting with stomach cancer within the succeeding three years (beginning in 1977) will be undertaken. A detailed whole life occupational history will be obtained at interview and matched against that obtained from four controls chosen at random from the population at large. The data will be compared and contrasted for statistically significant differences in the dust exposure between cases and control groups.
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1706,
LUNG CANCER IN THE ANTIMONY INDUSTRY
J.P. Cunningham, Anzon Ltd., *Cookson Hse. Willington Quay, Tyne & Wear, Wallsend NE28 6UQ, England, United Kingdom* (D-IARC-79-700)
A prospective epidemiological survey of workers engaged in the production of antimony metal, antimony oxide, and antimony sulphide is being undertaken to ascertain whether there is an excess of lung cancer by comparison with local death rates and death rates in other occupations. The survey includes all persons working at the plant on 1/1/1961 or joining after that date, and is likely to continue until 1985 or later. Persons leaving employment are traced. The calculations of expected deaths are age-specific and related to man-years of exposure. The survey covers an adjacent zircon plant, as a control. Other factors studied are smoking, sulphur, arsenic and area of residence.
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1707,
MEDICAL AND OCCUPATIONAL RECORDS ANALYSIS SYSTEM
K.S. Williamson, Imperial Chemical Industries Ltd., Central Medical Group, *Fulshaw Hall, Cheshire, Wilmslow SK9 1QB, England, United Kingdom* (D-IARC-79-702)
Workers in the chemical manufacturing industry may be exposed to many different chemical compounds in the course of their work. The possible toxic effects of such small but long-term contacts are largely unknown. The object of this study is to bring together data on the mortality and serious morbidity experience of all employees of Imperial Chemical Industries (ICI) in the United Kingdom, with a continuous record of their place of employment and the chemical substances with which they come into contact. This will be an ongoing study, involving follow-up of an average population of about 100,000 over many years. Data will be collected in a machine system and will be capable of analysis in a number of ways, e.g., by cause of death or serious illness in workers exposed to a particular chemical or mixture of chemicals or by tracing the chemical exposure of those contracting a particular disease, etc.
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1708,
BREAST CANCER AND ORAL CONTRACEPTIVES
D.T. Janerich, State Bureau of Cancer Control, *Empire State Plaza, Tower Bldg. Rm. 565, Albany, New York* 12237 (D-IARC-79-914)
This case-control study was designed to study the possible relationship between oral contraceptives and breast cancer. Our case group consists of women of 45 years of age or younger with breast cancer; controls are matched on the basis of age at first birth. The final case group will consist of 300-400 women. The questionnaire is self-administered and requires full contraceptive and reproductive histories. This study is nearing the end of the data collection stage. The association of prior benign breast disease and oral contraceptive use with breast cancer is currently being analyzed. Family history and oral contraceptive use in relation to breast cancer is also being examined.
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1709,
BREAST CANCER IN YOUNG WOMEN - THE EFFECT OF PRIOR PREGNANCY
D.T. Janerich, State Bureau of Cancer Control, *Empire State Plaza, Tower Bldg. Rm. 565, Albany, New York* 12237 (D-IARC-78-642)
Women whose first pregnancy occurs at an early age have a lower overall risk of breast cancer than either nulliparous women or those women whose first birth is later in their reproductive lives. In this case-control study, pregnancy histories were studied among 317 parous women who were 45 years old or less when breast cancer was diagnosed. The question of whether or not the protection afforded by early pregnancy occurs immediately or is delayed, similar to early surgical menopause, is being examined.
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1710,
URANIUM EPIDEMIOLOGY STUDY
R.W. Buechley, University of New Mexico, School of Medicine, Epidemiology Section, *University Hill N.E., Albuquerque, New Mexico* 87131 (D-IARC-79-910)
The health status of uranium miners in the Grants, New Mexico, uranium belt will be studied with special emphasis on those diseases associated with exposure to radon daughters, e.g., lung cancer. A list of about 20,000 persons receiving pre-employment medical examinations has formed the basis of a defined cohort of 4,000 miners who have worked underground for at least one year. The relationships for individual miners of radiation exposure, mining, and smoking will be examined. For the last 15 years exposure levels have been measured. In 1969 new standards reduced allowable exposure by a factor of 5. Ultimately health histories of Grants area miners employed only since 1969 (low radiation levels), Grants area miners employed before 1969 (higher radiation levels), and miners working in Utah and Colorado earlier at much higher radiation levels will be compared and external comparisons made with non-mining populations of the mining area, of other areas of New Mexico, and of the United States as a whole.
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1711,
MORBIDITY AND MORTALITY AMONG RESERVE MINING COMPANY EMPLOYEES
I.T. Higgins, University of Michigan, Ann Arbor Campus, School of Public Health, Dept. of Epidemiology/Environmental & Industrial Health, *Ann Arbor, Michigan* 48104 (D-IARC-79-877)
This study comprises follow-up of a cohort of men employed at two facilities of the Reserve Mining Company. The attempt is being made to obtain information about all men who have been employed by the Company for one year or more. Mortality from all causes and from specific causes will be compared with expectations based on U.S. and Minnesota rates and within the cohort it will be related to occupational exposures and smoking habits. Particular interest is in all cancers, especially respiratory and alimentary tract cancers. Radiological assessment of the cohort is also being carried out using the classification of chest radiographs developed by the International Labour Organization and the International Union Against Cancer.
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1712,
HEALTH OF FORMER THORIUM WORKERS
A.P. Polednak, Argonne National Lab., Biological & Medical Research Division, *9700 S. Cass Ave., Argonne, Illinois* 60439 (D-IARC-79-798)
The study population is comprised of about 4000 persons (mostly males) who worked at a thorium processing plant from the mid 1930's until 1973. Mortality and causes of death (from death certificates) are being studied with internal comparisons (by job classification and length of employment) and external comparisons (using U.S. mortality rates specific for sex, age, time and cause). For morbidity studies, subgroup of 558 males (who worked for one year or longer in jobs probably involving highest exposure levels to thorium) has been selected, and questionnaires on medical and occupational history, respiratory symptoms and personal habits (smoking and alcohol consumption) have been sent to those not known to be dead. A random sample of 100 of these 558 men has been selected for a pilot study which involves measurement of radioactivity levels, and a medical examination (including pulmonary function tests). Interest in the health of thorium workers stems mainly from the potential importance of thorium as an energy source. Lung cancer and other lung diseases (e.g., pneumonoconiosis) are of particular interest in these studies, since the major hazard involved in the thorium extraction process is believed to be related to inhalation of airborne thorium and thorium daughter products.
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1713,

ATLANTA CANCER SURVEILLANCE CENTER

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The Atlanta Registry is one of eleven of such programs funded and sponsored by the National Cancer Institute of the United States. Each represents a unique set of persons with respect to climate, race, industrialization, lifestyles, and heritage. Atlanta represents a growing but not particularly industrialized city in the southeastern USA with a large black population and whose longtime resident white population is largely Anglo-Saxon. The study's overall objective is registration and follow-up of every case of cancer in the Atlanta Standard Metropolitan Statistical Area and a separate ten county rural area whose population is largely black. Patients are identified through hospital medical record departments, pathology laboratories, radiotherapy facilities, and death certificates. Collected by specially trained abstractors are demographic information, birthplace, census tract of residence, occupation, use of tobacco, alcohol, and medications, site and histological type of malignancy, diagnostic tests and procedures employed, extent of disease at diagnosis, therapeutic procedures undertaken including surgery, radiotherapy, chemotherapy, and immunotherapy, concomitant diagnoses, family history of cancer and the name of the physician following the patient's progress. Patients are followed through re-admissions to hospitals, by information from the follow-up physician, and through death certificates. It is hoped that these data will identify persons at unusually high or low risk of cancer through various factors of environment and background. Because the registry is population-based, it will be able to produce incidence data and patterns of diagnostic and therapeutic care for the area. Survival information will be calculated and the effectiveness of different modes of therapy evaluated. Cooperation with national and international special studies such as the relationship of non-melanotic skin cancer to the environment, of bladder cancer to the use of saccharin and other dietetic or occupational hazards.

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2.1714,

PROSPECTIVE AND RETROSPECTIVE STUDY OF THE POSSIBLE RELATIONSHIP BETWEEN HERPESVIRUS TYPE II INFECTION AND GENITAL CANCER

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Since 1964, more than 1,500 women were detected during routine cytological screening as having herpesvirus infection. These individuals are followed clinically and cytologically in a special herpes clinic: the incidence of cervical cancer was found to be approximately 10 times higher than in general populations cytologically screened. The main objectives of this study are to investigate the degree of this association and explain the nature of the association and related factors. The incidence of anaplasia was found to be higher in patients with primary herpesvirus type II infection.

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2.1715,

THE JOHNS HOPKINS LUNG PROJECT FOR THE EARLY DETECTION, LOCALIZATION AND THERAPY OF LUNG CANCER

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This study began in 1969 when the Johns Hopkins Medical Institution was asked to (1) develop improved methods for the cytological detection of lung cancer, (2) develop improved methods for the localization of lung cancers that are not detectable by chest X-rays, and (3) test these screening techniques in a population sample. The procedures which evolved are now being employed in Phase II of The Johns Hopkins Lung Project and by the other two centers in the Early Lung Cancer Cooperative Study - The Memorial Sloan-Kettering Hospital for Cancer, and Mayo Foundation. The three collaborating centers are assisted in uniform data collection and analysis by the University of Cincinnati. The goal of the cooperative study is to determine the effect of early cytological or X-ray detection, followed by surgical therapy, on long-term survival in lung cancer, as measured by lung cancer mortality in the survey populations. The Johns Hopkins Lung Project has recruited 10,390 male smokers, aged 45 or over, from the Baltimore metropolitan community. Volunteers were randomized into (a) a group screened by annual chest X-ray, and (b) a group screened by sputum cytology in addition to their annual chest X-ray. All chest X-ray examinations include independent double reading. In addition, all sputum cytology screenees receive an annual examination of an aerosol-induced sputum specimen plus an examination of mailed morning sputum every four months. Subjects in whom cancer is detected may be admitted to the Johns Hopkins Hospital for localization and therapy. Curative resection is undertaken where possible, otherwise therapy includes chemotherapy and radiotherapy. All ten thousand subjects will be followed for at least five years to determine survivorship or cause of death.

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2.1716,

EPIDEMIOLOGY OF ACUTE LEUKEMIA IN URBAN CHILDREN

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The epidemiological patterns of white children with acute leukemia are markedly different from those of black children. For example, a peak around ages 3-4 in mortality rates from acute leukemia has been known to exist in white U.S. children for about 30 years, but seems only recently to be developing in black children. This study is therefore examining the overall epidemiological patterns of acute leukemia in white and black children. In the first phase, records of all patients under 20 years of age discharged from metropolitan Baltimore hospitals from 1960-75 with a diagnosis of acute leukemia were reviewed. A death certificate search was also carried out to identify any cases which might not have been ascertained through hospital record review. The most important finding of this phase of study, already reported (Szklo, M. et al.: Am. J. Epidemiol. 104:330-331, 1976), was a marked increase over time of acute non-lymphocytic leukemia incidence rates in black children. In the second phase of the project, now under way, children with acute leukemia will be compared to two control groups, children with other malignancies and children without cancer, in order to determine whether cases differ from controls in terms of host and environmental characteristics and whether families of cases differ from control families in blood group distribution, immunoglobulin levels and prior experience of viral infections. Because of the small number of black children with acute leukemia in Baltimore, one Washington, D.C. hospital and two Philadelphia hospitals were also included in the case-control phase of the study.

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2.1717,

EPIDEMIOLOGICAL STUDIES OF ENVIRONMENTAL POLLUTANTS IN RELATION TO REGULATIONS

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Data from large-scale occupational mortality studies are being collected and analyzed with special attention to the convergence of evidence indicating that specific occupations have excessive risks of cancer at certain sites. Indices for integration of studies showing epidemiological evidence of carcinogenicity with laboratory studies, including those reflecting mutagenicity, are being developed. Data on environmental exposure-effect relationships, especially community air pollutants, are being collected and analyzed. Data on carcinogenic agents for which workplace exposures are not yet regulated are also being collected, and regulations for arsenic, coal tar, and aminotriazole proposed.

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2.1718,

CHARACTERISTICS IN YOUTH THAT PREDICT THE OCCURRENCE OF ADULT-ONSET CANCERS

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From college entrance health data of 50,000 former male students from Harvard and the University of Pennsylvania records of cancer decedents are being contrasted with those of surviving classmates with reference to physical, social, and psychological variables. Nearly 1,300 men from the 50,000 population died from cancer of specific sites. Aetiological hypotheses are being sought and tested for such predictor characteristics as history of childhood infections, personal traits, family health, and societal influences.

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2.1719,

MORTALITY AMONG DRY CLEANERS

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Workers in dry cleaning shops are exposed to such chemicals as tetrachloroethylene, trichloroethylene, petroleum solvents, and carbon tetrachloride, some of which are carcinogenic in animals. A cohort follow-up study of 10,000 members of a dry cleaning union between 1940-1977 is being conducted. Cause-specific mortality rates will be compared to expected rates from the general and local populations, and title and duration of membership will provide an indication of exposure gradients and latent periods.

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2.1720,

MORTALITY AMONG U.S. VETERINARIANS

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Although transmission of oncogenic viruses from animals to humans has not been clearly demonstrated, this hypothesis continues to receive considerable support as this transmission may be a possible factor in the development of neoplasms. Veterinarians represent a group likely to experience exposure to animals with viral diseases as well as to chemicals and drugs. Using the obituary notices listed in the Journal of the American Veterinary Medical Association, the distribution of the causes of death among 5,000 veterinarians will be compared with an expected distribution derived from national and local populations. Classification of veterinarians by type of practice will help identify high risk groups.

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2.1721,

CANCER MORTALITY AMONG PETROCHEMICAL WORKERS

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The objective of this study is to determine whether persons employed in the petrochemical industry experience unusual patterns of cancer mortality indicative of exposure to hazards in the work environment. The study group material consists of approximately 18,000 deaths among members of a labor union that represents a large segment of the petrochemical industry in the USA. Deaths among active union members have been reported to the central office of the union by the individual local branches since the 1940's. A proportionate mortality analysis will be performed to compare the relative frequencies of deaths from specific forms of cancer among union members with the experience of the general population. Occupational information for each subject includes date of entry into union and specific industrial category of the plant in which he worked. The investigation is intended to identify high-risk areas within the petrochemical industry that warrant further examination by more refined epidemiological methods.

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2.1722,

CANCER MORTALITY AMONG STRUCTURAL PEST CONTROL WORKERS

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The objective of the study is to determine whether persons applying various kinds of pesticides in non-agricultural settings experience unusual mortality patterns for cancer at specific sites that may be indicative of exposure to carcinogenic agents. The study group consists of approximately 5,000 persons who were employed by pest control firms in the state of Florida in 1965. The cohort will be followed for mortality to the present time and its site-specific cancer mortality rates will be compared to the general population of the area. Duration of employment and time since first employment in the trade will be considered in the analysis. Information on type of pest control work and general classes of pesticides used is also available.

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2.1723,

XEROMAMMOGRAPHY RESEARCH RESOURCE AND THE EVALUATION OF PARENCHYMAL PATTERN AS BREAST CANCER RISK INDICATION

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The study has two major purposes: 1) To develop a mammography research resource for studies of the epidemiology of breast cancer and 2) to use the resource to evaluate the following: a) the association of breast cancer risk with breast parenchymal pattern and b) to determine the relationship of pattern to other breast cancer risk indicators and to those of benign breast disease. The study now involves 7 participating hospitals where 10,000 examinations are conducted each year.

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2.1724,

COMPUTER-BASED, EXPOSURE-ORIENTED OCCUPATIONAL EXPOSURE CODE

P. Cole, Harvard University, Boston Campus, School of Public Health, Dept. of Epidemiology, *55 Shattuck St., Boston, Massachusetts* 02115 (D-IARC-79-859)

The purposes of this study are: 1) To develop a computer-based system whereby, given a job title and specification of industry, a list of possible occupational exposures to chemicals and other possible carcinogenic agents will be made available, 2) to evaluate the system as a tool for the study of occupational carcinogenesis using large data sets from a cancer registry.

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2.1725,

CASE-CONTROL STUDY OF MALIGNANT GLIOMA

F. Hochberg, Massachusetts General Hospital, *32 Fruit St., Boston, Massachusetts* 02114 (D-IARC-79-860)

This is a case-control study of about 400 newly diagnosed cases having malignant (grades II-IV) glioma. The controls are the 'best friends' of the cases of the same sex and similar age. The controls are further specified by an algorithm. Information is gathered primarily by a mail questionnaire followed by a telephone contact. Interest is in exposure to radiation, childhood diseases and industrial compounds.

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2.1726,

SURVIVORS OF CHILDHOOD CANCER

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A registry has been established of 5-year survivors of childhood cancer. To date, 600 patients have been enrolled. These patients and their progeny are being followed for development of new tumors and for evidence of late complications of cancer therapy. The study includes the physiological, psychological, oncogenic and genetic sequelae of successful cancer therapy in man.

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2.1727,

EPIDEMIOLOGY OF HODGKIN'S DISEASE

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The aim of this study is to evaluate the hypothesis that certain behavioural patterns, social class and contact with infectious disease agents during childhood and adolescence are causes of Hodgkin's disease. A collaborative case-control study of cases, siblings and neighbourhood controls is under way. Interview-based data gathering, including sera collection, will be completed by December 1978.

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2.1728,

DIETHYLSTILBESTROL-ADENOSIS PROJECT - GENITAL TRACT ANOMALIES AND CANCER IN FEMALES EXPOSED IN UTERO (ABBREV)

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Young women exposed in utero to diethylstilbestrol are known to be at risk for the development of clear cell adenocarcinoma of the vagina and cervix. A large proportion of the exposed population is also known to have developed adenosis of the vagina, extropion of the cervix, and variety of structural anomalies of the cervix and vagina, which have been described as ridges, rims, hoods or pseudopolyps. There is speculation that those women are also at a higher risk for the development of squamous cell dysplasia and carcinoma. The goal of this prospective study is to investigate the incidence and natural history of the above lesions. One thousand exposed women were identified through review of prenatal records, physician referrals and patients who presented themselves for examination. Controls for the cohort of subjects identified through review of prenatal records comprise a similar but non-exposed cohort. All subjects were examined initially in 1974-76 and will be re-examined at yearly intervals for a minimum of five years.

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2.1729,

CORRELATION OF EPIDEMIOLOGICAL AND METABOLIC PARAMETERS - THE POSSIBLE ROLE OF VITAMIN A IN CERVICAL TISSUE EPITHELIUM

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In this study of carcinoma of the uterine cervix the primary focus is on the possible interrelationships of diet, with emphasis upon Vitamin A, social, environmental, epidemiological factors, and the cellular changes which are detectable clinically by routine cytology and biopsy of the uterine cervix. The availability of the Papanicolau test permits screening of large population groups and the finding of a positive or suspicious smear identifies 'women at risk'. Such women are being studied intensively in terms of (1) diet, with computer coding and scoring of nutrient values: (2) ethnic and socioeconomic background and (3) personal life-styles including educational performance as well as (4) measurements of specific blood and tissue biochemical levels and assessement of tissue pathology.

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2.1730,

EPIDEMIOLOGY OF CANCER OF THE TESTIS IN UPSTATE NEW YORK

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The literature on cancer of the testis suggests a number of hypotheses dealing with possible relationships with cryptorchidism, occupational activity, clothing styles, sexual behavior, fertility, exposure to high temperatures, and the like. In our earlier demographic study of testis cancer it was found that the risk of testicular cancer was increased for persons who were in professional occupations, of several generations in this country, were rural or suburban dwellers, and had married early. We planned to interview all testis cancer cases from Upstate New York, beginning in autumn 1977. Names of cases will be made available to us as they are reported to the New York State Tumor Registry. To control for the fact that cancer of the testis appears to be a disease of high socioeconomic status, controls, matched on age (within 5 years), who reside in the neighborhoods of cases will be interviewed. It is anticipated that approximately 100 cases will be reported each year. Thus, in 3 or 4 years sufficient cases and neighborhood controls will be available for a definitive analysis. Data collection is under way. We have completed 76 case and 43 neighborhood control interviews.

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2.1731,

OCCUPATIONAL LUNG CANCER IN THE RUBBER INDUSTRY

D.A. Andjelkovich, University of North Carolina, Chapel Hill Campus, School of Public Health, Dept. of Epidemiology, *Rosenau Hall, 201H, Chapel Hill, North Carolina* 27514 (D-IARC-79-969)

This study was prompted by conflicting findings in relation to occupational lung cancer in the industry. While an overall excess of lung cancer was found in Great Britain, an overall deficit was observed by us in the U.S. Accordingly, it was decided to investigate the relationship between mortality from this disease and specific occupational exposures. The main objective of this study is to identify, retrospectively, specific groups of workers who may experience an excess risk of mortality from lung cancer. In addition, the British report of an association between this disease and employment in areas where curing of green rubber products is performed is being evaluated and other published findings on a relationship between lung cancer and work in jobs involving compounding and mixing of raw rubber stocks is being examined. A case-control study design with over 100 cases and 400 controls is being used, matched on pertinent variables to eliminate confounding factors unique to occupational studies. The analysis involves examination of detailed employment records to determine whether cases were more likely to have worked in specific areas within the plant under study, which may now contain (or which may have contained in the past) respiratory system carcinogens. The design also includes an examination of certain non-occupational factors which may be responsible for the observed excess.

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2.1732,

STOMACH CANCER AMONG RUBBER WORKERS - A CASE-CONTROL STUDY

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Whereas the incidence of stomach cancer has been steadily declining in the U.S. during the past few decades, our analyses have indicated that rubber workers remain at a considerably higher risk than the general population. Because of the diverse chemicals to which these workers are being exposed, many of which are known or suspected carcinogens, an analytical study is being conducted to determine whether this excess risk may be caused by industrial exposures to polycyclic hydrocarbons, nitrosamines, asbestos, or carbon black. All of these substances have been, or are being, used or generated by the industrial processes in the rubber industry.

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2.1733,

LEUKEMIA IN RUBBER WORKERS, A CASE-CONTROL STUDY

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Recent descriptive mortality analyses in five major U.S. rubber companies have demonstrated a consist-

ent excess of deaths from malignant neoplasms of the lymphatic and haematopoietic system (LHS) among rubber workers. A preliminary case-control study has demonstrated an association between lymphatic leukaemia and a history of having worked in jobs entailing solvent exposure. An estimated 150 persons, dying in the period 1964-1973 with an LHS neoplasm, will be individually matched with two pairs of controls, who are to be selected from among non-cases within the source population from which the case derives. Complete work history information will be utilized for all study subjects. Analysis of case-control differences in work history will examine 1) the association of leukaemia, and of non-leukaemia LHS neoplasms, with solvent exposure, 2) the association of any LHS neoplasm with possibly carcinogenic factors within the work environment.

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2.1734,

PESTICIDE MANUFACTURER/FORMULATOR MORTALITY STUDY

B.W. Carnow, University of Illinois, Medical Center at Chicago, School of Public Health, Dept. of Occupational & Environmental Medicine, *Box 4348, Chicago, Illinois* 60680 (D-IARC-79-803)

This study is seeking to determine if selected groups of workers in the pesticide manufacturing/formulating industry experience excess cause-specific mortality. Although a number of epidemiological studies have been carried out to examine the relationships between chronic pesticide exposure and morbidity and mortality, most have not included sufficient population numbers, length of exposure and latency periods in the study design. A cohort of approximately 4,000 workers who were employed in the pesticide manufacturing/formulating industry for a minimum of 12 months prior to 1980 will be studied and their mortality experience will be compared to that of the general population for 60 causes of death. In addition, attention will be directed to various categories of malignant and non malignant lesions specifically associated with exposure to organo-chlorine pesticides. A prospective cohort of workers in the pesticide industry will also be identified.

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2.1735,

INVESTIGATION OF THE RELATIONSHIP OF GLUCOSE INTOLERANCE AND CANCER

J.A. Kautz, Northwestern University, Chicago Campus, School of Medicine, Dept. of Health & Preventive Medicine, *303 E. Chicago Ave., Chicago, Illinois* 60611 (D-IARC-78-740)

Data on four cohorts of employed persons in Chicago under study by Dr. Stamler for the past two decades are being used both for pilot studies, for more extensive epidemiological studies, and for examining the relationship of multiple factors to cancer mortality. Extensive data are available on these groups, in terms of factors possibly of epidemiological significance for the major cancers (particularly lung and colon cancer in men and breast and cervical cancer in women). This study investigates the relationship of diabetes and cancer in the population.

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2.1736,

IDENTIFICATION OF HIGH RISK FACTORS IN THE AETIOLOGY OF BREAST CANCER

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Certain epidemiological indices for the development of breast carcinoma have been developed in the past decade. These include race, family history, age at menarche, parity and age at first parity, previous benign breast lesions and the pathology found. These indices, and others, are being studied in four groups of patients: (1) Women who have developed breast cancer without previous breast disease; (2) women developing breast cancer after a previous benign biopsy; (3) women who have not developed breast cancer but have had single or multiple benign breast biopsies, and (4) women who have been examined at their place of employment and show no evidence of breast cancer.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1737,

IDENTIFICATION OF HIGH RISK FACTORS IN THE AETIOLOGY OF BREAST CANCER

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Certain epidemiological indices for the development of breast carcinoma have been developed in the past decade. These include race, family history, age of menarche, parity and age of first parity, previous benign breast lesions and the pathology found. These, and others, are being studied in four groups of patients: (1) Women who have developed breast cancer without previous breast diseases; (2) women developing breast cancer after a previous benign biopsy; (3) women who have not developed breast cancer but have had single or multiple benign breast biopsies, and (4) women who have been examined at their place of employment and have no evidence of breast cancer. The analysis is by matched cohort and decade of age at which women in the first two groups developed breast cancer.

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2.1738,

MORTALITY AND INDUSTRIAL HYGIENE STUDY OF PCE WORKERS

D.P. Brown, U.S. Dept. of Health & Human Services, Public Health Service, Center for Disease Control, National Inst. for Occupational Safety & Health, Division of Surveillance Hazard Evaluation & Field Studies, *4676 Columbia Pkwy., Cincinnati, Ohio* 45226

Perchloroethylene (PCE) is used extensively throughout the dry cleaning industry (100,000 workers). Tests for carcinogenicity in the Bioassay Program of the National Cancer Inst. show an increase in hepatocellular carcinomas in mice. To date, the effects on humans from long-term low level exposure to PCE are unknown, and the study will assess these by analysis of cause-specific mortality among an identified group of dry cleaning workers. A cause of death for each individual in the cohort will be determined retrospectively and the observed deaths will be compared to those expected based on a standard race-, sex- and age-specific population. Worker exposure to PCE in the dry cleaning industry will be characterized by industrial hygiene surveys. The Stanford Research Inst. (SRI) is conducting the mortality study under contract. Personnel records from four labor unions have been used to assemble a cohort of approximately 1,659 dry cleaning workers who were employed for at least one year prior to 1960 in a facility where the primary solvent was PCE. All of the demographic and work history coding has been completed and vital status follow-up through the Social Security Administration (SSA) has been accomplished. Once the SSA data is processed, it will be determined how much more vital status follow-up is necessary. Industrial hygiene surveys have been conducted in 30 dry cleaning facilities in San Francisco, Oakland, Detroit and Cincinnati. An additional 15-20 surveys are planned in New York City and Chicago, and a final report will be ready in early 1980.

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2.1739,

MORTALITY, MEDICAL, AND INDUSTRIAL HYGIENE STUDY OF PCB

D.P. Brown, U.S. Dept. of Health & Human Services, Public Health Service, Center for Disease Control, National Inst. for Occupational Safety & Health, Biometry Section, *4676 Columbia Pkwy., Cincinnati, Ohio* 45226 (D-IARC-79-985)

Polychlorinated biphenyls (PCB) are a class of chlorinated aromatic hydrocarbons that are widespread in the environment, are highly stable, and tend to concentrate in the food chain. Current use is primarily limited to the electrical industry as insulating material in capacitors and transformers. Reports of adverse health effects in humans and animals accidently exposed to PCB and the demonstration of carcinogenic effects of certain PCB in animals necessitate evaluation of the toxicology of these compounds. In humans the syndromes of chloracne and Yusho neonatorum have been extensively documented, in addition to gastrointestinal, endocrinological, haematological, and embryotoxic effects. The health effects of PCB exposure are being assessed by (1) retrospective mortality study of a cohort of occupationally exposed workers; (2) a cross-sectional medical survey of a cohort of currently employed workers; and (3) a detailed industrial hygiene survey. The mortality study is well under way; follow-up is near completion on the two study cohorts exposed to PCB. Several of the medical surveys have been completed. The industrial hygiene surveys of all plants included in the mortality study and medical study have been completed.

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2.1740,

MORTALITY STUDY OF PESTICIDE FORMULATORS/MANUFACTURERS

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Pesticide formulators/manufacturers have been studied by numerous investigators. To date, there have been no reported retrospective mortality studies on sufficiently large cohorts of workers exposed to high levels of pesticides to yield definitive information on chronic long-term effects. Published studies do suggest, however, that chronic exposure and long latency may result in cancer, kidney and liver disease, suicides, accidents, diseases related to hypertension, and abnormalities in offspring. Any of these diseases may be attributable to a single pesticide or class of pesticides. Workers in this industry traditionally manufacture, dilute, mix, and package a large variety of pesticides and diluents, which change from season to season and from year to year depending on demand. The aim of this study is to determine if selected groups of pesticide formulators/manufacturers experience excessive cause-specific mortality. Records of several plants have now been microfilmed.

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2.1741,

CORRELATION OF WATER TRIHALOMETHANE LEVELS IN SELECTED CITIES WITH CANCER MORTALITY

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This project involves statistical correlation of available data on trihalomethane levels in water with age- and sex-adjusted site-specific cancer mortality data. The water was that collected during the 80 city National Organic Reconnaissance Survey supported by the Environmental Protection Agency (EPA), the National Organic Monitoring Survey (113 cities) and the EPA Region V Survey. The mortality statistics were those supplied by the National Center for Health Statistics to the National Cancer Institute.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1742,

EPIDEMIOLOGICAL AND INDUSTRIAL HYGIENE STUDIES OF THE FOUNDRY INDUSTRY

E.A. Egan, U.S. Dept. of Health & Human Services, Public Health Service, Center for Disease Control, National Inst. for Occupational Safety & Health, Biometry Section, *4676 Columbia Pkwy., Cincinnati, Ohio* 45226 (D-IARC-79-991)

In order to ascertain which health problems may be associated with employment in a foundry, a proportional mortality study is being conducted. The International Molders and Allied Workers Union has provided the National Institute for Occupational Safety and Health with data on 3,243 of its members who died between June 1, 1971, and December 31, 1975. Death certificates have been obtained for the majority of the study population. Statistical analyses will take into account length of employment and geographical location of the deceased workers in the study population. Studies conducted on foundry workers in both Finland and Canada found that workers employed in this industry have an increased risk of lung cancer. Neither of the industrial hygiene studies performed in conjunction with the Finnish and Canadian epidemiological studies was successful in identifying the chemical or physical agent(s) that may have been responsible for the increased lung cancer incidence. It is thus planned to initiate an industrial hygiene study to evaluate job areas or processes with potential for exposure to known or suspected carcinogens.

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2.1743,

COMPARISONS OF OCCURRENCE AND LEVELS OF DRINKING WATER CONSTITUENTS AMONG PAIRS OF HIGH AND LOW CANCER MORTALITY COUNTIES IN OHIO

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The basic study procedures and goals of this project are similar to those of the national study. As a result of at least two independent epidemiological studies attention has been focused on Ohio because of the high cancer mortality rates for counties supplied with drinking water from surface sources. Since Ohio counties represent wide contrasts in water sources, geology, industrialization, socioeconomic levels, and cancer mortality rates, it was judged that a study limited to Ohio would be worthwhile. The selection of study counties will be based on the county mortality data available from Ohio State University and the industrial data available from the Ohio Environmental Protection Agency and various publications.

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2.1744,

COMPARISONS OF OCCURRENCE AND LEVELS OF DRINKING WATER CONSTITUENTS BETWEEN 12 MATCHED PAIRS OF HIGH AND LOW CANCER MORTALITY COUNTIES

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Using available data from the National Cancer Institute, all U.S. metropolitan counties were sorted into categories defined by five parameters - region of the country, population years at risk (females for the time period 1968-;972), percent of population employed in manufacturing industry, percent urbanization, and average educational level. Each pair of counties was selected from categories so that one had a female age-adjusted cancer mortality rate 24 and the other 16 for the total of four sites, namely colon, rectum, bladder, and liver. Historical data from each county have been collected from the appropriate state regulatory agencies and the major utilities in the counties; data collected are sources and treatment technologies used during the previous 30 years for each served area. Waters samples are being collected bimonthly for analyses for mutagens and biannually for analyses for 41 inorganic chemicals, 6 trihalomethanes, TOC, fluorescence, asbestos, and radiation. Comparisons of water constituent occurrences and levels, treatment technologies, and source types will be made between the pairs of counties to determine if there are significant differences between counties with contrasting cancer mortality rates.

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2.1745,

MORTALITY, MEDICAL, AND INDUSTRIAL HYGIENE STUDIES OF CHLORINATED HYDROCARBONS

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Information from various test systems has been interpreted to indicate that chlorinated hydrocarbons, benzyl chloride, monochlorobenzene, methylene chloride and methyl chloride, are being investigated for epidemiological study. In conjunction with industrial hygiene surveys under contract, the National Institute for Occupational Safety and Health is determining the feasibility of conducting a mortality study on one or more of these four chemicals. The possibility of doing such a study will, in a large part, be determined by the existence of a sizable exposed worker population and appropriate personnel records. It has been found that it is not practical to study benzyl chloride because few workers are or have been exposed; also because adequate records on past workers are not available. An industrial hygiene study has been conducted in a cross-section of the industry to document patterns of current exposure to this chemical. The feasibility of doing epidemiological studies on workers exposed to the other three chemicals is currently being determined.

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2.1746,

MORTALITY AND INDUSTRIAL HYGIENE STUDIES OF PRINTING TRADES

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Published literature on the printing trades suggests that a significant number of health hazards exist. Workers are exposed to a variety of substances, i.e., carbon black, oil mist, polychlorinated biphenyls, polyvinyl chloride, and carbon disulphide. Increased risk of cancer of the skin, lung, digestive system and bladder has been suggested. Other suspected sequelae include heart disease, acro-osteolysis and liver cirrhosis. A detailed characterization, including industrial hygiene assessment of the industry, and a retrospective study of the mortality patterns among select specialities within the printing trades industry are being conducted under contract. The contractor, Mt. Sinai Hospital, New York City, has performed industrial hygiene surveys and industrial studies in selected printing establishments. Records from a printing union local have been collected and are being analyzed.

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2.1747,

MORTALITY AND INDUSTRIAL HYGIENE STUDY OF CLAY FIBER WORKERS

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In the process of studying the chronic health hazards of occupational exposure to respirable fibers such as asbestos, glass fibre, and mineral wool, the National Institute for Occupational Safety and Health (NIOSH) has identified additional fibrous minerals which are of occupational health concern. Attapulgite, one of a group of substances collectively known as 'fuller's earth', is a mineral fiber which has been discussed in relation to chronic lung disease. A mortality study of a population with an occupational exposure to attapulgite for approximately 30 years since the beginning of exposure is being conducted. This will permit investigation of long-term chronic health effects of exposures to small diameter, short mineral fibers by study population with sufficient latency. To date 85% of the present and past work force has been followed up.

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2.1748,

MORTALITY STUDY OF WORKERS EXPOSED TO SMALL FIBROUS GLASS

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A recently completed study of fibrous glass workers at a plant in Ohio failed to demonstrate any increased mortality due to malignant respiratory disease. However, increased mortality due to non-malignant respiratory disease was noted in the same study population. The observed lack of an excess mortality due to malignant respiratory disease in this population may have resulted from bias in study selection. The major portion of the study group was exposed to fibres of large diameter, which generally have not been shown to be carcinogenic in man or animals. This study proposes a retrospective mortality study of a subcohort of the entire working population who were subjectively determined through a double-blind study to be exposed to fibres from one to three microns in diameter, a range suspected of having carcinogenic potential in man. This study, however, will not answer the question of carcinogenicity of fibres less than 1 micron in diameter.

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2.1749,

MORTALITY AND INDUSTRIAL HYGIENE STUDIES OF MINERAL WOOL WORKERS

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In view of the demonstrated carcinogenicity of asbestos fibers, industries have begun searching for substitute materials. However, the fibers of these substitute materials may be similar in shape and size to those of asbestos. It is felt by many that the morphology of the fibers is the most important factor in the development of malignant and non-malignant respiratory disease. Since little is known of the health effects on man of these and other respirable fibers, it was felt appropriate to investigate this question by environmental surveys and cohort mortality studies. The presence of other substances that may promote the development of adverse health effects or act in a synergistic manner is also being examined. To date 85% of the study cohort has been followed-up. The coding of occupational histories and acquisition of death certificates are near completion and the industrial hygiene research has been completed.

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2.1750,

LEUKEMIA IN BENZENE WORKERS

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Workers occupationally exposed to benzene in 1940-1949 were followed to determine their vital status as of 1975. In comparison with two control populations, a significant (p less than 0.002) excess of leukemia was observed. A five-fold excess risk of all leukemias and a ten-fold excess of deaths from myeloid and monocytic leukemias combined. These figures may underestimate the true leukaemia risk to benzene-exposed workers, because follow-up is only 75% complete and the untraced 25% of the study population were all regarded in the analysis as being alive at the end of the study period. The environment of the workers in the study population was not contaminated with solvents other than benzene, and existing records indicate that the benzene levels themselves were generally below the limits recommended at the time of their measurement. Completion of follow-up of this cohort is continuing.

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2.1751,

MORTALITY AND INDUSTRIAL HYGIENE STUDIES OF WORKERS EXPOSED TO ETHYLENE OXIDE

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Evidence exists indicating that ethylene oxide is a carcinogen and mutagen in animals. Industrial hygiene and mortality studies will be performed on a cohort of workers exposed to this agent. The mortality study will be conducted to determine whether or not an excess number of cancer deaths (or any other type of deaths) has occurred among deceased workers from the plant or plants being investigated. Detailed industrial hygiene studies will be conducted for the facilities included in the mortality study. Personal monitoring of workers' present exposure in selected job categories will be conducted at each facility. Attempts will be made to determine exposure levels in the past. Preliminary studies of manufacturing plants have been conducted. The results of these studies will be used in the development of a recommended safe exposure standard.

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2.1752,

RETROSPECTIVE COHORT MORTALITY STUDY OF WORKERS EMPLOYED IN THE NORTHWEST PAPER, PULP AND PLYWOOD INDUSTRIES

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A recent analysis of state vital statistics has suggested that persons working in the paper, pulp and plywood industries may be at particular risk of developing malignancies of the blood forming organs and lymph system. The purpose of this study is to examine the mortality experience of persons working in the Northwest paper, pulp and plywood industries, in particular, to assess whether employees in these industries have experienced an excess mortality from malignant diseases. Where the analysis suggests a cancer mortality excess, an attempt will be made to identify 'agents' or processes which are demonstrably associated with the increased mortality.

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2.1753,

MORTALITY AND INDUSTRIAL HYGIENE STUDY OF WORKERS EXPOSED TO ACRYLONITRILE

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Acrylonitrile (AN) is a chemical intermediate widely used in the manufacture of acrylic fibre, synthetic rubbers and plastics. The results of a recent study conducted by the Manufacturing Chemists Association showed that rats fed acrylonitrile in their drinking water developed tumours at various sites. A preliminary report from an acrylic fibre production plant has indicated an excess of lung and colon cancer deaths occurring among workers assigned to polymerization areas. In order to further investigate these findings, an epidemiological evaluation of another cohort of workers exposed to acrylonitrile will be undertaken. An industrial hygiene survey will be conducted concurrently in order to document worker exposure levels, at present and in the past. A retrospective cohort analysis will be conducted on this cohort of workers who will have had sufficient latency to demonstrate any chronic effects of acrylonitrile exposure.

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2.1754,

REPRODUCTIVE HAZARDS AMONG WOMEN EMPLOYED IN THE PHARAMACEUTICAL RESEARCH INDUSTRY

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An ongoing study of women working in the pharmaceutical research industry is being conducted to determine whether or not these women are at excess risk of miscarriages, stillbirths, transplacental carcinogenesis, malformations or other reproductive problems. The female workers' reproductive history will be obtained using a structured interview questionnaire. Other working women who are not exposed to hazardous substances will be interviewed to provide a control population.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1755,

MORTALITY PATTERNS, 1940-1975, AMONG WORKERS EMPLOYED IN AN ASBESTOS TEXTILE, FRICTION AND PACKING PRODUCTS MANUFACTURING FACILITY

C.F. Robinson, U.S. Dept. of Health & Human Services, Public Health Service, Center for Disease Control, National Inst. for Occupational Safety & Health, Div of Surveillance Hazard Evaluations & Field Studies, *4676 Columbia Pkwy., Cincinnati, Ohio* 45226 (D-IARC-79-1004)

A preliminary report of a study of a cohort of textile, friction, and packing products asbestos production workers exposed to 99 percent chrysotile asbestos (except during the war years) demonstrated an excess risk for nonmalignant respiratory disease, suicide, heart disease, respiratory tract cancer and mesothelioma of the pleura and peritoneum among males; and an excess risk for nonmalignant respiratory disease, respiratory tract cancer and mesothelioma of the pleura and peritoneum among females. An increased risk due to lymphosarcoma among male asbestos workers was also indicated. These findings once again lend support to the conclusion that occupational exposure to predominantly chrysotile asbestos poses a carcinogenic risk for malignancies of multiple sites. The preliminary report is now in the process of being prepared for final publication.

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2.1756,

MORTALITY, REPRODUCTIVE, AND INDUSTRIAL HYGIENE STUDIES OF CARBON DISULPHIDE WORKERS

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Carbon disulphide is used in a variety of industries; it is used in the xanthenation of cellulose to produce viscose rayon and cellophane and as a solvent for sulphur chloride in vulcanizing rubber. Additional uses are as a solvent for rubber cement, phosphorus, fats, oils, resins, and waxes, as an insecticide and also in the manufacture of optical glass. The toxicity of carbon disulphide has been recognized for many years and it has been generally associated with central nervous system effects, such as loss of memory, excessive irritability, vertigo, melancholia and, in severe cases, dementia. More recent studies indicate an increased mortality and morbidity from cardiovascular diseases and effects on the reproductive systems of both men and women. A study of this agent conducted by the National Institute for Occupational Safety and Health has the following phases: (1) A mortality study under contract; (2) a study of mutagenesis by administering reproductive history questionnaires to wives of workers; (3) a cross-sectional study to investigate the adverse health effects in workers exposed to carbon disulphide, and (4) an industrial hygiene study to determine present carbon disulphide exposure levels and estimate working lifetime exposures.

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2.1757,

MORTALITY, MEDICAL AND INDUSTRIAL HYGIENE STUDIES OF WORKERS EXPOSED TO SYNTHETIC ESTROGENS

S.G. Selevan, U.S. Dept. of Health & Human Services, Public Health Service, Center for Disease Control, National Inst. for Occupational Safety & Health, Biometry Section, *4676 Columbia Pkwy., Cincinnati, Ohio* 45226 (D-IARC-79-1012)

Synthetic estrogens are a group of synthetic hormones having serious potential effects on exposed workers. Women taking oral contraceptives have an increased risk of thromboembolism, cerebral vascular disease, and myocardial infarction. A study by the National Institute for Occupational Safety and Health (NIOSH) carried out in an oral contraceptive plant indicated that problems are occurring in both males (gynecomastia) and females (menstrual changes). Also, it has been noted that estrogens may be carcinogenic. A cross-sectional medical/environmental study is proposed to investigate health problems resulting from exposure to synthetic estrogens and to attempt to determine a safe level of exposure to these agents. A mortality study of workers occupationally exposed to oral contraceptives will be performed to determine if an excess number of carcinoma deaths have occurred in exposed workers.

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2.1758,

A STUDY OF CANCER AND THE PUBLIC DRINKING WATER SUPPLIES IN MISSOURI

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This project involves setting up a data base of mortality, morbidity, and environmental information for rural postal routes grouped into rural water supply areas. This technique permits comparison of cancer rates for water supply areas which differ considerably in terms of water quality, industrial exposures, geology, and socioeconomic characteristics. County units which are often used may not coincide with water utility service areas. This project should permit an evaluation of the health and environmental (primarily drinking water) consequences of existing or newly established industrial and/or mining operations within rural areas.

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2.1759,

RETROSPECTIVE STUDY OF CANCER IN BLACK AND WHITE POPULATIONS

S. Albert, Michigan Cancer Foundation, Dept. of Biometry & Medical Sociology, *110 E. Warren St., Detroit, Michigan* 48201 (D-IARC-79-879)

It is recognized that certain cancers differ in white and black populations with respect to extent of disease at diagnosis and survival. The purpose of the present study is to characterize the 10 most frequent cancers in the black and white populations. The study is concerned with incidence, histological types, organ distribution (where applicable), extent of the disease at diagnosis, treatment and survival. These characteristics are being studied over a period of time, not less than years, to determine whether any changes have occurred. This study is also designed to determine whether Detroit is similar to other areas or whether there are regional differences.

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2.1760,

GASTRIC CANCER IN SAN MARINO

C.E. Jackson, Henry Ford Hospital, Dept. of Medicine, *2799 W. Grand Blvd., Detroit, Michigan* 48202 (D-IARC-79-881)

The purpose of this project is to define the genetic and environmental factors causing the high frequency of gastric cancer observed in San Marino. Initial studies have revealed a higher percentage of patients with first degree relatives affected than in the controls. Screening of segments of the population by gastroscopy is being undertaken in attempts to detect the neoplasms early. The project is a cooperative one between physicians in San Marino and in Detroit, Michigan, USA which has a large San Marinese population.

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2.1761,

THE EPIDEMIOLOGY OF MULTIPLE MYELOMA

S. Grufferman, Duke University, School of Medicine, Dept. of Pediatrics, *Box 3711, Durham, North Carolina* 27710 (D-IARC-79-977)

The major objective of this case-control study is to learn more about the epidemiology of multiple myeloma. Surprisingly little is known about the epidemiology of this disease, available information is dated, and there are few aetiological hypotheses. The study will have two major components: a medical record review of 450 multiple myeloma cases and an interview study of an additional 150 patients, both components involving matched hospital controls. In addition to seeking associations with available demographic variables, associations between multiple myeloma and socioeconomic class, occupation, environmental exposures, diet, and diseases causing 'immune stimulation' will be evaluated. Particular attention will be paid to evaluation of the association between socioeconomic class and multiple myeloma. Paradoxically, multiple myeloma is reported as being positively associated with high socioeconomic class whereas incidence rates are twice as high in blacks as in whites.

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2.1762,

CAUSES OF DEATH OF ANESTHETISTS FROM THE CHLOROFORM ERA

H. Linde, Northwestern University, Evanston Campus, School of Medicine, Dept. of Anesthesia, *633 Clark St., Evanston, Illinois* 60201 (D-IARC-79-812)

The mortality rates of physicians who gave anesthetics during the period when chloroform was in use will be studied to ascertain if there were excessive deaths due to cancer. Anesthetists will be identified who died prior to 1947 (the date when previous

study of causes of death among anesthetists started) and their causes of death obtained. The rates for these causes will be compared with those observed in the periods 1947-1956, 1957-1966, 1967-1972. The literature and historical records will also be studied to arrive at an estimate of the use of chloroform in American anesthetic practice during the earlier part of this century.
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1763,
CANCER MORTALITY AND MORBIDITY IN PENNSYLVANIA
R. Antonio, State Dept. of Health, *407 S. Cameron St., Harrisburg, Pennsylvania* 17101 (D-IARC-78-808)
Annual compilation of cancer mortality and morbidity data in Pennsylvania.
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1764,
REASONS FOR VARIATIONS IN CANCER PATIENT SURVIVAL BY RACE
L.N. Kolonel, University of Hawaii System, Manoa Campus, School of Public Health, Dept. of Biomedical Sciences, *Spalding Hall, Room 255, Honolulu, Hawaii* 96822 (D-IARC-79-789)
This study is examining ethno-racial variations in cancer patient survival for four sites of cancer: stomach, colon and rectum, breast and lung. Five ethnic groups are included: Caucasian, Japanese, Chinese, Filipino and Hawaiian. Data are from the Hawaii Tumor Registry, and survival rates by race are being compared after adjusting for extent of disease at diagnosis. Further analyses will use socio-economic indicators developed from registry and census data in a first attempt to explain any observed racial differences in survival.
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1765,
CLINICAL CANCER GENETICS
L.C. Strong, University of Texas, Health Science Center at Houston, Graduate School of Biomedical Sciences, Section of Medical Genetics, *P.O. Box 20334, Houston, Texas* 77025 (D-IARC-79-1054)
The objectives of this study are to identify unusual familial aggregations of childhood cancers, associations of childhood cancer and congenital anomalies, or the occurrence of rare tumours in childhood for further aetiological study. Patients are referred from clinical departments. All cancers or other disorders in families under study are documented by medical records and/or vital statistics. Documented familial cases are compared with nonfamilial cancer cases with respect to age at onset, anatomical site, multiplicity of cancers, congenital and chromosomal abnormalities or other predisposing conditions. Within affected families, various clinical and genetic markers are being evaluated.
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1766,
GENETIC CONSEQUENCES OF CHILDHOOD CANCER
L.C. Strong, University of Texas, Health Science Center at Houston, Graduate School of Biomedical Sciences, Section of Medical Genetics, *P.O. Box 20334, Houston, Texas* 77025 (D-IARC-79-1055)
The objective of this study is to identify genetic effects of cancer and therapy including both the primary factors predisposing to cancer which may lead to subsequent tumours in the patient or heritable tumours in offspring, and treatment-induced mutations which may lead to subsequent tumours or heritable disease in the offspring of patients who have had childhood cancers. A registry of long-term survivors of childhood cancer and their offspring is being established, including data concerning congenital anomalies, predisposing conditions, family history, primary cancer treatment, and other medical or social history. Multiple factorial analysis of risk factors of second tumours and of genetic disease in the offspring will be undertaken.
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1767,
CANCER, ALCOHOL AND SMOKING
G.N. Schrauzer, University of California, San Diego Campus, Graduate School, Dept. of Chemistry, *P.O. Box 109, La Jolla, California* 92037 (D-IARC-78-844)
Comprehesive statistical study of the role of alcohol and smoking in the causation of cancer is under way.
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1768,
CASE-CONTROL STUDY OF EPITHELIAL OVARIAN CANCER IN WOMEN AGES 25 TO 49
J.T. Casagrande, University of Southern California, School of Medicine, Dept. of Community & Family Medicine, *2025 Zonal Ave., Los Angeles, California* 90033 (D-IARC-78-849)
Ovarian cancer has many epidemiological similarities to breast cancer but until quite recently has received little attention from epidemiologists. Daughters of breast cancer patients have an increased risk of breast cancer and have major differences in their hormone levels compared to other comparably aged girls. (Daughters were used instead of breast cancer patients since the hormone levels which presumably established the patients' risk earlier in life may not be reflected in their levels at diagnosis and these levels may also be altered by the disease itself). A similar approach has been adopted for ovarian cancer and the objectives of the present study are to 1) investigate further the risk factors associated with ovarian cancer, 2) determine whether the family members of patients also have an increased risk of developing ovarian cancer, and 3) identify the teenage daughters of patients and controls for future hormone studies. The present study consists of the microscopically confirmed ovarian cancers of epithelial origin in white women aged 25-49 diagnosed in Los Angeles from 1973 to 1976. Each patient is to be matched with three controls: a high school friend, a family member and a randomly chosen neighbour.
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1769,
RETROSPECTIVE STUDY OF ENDOMETRIAL CANCER AMONG SOUTHERN CALIFORNIA WOMEN
T.M. Mack, University of Southern California, School of Medicine, Dept. of Pathology, *2025 Zonal Ave., Los Angeles, California* 90033 (D-IARC-78-855)
The objective of this descriptive study of carcinoma of the endometrium is to test previously suggested causal hypotheses. Cases with endometrial cancer have been identified by the Los Angeles County University of Southern California Cancer Surveillance Program. Incidence rates for this cancer determined for specific sub-groups of the population have revealed a direct positive correlation with social class. The pathology reports for 2,500 white women aged 55 to 64 have been reviewed. A sample of tissue slides will be examined blindly by single pathologist to verify the diagnosis of the lesions and test whether a cancer-social class relationship can be demonstrated for invasive as well as non-invasive disease.
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1770,
EPIDEMIOLOGY OF PANCREATIC CARCINOMA AND IDENTIFICATION OF HIGH-RISK GROUPS
T.M. Mack, University of Southern California, School of Medicine, Dept. of Pathology, *2025 Zonal Ave., Los Angeles, California* 90033 (D-IARC-78-856)
The objectives of this research are to study the epidemiology of cancer of the pancreas, to formulate causal hypotheses and identify groups at high risk of developing this tumour. A large case-control study, to be performed in Los Angeles County, has been designed to permit simultaneous examination of multiple antecedent risk factors. Cases with cancer of the pancreas will be identified by the Los Angeles County University of Southern California Cancer Surveillance Program. questionnaire has been designed to obtain data on occupational and on environmental exposures - tobacco and alcohol consumption, diet, and medical history and treatment. It will be administered to both cases and neighbourhood controls as soon as possible after the cases have been diagnosed. Standard matched pair analyses of multiple variables will be performed on the data from the questionnaire.
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1771,
CAUSATIVE FACTORS IN CARCINOMA OF THE OESOPHAGUS AMONG SOUTHERN CALIFORNIA RESIDENTS
T.M. Mack, University of Southern California, School of Medicine, Dept. of Pathology, *2025 Zonal Ave., Los Angeles, California* 90033 (D-IARC-78-857)
The objectives are to study the epidemiology of carcinoma of the oesophagus, to test previously suggested causal hypotheses and associations, to discover new associations and to delineate the characteristcs of high risk groups by means of a large case-control study designed to permit simultaneous examination of multiple antecedent risk factors. Cases with cancer of the oesophagus will be identified by the Los Angeles County Univeristy of Southern California Cancer Surveillance Program. A questionnaire has been designed to obtain data on environmental exposures - tobacco and alcohol consumption, diet, occupation, and medical history and treatment. It will be administered to both cases and neighbourhood controls as soon as possible after the cases have been diagnosed. Standard matched pair analyses of multiple variables will be performed.
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1772,
MALIGNANT MELNOMA - A CASE-CONTROL STUDY IN LOS ANGELES
T.M. Mack, University of Southern California, School of Medicine, Dept. of Pathology, *2025 Zonal Ave., Los Angeles, California* 90033 (D-IARC-78-858)
The annual incidence of malignant melanoma in Los Angeles is about 10 per 100,000 and appears to be increasing. A case-control study has been designed to test and formulate causal hypotheses and to identify groups at high risk. The specific aims of this study are: 1) To quantify the risk of persons for melanoma in relation to job, medical history and particular patterns of behavior, inheritance and skin characteristics, 2) To distinguish between the determinants of risk to different body sites and the determinants of different pathological types. Cases with malignant melanoma will be identified by the Los Angeles County University of Southern California Cancer Surveillance Program. A questionnaire designed to obtain data on occupational and environmental exposures, behavioral patterns in the sun, medical history and treatment, and skin features will be administered to both cases and controls. In addition, skin color will be determined for cases and controls.
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1773,
WISCONSIN CANCER REPORTING SYSTEM - CANCER SURVEILLANCE AND RESEARCH
M.A. Woodbury, State Div. of Health, Section of Epidemiological Surveillance & Assessment, *State Office Bldg., Madison, Wisconsin* 53702 (D-IARC-79-1074)
The overall objective of the epidemiological study section of the Wisconsin Cancer Reporting System is the identification of high risk population groups, environmental factors and potential carcinogenic agents. This is a long-range plan currently directed toward developing the tools necessary for providing a mechanism for identifying cancer morbidity and mortality events or patterns significantly deviating from past trends. A computer program will be written to indicate such occurrences. Specific epidemiological studies will determine the factors involved, should the unusual event or pattern not be the result of changes in reporting habits. A computer program will also be developed to correlate an ongoing basis on various environmental conditions with cancer morbidity and mortality. (For example, a study of the degree of correlation of cancer mortality by distance from a taconite mine with measurements of asbestos in air, water and soil by distance from the mine). It is anticipated that such computerized surveillance will substantially increase the ability to recognize changes early and to set in action the analytical epidemiological studies required.
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2.1774,

PHYSIOLOGICAL CORRELATES OF LEUKEMIA

D.E. Dix, Haynes Medical Lab., *26 Haynes St., Manchester, Connecticut* 06040 (D-IARC-79-751)

All tumors reported by the Connecticut Tumor Registry (Cancer Incidence in Five Continents, III, IARC No. 15, pp. 196-199, 1976), with the exception of chorionepithelioma, were divided into two classes. Class I tumors have a single peak incidence at age greater than 60: Class II tumors (lymphatic leukemia, bone, testis, and Hodgkin's) have two incidence peaks; one at age greater than 60, and one at age less than 35 with a peak height of 3 percent or more of the total incidence and a width of at least 20 years. All class I tumors have very similar incidence patterns reaching 25 percent, 50 percent, 80 percent of their total incidence between ages 42-74, 62-82, and 75-88, respectively. This similarity suggests a common cancer susceptibility factor. The study aims to identify characteristics of immune or endocrine status which correlate with this pattern of incidence. The early incidence peak of class II tumors suggests the expression of tumor specific susceptibility factors. Physiological properties which are unique to all class II tumors are being investigated with a focus on properties which distinguish acute lymphocytic leukemia, which belongs to class II, from acute and chronic myeloid leukemia as well as chronic lymphatic leukemia which belongs to class I.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1775,

EXPOSURE TO HALOGENATED ORGANIC CHEMICALS FROM DRINKING WATER

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A method for determining trihalomethanes in human blood has been developed. Animal models have been used to determine the sensitivity of the technique in assessing exposure to chloroform, carbon tetrachloride, trichloroethylene, bromodichloromethane and p-dichlorobenzene. A body burden survey of persons exposed to various levels of trihalomethanes in their drinking water is in progress. Persons living in the environs of Miami, Florida, having different levels of trihalomethanes in their drinking water are participants in the study. Each participants is interviewed and a blood sample drawn for trihalomethane level determination. So far levels of chloroform have been observed in all participants in the range of 10-60 parts per billion.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1776,

SURVEILLANCE OF CANCER MORBIDITY IN DULUTH, MINNESOTA

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The study will monitor the incidence of cancer of all sites in the resident population of Duluth, Minnesota, during 1969-1981 or longer in order to detect any health effect from the ingestion of asbestiform fibres in the city water supply. Cases will be ascertained through hospital records at St. Luke's, St. Mary's and Miller-Dawn Hospitals in Duluth and at the Mayo Clinic. Rates will be compared with data from the Minneapolis-St. Paul Component of the Third National Cancer Survey and the Surveillance, Epidemiology and End Results Program of the U.S. National Cancer Institute. Additional information will be obtained from persons with cancer of selected sites and matched controls regarding length of residency in the city, smoking history, occupational and dietary history.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1777,

CONNECTICUT TUMOR REGISTRY - FORTY YEAR REPORT

J.F. Heston, Connecticut Cancer Epidemiology Unit, *30 College St., New Haven, Connecticut* 06510 (D-IARC-79-753)

A compilation of the incidence and mortality data of the Connecticut Tumor Registry (CTR), 1935-1974, is being prepared to make the data generally available. Because of the uniquely long history of the population-based CTR, its data are of particular value in the study of secular trends. Research workers make frequent use of the data in various combinations. The information will be presented in chapters. The initial chapter will describe the Registry briefly and will give technical information and general definitions needed to understand and use the data. The second chapter will include tables of incidence frequencies for about 40 specific cancer sites by single year of incidence starting in 1935, by sex and 5 year age group. Incidence rates will be presented similarly by 5 year time periods for the common cancers and by 10 year or possibly longer time periods for rare cancers. The third chapter will give information about cancer mortality in a format comparable to that for incidence. To the extent practicable, the format will be similar to that used for the Third National Cancer Survey. Subsequent chapters will be designed on the basis of experience gained from preparation and field testing of the first three.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1778,

COLORECTAL CANCER - FACTORS RELATED TO SURVIVAL

T.R. Holford, Yale University, School of Medicine, Dept. of Epidemiology & Public Health, *333 Cedar St., New Haven, Connecticut* 06510 (D-IARC-79-754)

Cancer of the colon and rectum is the second most frequently occurring cancer among women and the third among men in the United States, the median survival time being about 2.2 yrs and 2.0 yrs respectively. This project will investigate prognostic factors for survival from colorectal carcinoma using cases on file in the Connecticut Tumor Registry, which is a member of the Cancer Surveillance, Epidemiology and End Results (SEER) Group. Statistical methodology will be developed so that survival analysis with covariates can be done for cancer registry data. The analysis will simultaneously consider, using a regression-like approach, the effect of several factors on survival so that the interrelationships can be investigated. The variables of interest include age, race, sex, treatment, and extent of disease. In addition, information on socio-economic status, environmental factors, and associated lesions will be investigated to determine their effect on survival.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1779,

ESTROGEN AND GENITAL CANCERS - AN EPIDEMIOLOGICAL STUDY

J.L. Kelsey, Yale University, School of Medicine, Dept. of Epidemiology & Public Health, *333 Cedar St., New Haven, Connecticut* 06510 (D-IARC-79-757)

This is a case-control study of women in the age range 45-74 years which seeks to determine if use of oestrogen replacement therapy during and following menopause or use of oral contraceptives during the reproductive years alters the risks for cancer of the breast, ovary, or corpus uteri. Particular attention is being paid to specific histological types and to the stage of the disease. Statistical analysis will include consideration of such variables as total length of use, date when first used, and specific compounds used; the possibility of different risks in subgroups of women will also be considered.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1780,

MULTIPLE RISK FACTORS IN BREAST CANCER

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This case-control study has two primary aspects: (1) determine whether hair dye use is associated with breast cancer, and (2) using multivariate techniques examine the additive and interactive effects of various risk factors for breast cancer, including history of thyroid disease, reproductive factors, and family cancer history. Breast cancer cases and controls were drawn from a screening program.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1781,

RADIATION AS A CAUSE OF BREAST CANCER WITH PARTICULAR REFERENCE TO ACNE TREATED WITH RADIATION AND TO MAMMOGRAPHY

N. Simon, City University of New York, Mount Sinai School of Medicine, School of Medicine, Dept. of Radiation Research, *5th Ave. at E. 100th St., New York, New York* 10029 (D-IARC-79-954)

Women who have undergone previous radiotherapy for acne should be added to the group of radiation exposures previously known to cause breast cancer - young women fluoroscoped for tuberculosis, survivors of atomic bomb explosions and postpartum irradiated mastitis. Some 27 patients with cancer of the breast who were treated with irradiation previously for acne have been identified in our department. The number of women who have been treated with radiation for acne is now being investigated, to attempt to determine the incidence of cancer of the breast in such women. This survey of a population of women has been started as a feasibility study of 1,000 women in New York.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1782,

RISK FACTORS FOR OVARIAN CANCER

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Failure to develop techniques for early diagnosis of ovarian cancer leads to the late presentation of most cases at a time when cure is impossible. No risk factors for this disease have been established. Patients undergoing treatment for both early and late stage ovarian cancer are being surveyed for factors in personal, medical, social, occupational and other environmental conditions that may exert a carcinogenic effect with expression in the ovaries.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1783,

EPIDEMIOLOGY OF GASTROINTESTINAL TRACT CANCERS

E.L. Wynder, American Health Foundation Inc., Dept. of Epidemiology, *320 E. 43rd St., New York, New York* 10017 (D-IARC-79-961)

The purpose of this hospital-based case-control study is to examine suspected risk variables in relation to all organ sites of the gastrointestinal tract. One thousand cases and appropriate controls will be interviewed and personal, medical, surgical and nutritional histories will be obtained. Analyses will be site-specific with site comparisons on selected factors, primarily nutritional. Selected assays of blood and feces will also be undertaken.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1784,

EVALUATION OF CARCINOGENIC AGENTS IN CIGARETTE SMOKE

E.L. Wynder, American Health Foundation Inc., Dept. of Epidemiology, *320 E. 43rd St., New York, New York* 10017 (D-IARC-79-962)

The objective of the study is to determine means of preventing diseases related to tobacco usage by identifying less hazardous smoking products and habits, and susceptible subjects, and to monitor the use of the new low tar cigarettes to determine characteristics of users toward predicting population at increased risk of disease. The effect of changes in tobacco products on risks for cancers of the respiratory, urinary, upper alimentary and biliary tracts and the pancreas will be measured. Questionnaires are administered to hospitalized patients between 20 and 80 years of age. Patients with tobacco-related diseases are designated as cases and are matched with patients with no present or previous tobacco-related disease (controls) by age, sex, case and hospital. The major parameters of tobacco usage investigated include (1) type, duration and amount of tobacco use by brand, (2) the 'tar' and nicotine content of cigarettes smoked, (3) type and frequency of filter use, (4) inhalation practices. These data are analyzed in relation to various demographic characteristics and risk ratios calculated. The study continues to substantiate earlier findings on reduced risk of disease for persons who smoke filter cigarettes for 10 years or more. Cancer risk according to 'tar' level is being analyzed. One of the fundamental purposes of

the study is to demonstrate and determine what the risk will be for individuals who have smoked low-tar and low-nicotine cigarettes for 15, 20, 25 years and, finally, for those who have smoked such cigarettes for their entire lifetime.
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2.1785,

COLON CARCINOMA, DIET AND THE MICROFLORA

M.H. Floch, Norwalk Hospital, Gastrointestinal & Nutrition Laboratory, *24 Stevens St., Norwalk, Connecticut* 06856 (D-IARC-79-762)

Populations with a low incidence of cancer of the colon (African, Indian and Japanese) consume a low fat, high fiber diet and exhibit differences in their fecal microflora and fecal acid and neutral steroids excretion when compared to populations with a high incidence of colon cancer. This study is examining differences between these factors in patients with colon cancer, patients with cancer other than gastrointestinal, and control subjects, all from a population with a high incidence of colon cancer. The comparison of dietary factors obtained through dietary histories indicates no significant differences between the three groups. The predominant fecal flora of the colon cancer group shows an increase in aerobic bacteria compared with controls. No differences are observed with regard to species of the organisms. The comparison of the non-gastrointestinal cancer patients with controls also shows significant variations (decrease in total anaerobes and Eubacterium species). Total bile acid and neutral steroids excretion is not significantly different in the three groups. The colon cancer group does, however, excrete less lithocholic, coprostanol, and coprostanone compared to the control group. Final evaluation of follow-up medical data is presently being undertaken.
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1786,

BENIGN ADENOMAS OF THE LIVER AND ORAL CONTRACEPTIVES

E. Mahboubi, University of Nebraska, Medical Center, School of Medicine, Dept. of Epidemiology, *42nd & Dewey Aves., Omaha, Nebraska* 68105 (D-IARC-79-899)

Recent reports from Australia, Canada, Europe and the United States suggest that the incidence of the hitherto rare liver cell tumors in young women has increased. Several case reports of hepatocellular adenomas in young women using oral contraceptive pills prompted an epidemiological investigation to obtain quantitative information concerning the validity of a relationship between hepatocellular adenomas and the use of steroid hormones. Although these tumors are benign, they cause serious or fatal hemorrhage. This investigation seeks to establish their incidence in order to determine the degree of risk associated with oral contraceptive use and, if possible, the type of pill responsible for this increase.
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1787,

CANCER MORTALITY PATTERNS IN NEBRASKA (1950-1975)

E. Mahboubi, University of Nebraska, Medical Center, School of Medicine, Dept. of Epidemiology, *42nd & Dewey Aves., Omaha, Nebraska* 68105 (D-IARC-79-900)

It has been repeatedly said that 60-90% of all cancer is caused by environmental factors. Alterations in the health patterns of the general population occur as a result of man's ever-changing way of life and introduction of a variety of substances into his environment. Overall, cancer incidence rates have been fluctuating during the past three decades; there has been a steady decline in some cancer types and a substantial increase in others. Information on the geographical distribution of cancer has been particularly useful in developing and testing aetiologic hypotheses. Nebraska, with a population of one and half million, shows significantly higher rates of leukaemia and colon cancer than the national average. Therefore, an age-adjusted analytical study of the cancer mortality patterns by county in the last 25 years (1950-1975) is being undertaken to determine the possible relationships between specific cancer types and associated environmental factors.
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1788,

AN EPIDEMIOLOGICAL STUDY OF THE LONG-TERM EFFECTS OF GRISEOFULVIN IN MAN

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This study examines epidemiologically the anti-fungal drug griseofulvin. The study has been initiated as a result of recent findings by the Eppley Cancer Institute indicating that griseofulvin induces thryoid tumors in rats. The drug had previously been found to induce liver neoplasms in mice. Based upon available information the objectives are: (1) To identify, locate and establish groups of persons throughout the United States, and possibly some Western European countries who have, in the past 18 years or so, used griseofulvin for treatment of various skin diseases and other illnesses, and (2) to evaluate the possible carcinogenicity and teratogenicity of the drug.
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1789,

CASE-CONTROL STUDY OF WATER QUALITY AND CARCINOGENESIS IN PENNSYLVANIA

A. Bahn, University of Pennsylvania, School of Medicine, Dept. of Community Medicine, *36th & Hamilton Walk, Philadelphia, Pennsylvania* 19174 (D-IARC-79-1018)

This is a case-control retrospective study of colon cancer in four counties - Philadelphia, Delaware, Chester, and Bucks - of Pennsylvania. Decedent cases (colon cancer) and controls (deaths due to causes other than cancer) will be drawn from the state mortality records and the next-of-kin listed on the death certificates will be interviewed. Live cases will be selected from hospital records and controls will be randomly selected from the counties. For each case and control information will be obtained concerning residence, occupation, and medical histories, smoking habits, dietary patterns and medicine usage. Detailed chacterization of water sources, treatment methods and chemicals will be obtained. Relationship(s) between routine water analyses and the detailed organic analyses will be investigated for use in historical extrapolation of specific organic contaminant levels in the water. A further major goal of the project is to investigate and compare alternative case-control study methods. Effectiveness of using next-of-kin of decedents for determining relevant exposure will be compared with the use of live cases. Effect of time between death and interview in reliability and usefulness of data will be evaluated. The methodological information obtained will be useful in future investigations of the role of water constituents in the development of chronic diseases.
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2.1790,

EPIDEMIOLOGY OF GASTRIC CANCER AND PRECURSOR LESIONS

P. Correa, Louisiana State University, Medical Center, School of Medicine, Dept. of Pathology, *1542 Tulane Ave., New Orleans, Louisiana* 70112 (D-IARC-79-819)

The possible relation between nitrites in the environment and gastric carcinogenesis is being investigated. Nitrites and nitroso compounds are being estimated in the gastric juice and in local foods of the population of Narino, Colombia, where a high prevalence of gastric cancer and precursor lesions has been found. The role of chronic atrophic gastritis in carcinogenesis is being investigated in prospective studies of the population.
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1791,

STUDIES OF CANCER EPIDEMIOLOGY IN LOUISIANA

P. Correa, Louisiana State University, Medical Center, School of Medicine, Dept. of Pathology, *1542 Tulane Ave., New Orleans, Louisiana* 70112 (D-IARC-79-820)

Based on the frequency of different types of cancer in the State of Louisiana as recorded by mortality statistics and the Louisiana Tumor Registry, studies of analytical epidemiology and geographical pathology are planned and conducted. The main emphasis for 1978-79 is on respiratory cancer since high rates in the southern parts of the State contrast with relatively lower rates in the north. A survey of smoking patterns and a case-control study are being conducted. The aim of the study is to gain some information as to what proportion of the excessive risk can be explained by excessive smoking, occupation and environmental pollution. Five southern Louisiana parishes (counties) have been chosen to be compared with five northern parishes. The lung cancer death rate in the southern parishes is twice that of the northern parishes. A systematic sample of adult males in the 10 parishes has been chosen and will receive mail questionnaires. Lung cancer patients in the hospitals serving the residents of the 10 parishes will be interviewed. A hospital non-cancer control matched by age, sex and race will also be interviewed. In addition, a similarly matched healthy control from the same general neighborhood will be interviewed.
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1792,

WATER SOURCES AND CHARACTERISTICS AND RISK OF MALIGNANCIES OF SELECTED SITES IN SELECTED LOUISIANA PARISHES

M.S. Gottlieb, Tulane University of Louisiana, School of Medicine, Dept. of Medicine, *1430 Tulane Ave., New Orleans, Louisiana* 70112 (D-IARC-79-822)

In order to determine whether certain drinking water sources predispose individuals to cancer, deaths from cancer of selected sites will be matched to control deaths from non-cancer (non-related causes) within groups of selected parishes with similar characteristics except having differing water sources (river and ground). Matching will be for age, sex, race, and year of death. Cases and controls will be characterized by place of birth, ancestry (Acadian or otherwise), water source and characteristics, occupation and industry, and distance from industry. Length of time on water source for individuals will be determined from residence data, characteristics of the water during the last ten years of life, as well as distance of the residence from local industries characterized by type, size and length of exposure time. These factors will be compared for cancer deaths and non-cancer deaths to determine the contribution of single and multiple variables to the likelihood of dying from cancer. An incidence study will follow for selected sites and parishes where the mortality risk is high. This will be followed by a case/control interview study, including carcinogen screening for selected parishes at high risk for selected sites.
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1793,

CASE-CONTROL STUDY OF GASTROINTESTINAL AND URINARY TRACT CANCER MORTALITY IN RELATION TO DRINKING WATER CHLORINATION

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Based on previous research which indicated that females residing in areas with chlorinated water had higher risks of dying of gastrointestinal and urinary tract cancer than their counterparts receiving non-chlorinated water, a case-control mortality record study has been initiated in 19 stable New York counties, to see if gastrointestinal and urinary tract cancer mortality can be related to urban or rural residence, mean income, population density, raw water quality, pH, nitrate concentration and color of the water provided for consumption.
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1794,

EFFECT OF EARLY DETECTION AND TREATMENT ON SURVIVAL FROM LUNG CANCER

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This study was undertaken to determine whether systematic, periodic examinations of sputum cytology, supplementing chest x-ray, could lead to earlier detection of lung cancer in a high risk group and to a reduction in death rate. The population chosen for study is volunteer men, in the New York metropolitan area, over the age of 45 years, who smoke more than one pack of cigarettes daily. A total of 11,000 men will be recruited into the study and all will have

posteroanterior and lateral chest x-rays annually; approximately half will also have sputum cytology examinations at four-month intervals. The study is expected to require 5-10 years, and is being conducted in cooperation with the Mayo Clinic Foundation and Johns Hopkins University where additional populations are being surveyed in the same fashion.

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2.1795,

EPIDEMIOLOGY OF MINIMAL BREAST CANCER IN INITIALLY ASYMPTOMATIC WOMEN

B.S. Pasternack, New York University, School of Medicine, Dept. of Environmental Medicine, *550 1st Ave., New York, New York* 10016 (D-IARC-79-943)

The goal of this study is to determine, by means of risk factor analysis, whether minimal breast cancer in initially asymptomatic women is essentially different from clinical breast cancer or whether it is an early manifestation of the same disease. Demographic and medical data recorded at the Guttman Breast Diagnostic Institute, which has been offering free breast examinations to women living in New York City since 1968, will be utilized. The study group will consist of an estimated 880 cases detected up to the end of 1978 and a random selection of approximately 2,700 controls. Two independent histopathological diagnoses will be obtained. Cases will be compared according to three tumor criteria: degree of invasiveness, aggressiveness (the ratio of prevalent to incident cases), and histological type. Controls will be used to confirm relative risk estimates for study factors. Comparison of all cases to controls should result in estimates of relative risk within the range found at other screening centers, whereas the comparisan of clinical cases to controls should provide estimates within the same order of magnitude as registry data.

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2.1796,

MORTALITY STUDY OF OCCUPATIONAL EXPOSURE TO HALO ETHERS

B.S. Pasternack, New York University, School of Medicine, Dept. of Environmental Medicine, *550 1st Ave., New York, New York* 10016

Chloromethyl-methyl ether (CMME) and his-chloromethyl ether, an impurity (2-8%) in commercial CMME, are alkylating agents having diverse use in the chemical industry. Animal studies have demonstrated that both compounds are potent lung carcinogens. A retrospective cohort study of occupational exposure to CMME was initiated in 1972 to evaluate the human carcinogenicity of these compounds. The initial survey showed a clear excess of respiratory cancer among the CMME-exposed workers, and a strong exposure-response relationship. Other findings among the exposed workers were a considerable number of respiratory cancers at early ages (before age 45), an excess among both smokers and non-smokers, and an inverse relationship between dose and respiratory cancer latency. Particularly because of the latter finding, another mortality survey is underway to better characterize the risk for those with lower exposure levels. The survey will include all seven major CMME producer and user firms in the USA for the time period 1948-1979. An estimated 2,000 CMME-exposed workers and 3,500 unexposed workers will be available for study.

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2.1797,

STUDY OF ENVIRONMENTAL CARCINOGENS

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The distribution of known environmental carcinogens (benzo(a)-pyrene, nitrosamines and certain metals) is being investigated in several industrial plants and correlated with lung cancer incidence in workers in these factories.

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2.1798,

RISK FACTORS IN BREAST CANCER

M.I. Tchapliuk, Moscow Research Inst. of Oncology, Dept. of Epidemiology, *2 Botkinskiy Proezd 3, Moscow 125284, Union of Soviet Soc. Republics* (D-IARC-79-1080)

The main purposes of the study are to determine, by prospective methods, the most important risk factors for women with breast cancer in the Russian Federation of Soviet Socialist Republics and determine the effectiveness of mammography and thermography in the diagnosis of breast cancer.

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2.1799,

CARCINOGENIC RISK IN ASBESTOS-CEMENT INDUSTRY

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This retrospective and, perhaps in the future, prospective study is to determine the comparative carcinogenic risk by type of dust inhaled by workers in different parts of asbestos-cement plants. There are three types of exposure - asbestos, which in this country is chrysotile, cement alone, and asbestos-cement. In the past, a minor fibrogenic potential for cement and asbestos-cement was established and compared to that of asbestos.

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2.1800,

ESTONIAN TUMOR REGISTRY

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This population-based tumor registry covers the territory of the Estonian SSR of 45,215 square kilometers which had, in 1976, a population of 1.4 million. The aim of the registry is to obtain information on total cancer incidence, mortality, prevalence and survival. Reasonably reliable incidence data for cancer have been available since 1967. The cancer registration system is being improved. Active follow-up of patients is in process.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1801,

RELATIONSHIP BETWEEN ENDEMIC NEPHRITIS AND KIDNEY CANCER

M.M. Milosevic, University of Belgrade, Inst. of Hygiene & Medical Ecology, *Dr. Subotica St. No. 5, 11000 Belgrade, Yugoslavia* (D-IARC-79-1088)

The aim of the project is to establish the age-adjusted incidence of malignant neoplasms for a seven year period and the relationship between endemic nephritis and cancer of the kidney in an area with 265,000 inhabitants situated in the Serbian Republic on the Morava river.

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2.1802,

CENTRAL CANCER REGISTRY - POPULATION-BASED

J.M. Ford, Central Cancer Registry, *Macquarie St., Sydney, N.S.W. 2000, Australia* (D-IARC-79-33)

Broadly the aims of the central cancer registry are: (1) to describe the nature and extent of cancer in the New South Wales population by appropriate preparation of data; (2) to provide information for use in control and prevention of cancer, including the audit of public health programs; (3) to provide a basis for education programs for the public and for professional people; (4) to explore the aetiology of cancer by analysis of the data with regard to time trends and spatial relationships and by initiating and collaborating in specific studies; (5) to help assess the cost and adequacy of therapeutic facilities and care systems within and external to hospitals; (6) to help inquire into the natural life history of cancer types and the modifications of survival times by various types of treatment; (7) to provide a central source of information for follow-up of cancer patients both routinely and on request.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1803,

A STUDY OF CANCER FOLLOWING MULTIPLE FLUOROSCOPIES

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This cohort study is designed to evaluate the carcinogenic risk from ionizing radiation in the dose range 0 to 100 rad and for the major cancer sites to establish if there is a possible dose-response relationship. The study population consists of patients first admitted to Canadian tuberculosis sanitaria between the years 1930 and 1952. A substantial proportion (40 to 50%) were fluoroscoped regularly in conjunction with artificial pneumothorax treatment and consequently accumulated a substantial radiation dose consisting of many exposures over a period of time. Information on the admission and treatment records of these patients has been extracted from the original sanitaria files. The data, consisting of approximately 130,000 records, have been keypunched. Two computerized record linkage steps using the identifying information present on the records are currently being undertaken. The first is to internally link the records so that admissions referring to the same individual will be brought together to form a composite record. The second step is to link these composite records to the mortality data base maintained by Statistics Canada for the years 1950 through 1974, in order to ascertain the mortality experience of the cohort. A dosimetry study has been completed and published (Health Physics 35(2):259-70, 1978) which determines the dose experienced by various body organs exposed to radiation from fluoroscopies. The dosimetry information will be applied to the individual patient records in order to estimate the radiation dose received by each patient. The analysis will consist of estimation of relative risks with respect to mortality for different cancer sites as a function of dose calculated relative to those members of the study population who are not fluoroscoped.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1804,

EPIDEMIOLOGY OF GASTRIC CANCER IN NEWFOUNDLAND

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The purpose of this epidemiological investigation is to: (1) characterize the demographic and statistical pattern of gastric cancer in Newfoundland by regional analysis and international comparison, (2) determine high and low risk geographical regions and occupations of the male work force, (3) quantitatively study water trace element composition from high- and low-risk sectors, as well as other indicated environmental, or geochemical factors, (4) relate such findings to incidence of cancer of all sites combined and death attributable to all causes, and undertake, on a comparative basis, an analysis of occupational risk and water trace element correlates with gastric cancer in the high and low risk areas of Iceland and Japan. Data from Newfoundland, Iceland and Japan will be analyzed in an identical fashion by stepwise, multivariate analysis. Statistical and chemical analytical work will be conducted in Canada.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1805,

EPIDEMIOLOGICAL STUDY OF INTRACRANIAL TUMORS IN NORTH MORAVIA

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Cancer is notifiable in North Moravia. During 1952-1968, 1,077 primary malignant intracranial neoplasms were recorded. The largest group was gliomas of the cerebral hemispheres, the brain stem and the cerebellum (52.8%). Incidence, the influence of age and sex, histological type, therapy, death following operation and the number of cases diagnosed only at autopsy are being studied.

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2.1806,

EFFICIENCY OF CLUSTER ANALYSIS TECHNIQUES

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The fact that very little (if any) clarification of the aetiology of rare diseases in general and of Hodgkin's disease in particular can be attributed to studies in which cluster analysis techniques were employed, stresses the need for evaluation of the efficiency of these techniques. A few studies have dealt with this topic in the past, mostly by applying one or more of these techniques to real (but reduced in size) data sets composed of cases with known infectious disease (such as poliomyelitis). The present study deals with the efficiency of three cluster analysis techniques (Knox's, Emm's and Mantel's) by applying each of them to simulated data sets. So far, the simulation of these sets were made according to each of two epidemiological models which were adapted to resemble in number of cases the data of Hodgkin's disease in Israel. This part of the study was carried out by the investigator in the National Institutes of Health, National Cancer Institute, USA. A continuation of this study is being carried on now in the Dept. of Epidemiology in the Israel Institute for Biological Research. The aim is to formulate a number of possible epidemiological models, based as much as possible on hints stemming from previous studies; to simulate replicate sets according to each of the models; then to apply cluster analysis techniques to those sets. The results will indicate the chances of revealing clustering among Hodgkin's disease cases as well as the preferable technique among those applied.

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2.1807,

TIME TRENDS IN MORTALITY RATES

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Mortality rates specific for race (Caucasian, Japanese, Chinese, Hawaiian and Filipino) sex, five or ten year age groups and 80 selected causes of death have been computed for each decennial census year in Hawaii, from 1910 to 1970. Computed mortality rates actually represent average annual mortality rates for the 5-year peri-censual periods. Because of changes in ICD code numbers over these years, every death was recoded by computer or by hand, using a common coding scheme. These data are being analysed for secular trends in Hawaii and for comparison with corresponding trends in Japan and on the US mainland.

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2.1808,

SPATIAL AND TEMPORAL VARIATIONS IN FOUR COMMON CANCERS IN BLACK GOLD MINERS FROM SOUTHERN AFRICA

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In previous work on the gold miners, the pattern of cancer in Black gold miners over the eight-year period 1964-71, comprising 2,926,461 man-years of employment, was studied. Of the 1,344 cancers found, primary liver cancer accounted for 52.8%, oesophageal cancer 12.1%, cancer of the respiratory system 5.4%, and cancer of the bladder 4.8%. Analysis of the spatial distribution of these four cancers, both on subcontinental and local scale, showed distinct gradients of significantly higher and lower incidence than expected. In the case of primary liver cancer in Mozambique and oesophageal cancer in Transkei, the spatial distribution reflects closely that found in the general resident population of each territory. The crude incidence rate of primary liver cancer in gold miners from Mozambique dropped sharply over the period of the survey. The survey continues.

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2.1809,

YORKSHIRE BREAST CANCER PROJECT

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All new cases of breast cancer presenting to a group of surgeons in Yorkshire, are being investigated. A series of predictive variable and detailed descriptions in clinical, surgical and pathological terms are now being analyzed. In the first instance the analyses will concern factors which might lead to the first relapse of each case. The study has accumulated over 700 cases to date and will realize over 1000 before the end of the collection phase.

The object of the study, besides its predictive and descriptive valve is to study the epidemiology of breast cancer in Yorkshire.

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2.1810,

SYMPTOMATOLOGY AND RISK FACTORS OF CANCERS OF THE LARYNX AND OF THE HYPOPHARYNX

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The study consists of 2 parts: 1) Analysis of the symptoms and the lead times as a function of diagnostical aspects (starting point of the lesion, clinical stage, etc.). 2) Case-control approach in order to evaluate the importance of the following factors: tobacco, alcohol and occupation.

The second part is being carried out in collaboration with Turin, Saragosse, Varese and Caen.

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2.1811,

STUDIES ON THE EPIDEMIOLOGY AND ERADICATION OF LYMPHOID LEUKOSIS VIRUS IN CHICKENS

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Lymphoid leukosis virus infection is widespread in commercial poultry populations, and is responsible for economically significant losses from leukosis. One approach to control of losses is by eradication of leukosis virus from commercial breeding stock. A detailed study is in progress on the relationship between the infective status of breeding birds and the transmission of virus to their progeny, with particular reference to ways of detecting dams which do not transmit virus. From information so gained two groups of breeding birds have been produced, one selected for freedom from virus infection and the other - an unselected control group, and comparisons of these groups are in progress.

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2.1812,

SOME MORBIDITY DATA ON MAMMARY CANCER AND ITS NEGLECT

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In the evaluation of the follow-up data on 1155 female mammary cancer patients according to region, a correlation between the rate of urbanization and cancer neglect could be observed. Regarding profession, industrial workers consulted doctors in the earliest stage of their disease. Patients of a higher educational level showed relatively lower rates of neglect. The first complaint was, in 80% of all cases, the palpable nodule. Fifteen percent of patients from all types of regions consulted doctors at one year's delay and a decrease in the rate of neglect can be attributed to frequent population scanning, self detection, and increased health education.

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2.1813,

REPRODUCTIVE OUTCOMES ASSOCIATED WITH PATERNAL EXPOSURE TO VINYL CHLORIDE MONOMER

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The carcinogenic potential of vinyl chloride has been characterized and, recently, vinyl chloride has been described as a mutagen and a teratogen. Recognized fetal wastage has been established as an indicator of mutagenic effects due to environmental or occupational exposures. A cohort of 249 men who had known exposure to vinyl chloride monomer (VCM) and who were currently married was identified from the work force of a major chemical company. A comparison group of non-exposed male employees with similar socioeconomic characteristics was also identified. An interview methodology was developed to obtain complete reproductive histories from the wives of the employees. Data for each pregnancy outcome will be correlated with the husband's work history. Only those pregnancies which occurred while the husband was exposed to VCM or within the subsequent three months will be considered 'at risk'. Data regarding other factors associated with pregnancy outcomes have also been collected.

Analysis is near completion and has focused on fetal death, congenital defects, fertility rates and infant mortality.

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2.1814,

RADIOIMMUNOASSAY OF CEA AND AFP AS A SCREENING TEST IN THE SURVEY OF HEALTH OF WORKERS IN THE CHEMICAL INDUSTRY

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Selected groups of workers with exposure to vinyl chloride, benzene, chromium, amino compounds, and black carbon have been examined since 1975 by radioimmunoassay techniques. The results are correlated with numerous laboratory and clinical data in order to evaluate the possibility of using RIA of serum or urine CEA and AFP as a screening test in the survey of health of groups of workers with occupational cancer risk.

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2.1815,

IODINE METABOLISM AND BREAST CANCER

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Research from this laboratory and others has indicated that glandular atypia occurs in the breast tissue of rodents under conditions of iodine deprivation. The cellular changes caused by iodine deficiency are intensified by aging. Additionally, some evidence shows further modifications of breast histology in iodine deficiency by steroid hormones such as estrogen and testosterone and pituitary hormones such as gonadotropins and thyrotropins.

There has been controversy concerning the effect of iodine deficiency on stimulation and maintenance of cancer of the breast in rodents when carcinogens are employed. However, neither within this induced neoplastic framework nor with the dysplastic changes caused by deficiency alone, have laboratory studies of the pathway of intracellular iodine been possible.

The main objective of our basic work is to study intracellular iodine metabolism in breast tissue. The techniques to be employed have been used in our laboratories with success and are described in our recent publications. The metabolic events will be compared with the histopathology obtained from the same experimental animal. By this protocol, we project results which may provide an insight into the mechanism whereby iodine influences breast growth and development and explain why, in its absence, abnormal responses may occur.

In light of the diverse iodine deficiency in the U.S. and other countries, this epidemiological factor will be researched by basic technics and then further extended to clinical areas.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1816,

INFLUENCE OF A COMMUNITY CANCER CONTROL PROGRAM AND TREND ANALYSIS OF DISEASE (ABBREV)

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The purpose of this study is to analyze the influence of a community cancer control program upon extent of disease, incidence, cumulative risk, treatment and survival for selected cancers. Trend analyses will compare community experience prior to the program (1969-1976) with that after implementation of the program (1977-1981). Data from the MCF population-based registry will be utilized for this study, including 5 years of survival follow-up. Variations in trends among selected demographic groups will also be analyzed.

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2.1817,

GEO-CANCEROLOGICAL STUDY OF BELGIUM

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The distribution of cancer mortality based on mortality data given by the National Institute for Statistics and cartographic analysis is being used as the basis for a correlation study examining geographical, socio-economic and environmental factors. Particular emphasis is placed on the influence of the urban environment by studying in more detail the mortality in big urban agglomerations.

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2.1818,

CHILDHOOD CANCER

M.A. Rahim, Bangladesh Cancer Epidemiology Research Program, Radiotherapy Centers in Bangladesh, *49 E. Azimpur Gov. Estate, Dacca 5, Bangladesh* (D-IARC-79-44)

Factors affecting a child suffering from malignant neoplasms will be studied under the auspices of the Bangladesh Cancer epidemiology Research Program (BCERP). The aim of the study is (1) to determine the occurrence and age, sex and religious distribution of childhood neoplasms (primarily lymphomas and leukemias); (2) to study the geographical distribution of these diseases in different districts; (3) to calculate mortality in the light of cases registered by the BCERP and (4) to plot an area map for the study of time - space clusters. Radiotherapy, hematology and histopathology units of the radiotherapy centers in Bangladesh will participate and BCERP tumor registry forms will be utilized for recording. Subsequent compilation and analysis will be done centrally at BCERP.

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2.1819,

EPIDEMIOLOGY OF LUNG CANCER

M.A. Rahim, Bangladesh Cancer Epidemiology Research Program, Radiotherapy Centers in Bangladesh, *49 E. Azimpur Gov. Estate, Dacca 5, Bangladesh* (D-IARC-79-43)

Recent publications (Rhaim, 1975; Rhaim et al., 1977) in the Bangladesh Medical Research Council Bulletin and Bangladesh Cancer Reports have shown that the highest cancer mortality rate for males is that for lung cancer. In this study the relationship between lung cancer and smoking in Bangladesh nationals will be examined. Patients will be interviewed to obtain information on the variety of tobacco smoked (bidi, hubble-bubble, country-made, processed, filter-tipped, etc.), the amount smoked and degree of inhalation. Questions have been designed to collect these data from the radiotherapy units in Bangladesh. All records will be collected by the Bangladesh Cancer Epidemiology Research Program for analysis.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1820,

A RETROSPECTIVE STUDY OF CANCER OCCURRENCE

M.A. Rahim, Bangladesh Cancer Epidemiology Research Program, Radiotherapy Centers in Bangladesh, *49 E. Azimpur Gov. Estate, Dacca 5, Bangladesh* (D-IARC-79-46)

The relative frequency of cancer will be determined by analyzing the record of patients admitted to hospital and treated in different radiotherapy centers since 1964. This study will be conducted under the auspices of the Bangladesh Cancer Epidemiology Research Program.

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2.1821,

BANGLADESH CANCER EPIDEMIOLOGY RESEARCH PROGRAM

M.A. Rahim, Bangladesh Cancer Epidemiology Research Program, Radiotherapy Centers in Bangladesh, *49 E. Azimpur Gov. Estate, Dacca 5, Bangladesh* (D-IARC-79-47)

OBJECTIVE: To examine the relative frequency of all cancers at hospitals with radiotherapy facilities available which have been selected to participate in the study. Participation of other hospitals without a radiotherapy center is voluntary. Consultants attached to participating hospitals are coinvestigators. After interview and examination a clinical report is prepared, one for each patient, in the ad hoc tumor registry of BCERP. The records are sent to a central location for compilation and statistical analysis. Three articles have been published and results show that cancers of the larynx, lung and oropharynx are frequent in males, and cancers of the cervix, breast and oral cavity in females.

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2.1822,

HISTORICAL REVIEW OF MALIGNANT MELANOMA IN ALBERTA 1967-1976

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Records of all patients diagnosed as having melanoma of skin or eye during the past ten years were indentified from the Alberta Cancer Registry. These files were reviewed and information was collected on sex, age, residence history, method of diagnosis, site, pathological features, stage at diagnosis, duration of stages, sites of metastases, treatment and survival. Analysis of data will provide information on the incidence of melanoma, treatment given, recurrence and survival rates and the correlation of various factors with prognosis.

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2.1823,

EPIDEMIOLOGICAL ASPECTS OF CARCINOMA OF THE CERVIX

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The low income female population constitutes the major portion of those attending the clinics of general hospitals in Brazil for screening for cancer of the uterine cervix. This study aims to characterize, in this low revenue population, those that are at 'high risk' for cervical cancer utilizing 18 variables obtained from complete gynecological examination, cervical cytology, colposcopy and biopsy. The preliminary work of collection of the data has been undertaken over the past two years. The data will now be processed by discriminate analysis to determine which of the variables examined could be a contributing factor to cervical cancer.

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2.1824,

EPIDEMIOLIGY OF CANCER IN THE NATIVE INDIAN POPULATION OF ALBERTA

L.M. Laing, University of Alberta, Dept. of Community Medicine, *Edmonton, Alberta, Canada* T6G 2E1 (D-IARC-79-69)

Native Indian populations are in cultural transition. The movement away from aboriginal patterns of adaptation is accompanied by changes in lifestyle and exposure to factors which may increase the risk of cancer. Risk factors include changes in reproductive patterns, a diet based on processed foods, occupational exposure to toxic substances, and increasing use of alcohol, tobacco, and drugs. Published information on cancer incidence and morality among native populations is relatively scant. The pattern of incidence of cancers among native Indian and Eskimo popualtions is different from that among other residents of North America. Malignant disease may once have been rare in native Indian and Eskimo populations. Cancers of the gallbladder and nasopharynx are significantly more frequent among native Indians. Cancers of the cervix and lung appear to have increased in relative prevalence. The Government of Canada maintains records of registered Indians through the Departments of Indian and Northern Affairs and Health and Welfare. There are approximately 32,000 registered Indians who are residents of Alberta. Lists of registered Indians will be matched with files of the Alberta Cancer Registry and with death certificates. An historical prospective study of cancer incidence and mortality among native Indians will be undertaken. It is estimated that for the study period 1974-78 there will be about 100 cancer deaths.

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2.1825,

OCCUPATIONAL MALIGNANCIES AMONG PETROCHEMICAL WORKERS OF ALBERTA

M.G. Grace, Dr. W.W. Cross Cancer Inst., Dept. of Biostatistics, *11560 University Ave., Edmonton, Alberta, Canada* T6G 1Z2 (D-IARC-79-68)

A study is in progress to demonstrate possible relationships between occupational exposure to toxic substances and cancer incidence, mortality and mortality from all causes in Alberta. Retrospective data are being collected on approximately 4,500 workers occupationally exposed to chemicals, and unexposed control group similar in size and other characteristics. Sources of data are: a self-administered questionnarie, Vital Statistics, the Provincial Cancer Registry and Patient Index system.

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2.1826,

TRENDS IN CANCER INCIDENCE

M.G. Grace, Dr. W.W. Cross Cancer Inst., Dept. of Biostatistics, *11560 University Ave., Edmonton, Alberta, Canada* T6G 1Z2 (D-IARC-79-67)

This study will examine the temporal variation in cancer incidence in Alberta over the years 1961-1977, and fit simple regression models to determine significant increasing or decreasing trends. All sites will be analyzed involving the processing of about 68,000 malignancies. These form the basis of comparisons with similar studies, and will be useful for the monitoring of preventive measures, occupational studies and as a long-range planning tool.

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2.1827,

THE GEOGRAPHICAL DISTRIBUTION OF COLON CANCER IN ALBERTA 1969-73

M.G. Grace, Dr. W.W. Cross Cancer Inst., Dept. of Biostatistics, *11560 University Ave., Edmonton, Alberta, Canada* T6G 1Z2 (D-IARC-79-65)

A previous investigation revealed a great variation in the geographical distribution of colon cancer incidence in the Province of Alberta where 1,431 cases were recorded during 1969-73. This study is follow-up to clarify the reality of higer or lower incidences in certain areas by analyzing demographic aspects of the population

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2.1828,

CHILDHOOD CANCER IN ALBERTA

M.G. Grace, Dr. W.W. Cross Cancer Inst., Dept. of Biostatistics, *11560 University Ave., Edmonton, Alberta, Canada* T6G 1Z2 (D-IARC-79-64)

Files on children diagnosed with cancer and registered with the Alberta Cancer Registry during the past 10 years are being reviewed. In addition to descriptive statistics on incidence and mortality by age, sex, site, and histology, this study will provide

information on survival rates. Variables which might provide leads to aetiological factors include occupation of father, place of birth and/or residence, reproductive history of mother, presence of congenital malformations, and family history of cancer. The total number of childhood cancer cases diagnosed in Alberta has increased from 71 cases in 1970 to 110 cases in 1977 (0-19 years of age). The incidence of childhood cancer in Alberta will be compared with that of other population-based registries in Manitoba, Saskatchewan, Norway, and Finland, and with results of the U.S. Third National Cancer Survey. The first stage of this study will consist of an analysis of data from review of files for the three-year diagnosis period, 1975-77, in order to assess the quality of information available for certain variables and refine the review protocol. Missing information will be sought from vital statitics registrations in the province.

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2.1829,

INCIDENCE OF CANCERS OF THE STOMACH AND OESOPHAGUS IN ALBERTA, 1969-73

K. Morgan, University of Alberta, Dept. of Genetics, *Edmonton, Alberta, Canada* T6G 2E1 (D-IARC-79-71)

The geographic distribution of cancers of the stomach and oesophagus in Alberta, diagnosed during the period 1969-73, will be studied in an attempt to define high-risk subpopulations among residents of the province. Approximately 900 cases have been verified by review of patients' files for sex, pathology, year of diagnosis, and residence at time of diagnosis. Additional study variables include birth date, birth place, ethnic origin, and major occupation. The other primary source of information for these variables is death certificates registered in the Province of Alberta. Some preliminary results of mapping age-adjusted incidence of cancers for both sites and sexes combined, by residence at time of diagnosis, include identification of cluster of three counties with statistically significantly increased standardized incidence ratios and a major city with a statistically significantly decreased standardized incidence ratio. These analyses will be refined, and associations with birth place, length of residence, occupation, and ethnicity (implicating life style factors) will be sought.

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2.1830,

GYNECOLOGICAL CYTOLOGY REGISTRY, NOVA SCOTIA

G. Anderson, Victoria General Hospital, *5788 University Ave., Halifax, Nova Scotia, Canada* B3H 2Y9 (D-IARC-79-72)

A computerized gynecological cytology registry has been designed for the Province of Nova Scotia. The objectives of the registry are as follows: (1) To provide complete and accurate information regarding the numbers and location of women being screened and the number of Papanicolaou smears being examined annually throughout the Province of Nova Scotia; (2) to provide information for use in the establishment of a province-wide quality control program in the area of gynecological follow-up of cases who have abnormal cytology; (4) to provide epidemiological data related to malignant and pre-malignant disease of the uterus in the Province of Nova Scotia. Data are being collected from all laboratories providing a gynecological cytology service in the Province of Nova Scotia using standardized diagnostic terminology and standardized requisition report form. The design of the computer program will provide annual and semi-annual reports relating to the numbers of women being screened in the province by age and county distribution. Information regarding abnormal smears and subsequent colposcopy and biopsy findings are also incorporated in the routine computer printout. Since Nova Scotia has a relatively small and stable population of approximately 300,000 women at-risk of developing cervical neoplasia, it is hoped that the program will provide useful information in relation to the distribution and epidemiology of this disease in this population.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1831,

CARCINOMA IN-SITU AND DYSPLASIA OF UTERINE CERVIX IN RELATION TO AGE, PARITY AND BEGINNING OF SEXUUAL RELATIONS

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The aim is to determine the age at which carcinoma in situ and dysplasia occur for comparison with findings of authors elsewhere, using a sample group consisting of all 'healthy' patients seen at the Department of Gynecology. Data concerning the age at disease onset will be taken from the Registry. At the beginning of this study only age was considered; in the last months, parity and beginning of sexual relations have been added.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1832,

RETROSPECTIVE MORTALITY STUDY OF NICKEL WORKERS

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A retrospective mortality study of roughly 12,000 men who have worked in the nickel industry since 1950 is being conducted. Mortality will be ascertained and cause-specific death rates calculated. Different occupational groups will be compared and we hope to make use of environmental data. The aim is to determine any occupational health risks and, hopefully, to identify environmental agents responsible.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1833,

A MORTALITY STUDY OF NICKEL WORKERS IN ONTARIO

R.S. Roberts, McMaster University, Dept. of Clinical Epidemiology & Biostatistics, *1200 Main St. W., Hamilton, Ontario, Canada* L8S 4L8

This study ultilizes a fairly conventional historical prospective design to compare mortality patterns in nickel workers over a 27 year follow-up period. The study cohort consists of approximately 70,000 men working at Sudbury and Port Colborne. Eligible subjects are males with six months or more of accumulated service who worked for the company (or who were receiving a pension) on or after 1 January 1950. The mortality experience of these men through to the end of 1976 will be ascertained from the Statistics Canada registry of death certificates using a record linkage procedure based on full name, date of birth and 'last known alive' date. A series of tactics are being undertaken to estimate the accuracy of the matching. The analysis of this data will relate features of the detailed occupational histories of these men to cause-specific mortality. Of particular interest are the relationships of cumulative nickel sulphide and nickel oxide to respiratory cancer, but other cancers and contaminants will also be considered. In addition, exposure in terms of years of duration in particular occupations (i.e., the sinter plant) will be analyzed.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1834,

A STUDY OF MALIGNANCY AND OTHER ASBESTOS-RELATED DISEASES IN RELATION TO CROCIDOLITE MINING AND ENVIRONMENTAL EXPOSURE AT WITTENOOM GORGE

M.S. Hobbs, University of Western Australia, Unit of Clinical Epidemiology, *Nedlands, W. Australia 6009, Australia*

The aim of the study is to determine the incidence of mesothelioma, bronchogenic carcinoma and other malignant tumors in workers previously employed in mining and milling crocidolite at Wittenoom Gorge, Western Australia, between 1942 and 1966, in relation to duration of exposure and smoking habits. The risk of mesothelioma in the relatives of workers and other Wittenoom Gorge residents not directly involved in mining crocidolite will also be assessed. Work is continuing to determine the vital status and present whereabouts of approximately 6,500 men formerly employed at Wittenoom Gorge through electoral rolls, other population registers and cancer and death registers in different Australian States. Commencing in 1979 a questionnaire will be sent to all former Wittenoom Gorge workers so far located to obtain further details concerning occupation and smoking habits. Respondents will be followed for as long as necessary to determine the interaction between crocidolite exposure and smoking in relation to the development of bronchogenic carcinoma. This questionnaire will also seek information concerning relatives of former asbestos workers also living at Wittenoom Gorge. This will be supplemented, if possible, by information from local government and school records to establish a roll of persons not directly involved in processing crocidolite but possibly at risk of developing mesothelioma from environmental exposure. Procedures will be established to monitor this cohort for the future development of mesothelioma.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1835,

INCIDENCE OF TESTICULAR TUMORS WITH EMPHASIS ON POSSIBLE RURAL PREPONDERANCE AND OCCUPATION

T.F. Sandeman, Peter MacCallum Hospital, Urological Service, *278 William St., Melbourne, Victoria 3000, Australia* (D-IARC-79-21)

Previous surveys of the testicular tumor population presenting to the Peter MacCallum Clinic have suggested an increased incidence in patients from rural areas. Articles published since then have confirmed this trend overseas. Futhermore, evidence in the literature indicates occupational risks for a large number of cancers. Two studies are being carried out: (1) A survey of all testicular neoplasms in the State of Victoria from 1950 to 1978, using records from pathology laboratories, to determine any increase in incidence and possible rural preponderance. (2) A case-control study of cases at Peter MacCallum since 1952, investigating residence (metropolitan, town or rural), occupation, place of birth, religion and possible exposure to carcinogens. All cases have been histologically classified to reveal relationships according to classification. Retrospective studies covering all the available case material are being carried out (a) to increase the numbers and (b) to detect any change in trends, and a survey of pathologists' records is being conducted.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1836,

THE INCIDENCE OF CANCER IN CHRONIC GASTRIC ULCER PATIENTS

D. Piper, University of Sydney, Royal North Shore Hospital, Dept. of Medicine, *St. Leonards, N.S.W. 2065, Australia* (D-IARC-79-31)

This is part of a prospective case-control study of 700 peptic ulcer patients who are being followed sequentially. Many variables related to peptic ulcer are being studied, and the number of these patients who develop cancer in the subsequent 10 years will be noted.

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2.1837,

ANALYSIS OF COMPUTERIZED DATA ON MALIGNANT MELANOMA

H.M. Shaw, University of Sydney, Dept. of Surgery, *Sydney, N.S.W. 2006, Australia* (D-IARC-79-35)

A detailed study of malignant melanoma is being made from two points of view: factors in the host and tumor that influence the behavior of the tumor, i.e., disease-free periods and site and type of metastases when they develop. The factors being investigated from the existing records include: (1) Identification of high risk individuals. (2) Role of sunlight exposure. Studies from the United States and Europe indicate an inverse relation between incidence of melanoma and geographic latitude. However, there appears to be little correlation between morbidity and mortality. Because morbidity has increased more than mortality, there is a need to establish whether: (a) the increase in incidence is indeed a real effect or an artifactual one, resulting from earlier diagnosis and the more frequent removal of superficial tumors, and (b) melanomas induced by sun exposure have a lower degree of malignancy than those always covered by clothing. (3) Tumor factors possibly unrelated to sunlight exposure. Morbidity may have increased more than mortality due to changes in the biological nature of the tumor, such as histological type, grade of mitotic activity, level of invasion or tumor thickness. (4) Patterns of dissemi-

nation of melanoma. It is important to determine why melanoma spreads by either rapid hematogenous transmission, by slower direct lymphatic extension or by extension through successive echelons of local and regional lymphatics.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1838,

AUSTRALIAN PETROLEUM INDUSTRY HEALTH STUDY

D.G. Christie, University of Melbourne, Dept. of Community Health, *234 Grattan St., Melbourne, Victoria 3053, Australia* (D-IARC-79-16)

A twelve-month study is being carried out to determine the feasibility of setting up a data system embracing all employees in the Australian oil industry. The purpose of the system will be to link present exposure to petrochemicals with figures on cancer morbidity and mortality by means of an ongoing prospective study.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1839,

QUEENSLAND MELANOMA PROJECT

N.C. Davis, Princess Alexandra Hospital, Queensland Melanoma Project, *Ipswich Rd., Woolloongabba, Brisbane, Queensland 4102, Australia* (D-IARC-79-12)

The aim of the study is to investigate the rising incidence of malingnant melanoma in Queensland: to seek etiological factors and to educate the population to reduce the effect of these factors; and to investigate treatment and prognosis in the area. Complete records and follow-up findings on 1,600 patients documented between 1963 and 1969 are maintained. Calculation of the incidence of melanoma in Queensland in the years 1975, 1976, and 1977, together with information on sex and age of patient, site and histological features of the lesion is at present being completed.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1840,

DIET, ALCOHOL, AND HORMONAL STATUS IN COLORECTAL CANCER

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Consumption of alcohol in Australia varies considerably between ethnic and social groups. Diet is presumed to be more homogeneous, which makes it less amenable to analytical study than alcohol. However, some critical dietary items may vary considerably within the population. It has been demostrated that the ratio of male:female incidence rate of colon cancer is about 1, whereas that for rectal cancer is around 2. Further it has been shown that nulliparity is a risk factor for colon cancer in a way similar to that for breast cancer. A case-control study investigating the relationship of both colon and rectal cancer separately, (paying particular attention to anatomical location) with dietary fat, dietary fiber, vitamins A and C and parity and hormonal status is now being undertaken. Cases are identified using a community-based cancer registry, while controls are drawn from the general community. Approximately 400 cases and 800 controls will be studied.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1841,

RISK FACTORS FOR FEMALE CANCERS

V. Siskino, University of Queensland, Dept. of Social & Preventive Medicine, *Herston Rd., Herston, Queensland 4006, Australia* (D-IARC-79-13)

The aim of the study is primarily to investigate further the link between reserpine and breast cancer. Women undergoing surgery for a recently diagnosed cancer (breast for cases, various sites for controls) in public hospitals in Brisbane from 1969-1973 were included. Information on use of drugs was sought in medical records or from local medical offices.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1842,

CENTRAL CANCER REGISTRY

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The Central Cancer Registry continually monitors hospital data from large hospitals in Victoria, covering an estimated 50% of cancers occurring. Clinical data are recorded by medically qualified registry personnel and follow-up to provide survival data is rigorous. The registry yields information on relative frequency as well as treatment trends and results, and is available as a case-identifying centre for retrospective epidemiological studies. A population-based registry is now being developed to register all cases of cancer within the State of Victoria to enable incidence and prevalence to be established. Registry data are made available to research workers on request and advice on statistical and epidemiological techniques is also given.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1843,

MONITORING THE OCCUPATIONAL ENVIRONMENT FOR CARCINOGENS - A PILOT STUDY IN MONTREAL

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Of the thousands of chemicals in the occupational environment, only a score have at present been demonstrated to be human carcinogens. There is no human evidence one way or another for almost all of the others. The very large number of agents renders inadequate conventional 'one-factor-at-a-time' epidemiologic study methods (case-control or cohort). The objective is to establish an ongoing monitoring system capable of scanning the occupational environment to detect hitherto unsuspected human carcinogens. A case-control type methodology will be used. Cases will be adult male cancer patients hospitalized in the Montreal region. Several sites will be included and each will be analyzed separately. In the pilot study, controls for each site will be selected from among the cases with cancer of other sites. For each man a lifetime history of exposure to a large number of agents will be ascertained. An innovative approach will be developed to ascertain occupational exposures which the worker might not be able to report or recall. This will be based on a self-administered questionnaire followed by an in-depth interview and a matrix relating specific chemical exposures to specific jobs. The matrix will be developed in consultation with experts in the fields of chemical and industrial engineering. A worker's exposure history will be inferred from his job history and the matrix. The analyses will aim to identify high risk chemicals and workplaces. A two-year feasibility study will evaluate diverse aspects such as case ascertainment, data collection methods, and the statistical sensitivity of the system before a long-term system is established.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1844,

OCCUPATIONAL AND NON-OCCUPATIONAL RISK FACTORS OF SQUAMOUS CELL CARCINOMA OF SKIN IN THE MONTREAL REGION

F. Aubry, McGill University, Dept. of Epidemiology & Health, *3655 Drummond St., Montreal, Quebec, Canada* H3G 1Y6 (D-IARC-79-83)

Data from the Cancer Registry of the Province of Quebec indicate that skin cancer is one of the leading types of cancer in the Montreal region. Given that the two major risk factors of squamous cell carcinoma of the skin recognized in the medical literature are sunlight exposure and the Celtic characteristics of people and that these factors are not particularly marked in the Montreal region, the possibility exists that other risk factors, particularly occupational, could play role. The objective of this case-control study is to assess the relative risk associated with occupational and non-occupational known and suspected risk factors of squamous cell carcinoma of the skin diagnosed in the Montreal region, specifically occupational exposure to sunlight and/or to chemical agents and radiations. The cases are defined as all cases of squamous cell carcinoma of the skin diagnosed during the two years preceding the beginning of the study in the pathology departments of Montreal hospitals. Two controls matched for sex and age with each case will be selected from among pathology records at the same hospital at which the case was found. The controls will be subjects in whom a pathological diagnosis will have been made for skin condition which is non-malignant and which is not known to be related to the risk factors of squamous cell carcinoma of the skin. Cases of pemphigus vulgaris, bullous pemphigus, intradermal naevus and lichen planus will thus be included. The total number of cases in this study is estimated between 400 and 800. A postal questionnaire on occupation and exposure to environmental factors will be sent to each case and each control and telephone calls will then be made to complete missing information. Data will be analysed by means of a discriminant analysis.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1845,

LATENT PERIODS OF CHEST CANCERS IN CHRYSOTILE WORKERS

F.D. Liddell, McGill University, Dept. of Epidemiology & Health, *3655 Drummond St., Montreal, Quebec, Canada* H3G 1Y6 (D-IARC-79-84)

The aim of this study is to investigate the variation in period from first occupational exposure to death in 245 cases of lung cancer among males in the 'Quebec Asbestos Mortality Cohort' consisting of 10,939 men born 1918 to 1920 who worked for at least a month in the asbestos mines and mills of Quebec, taking account of the full histories of exposure to asbestos dust and to cigarette smoke.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1846,

EVALUATION OF OCCUPATION AS RECORDED ON DEATH CERTIFICATES

D.T. Wigle, Canadian Dept. of National Health & Welfare, Lab. Centre for Disease Control, *Tunneys Pasture, Ottawa, Ontario, Canada* K1A 0L2 (D-IARC-79-87)

The death certificates for about 3,000 persons dying of cancer and previously included in random samples of the Canadian Labour Force will be examined to retrieve recorded information concerning major lifetime occupations. The occupations will be coded using standard occupational coding manuals prepared for use in the decennial census. The coded occupations will then be compared with those previously recorded when the individuals were interviewed during the Labour Force Survey.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1847,

LUNG CANCER MORTALITY IN ALUMINUM REDUCTION WORKERS

G.W. Gibbs, McGill University, Inst. for Mineral Industry Research, Occupational Health & Safety Unit, *Gault Estate, Mont St. Hilaire, Quebec, Canada* J3G 4S6 (D-IARC-79-82)

The study aims to determine the lung cancer mortality of workers in three aluminum reduction plants for the 4 year period 1 January 1974 to 31 December 1977 and to examine the relationship between lung cancer mortality and lengtn of employment and level of tar exposure. The methods to be applied are identical to those in an earlier study of lung cancer mortality (1950-1973) currently in press. The populations under study consist of 2 cohorts employed at aluminum reduction plants, one of 5,406 workers who were working at plant A on 1 January 1950 and the other of 485 workers who were working at plant B on 1 January 1951. The mortality experience from lung cancer for this population was studied to 31 December 1973. The period of observation will now be extended to 31 December 1977. The pattern of mortality for the 2 periods 1950-1973 and 1974-1977 will be examined to determine any change in the relationships between lung cancer mortality and tar exposure.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1848,

MORTALITY FROM SPECIFIC CAUSES OTHER THAN LUNG CANCER IN ALUMINUM PLANT WORKERS

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The aim of the study is to describe the mortality from specific causes other than lung cancer in two cohorts of workers employed in the aluminum reduction industry. The same populations which have been examined for study of lung cancer mortality will be used. The cohorts consist of 5,406 men working at plant A on 1 January 1950 and 485 men working at plant B on 1 January 1951. These workers were traced to 31 December 1973. The analyses will examine (1) whether there is any excess of mortality from specific causes in this industry when compared to expected numbers of deaths based on Quebec rates; (2) the relationship between mortality from specific causes and years of exposure, years since first exposure and tar exposure.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1849,

BLADDER CANCER IN THE CENSUS DIVISION OF CHICOUTIMI, QUEBEC

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The objective of this retrospective case-control study is to identify the cause of an increased incidence of bladder cancer in the census division of Chicoutimi. All bladder cancer cases reported to the Quebec Tumour Registry and/or all such cases diagnosed by the Chicoutimi Hospital Pathology Laboratory between 1970 and 1975 (total: 91 cases) are included. Each case is matched with two controls of the same age and sex: 1) the first person admitted to the hospital, for a major reason, at the same time as the patient and 2) the person living as close as possible to the patient in the diagnosis year, traced through the register of voters. The 273 individuals are required to complete questionnaire on the following items: consanguinity, residential history, medical history (bladder and kidney conditions), drug and sugar substitute consumption, occupational history, and tobacco, coffee and alcoholic beverage consumption. Histopathological diagnoses are viewed by a pathologist and coded according to Jewett's classification. The risk from one exposure or the combination of two exposures will be estimated. A multiple regression model will be built.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1850,

CANCER MORTALITY AMONG VINYL CHLORIDE WORKERS IN SHAWINIGAN, QUEBEC

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This retrospective cohort study aims to determine cancer mortality patterns among workers employed in a vinyl chloride polymerization plant, Shawinigan, Quebec, and establish their relationship with age, duration and level of exposure and alcohol and tobacco consumption. All workers employed during at least 5 years from the operative start of the plant until 31 December 1976 will be included. Their life status at the end of the study period, and the cause of death for the deceased, as well as duration and level of exposure to vinyl chloride and alcohol and tobacco consumption, will be determined. These data will be obtained through a questionnaire applied to the worker, or his family if he is dead. The industry, Population Registry and pathologists will also contribute relevant data. Values so obtained will be compared with those for a cohort of workers in the same firm who were not exposed to vinyl chloride. Cancer death rates will almost be compared to Quebec rates for the same period.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1851,

POSSIBLE INFLUENCE OF ENVIRONMENTAL POLLUTION ON CANCER MORTALITY IN A POPULATION LIVING NEAR A VINYL CHLORIDE POLYMERIZATION PLANT

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This retrospective case-control study aims to determine whether exposure to a factory environment accounts for higher death rates in the population of Shawinigan, Quebec, where vinyl chloride polymerization plant is located. All men aged 25-64 who died from cancer in Shawinigan between 1965 and 1974 will be examined for occupational history, duration of residence in Shawinigan, place of residence there and alcohol and tobacco consumption; they will then be compared with men of similar age who lived in Shawinigan and died at the same time from another cause.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1852,

MORTALITY PATTERNS IN A POPULATION LIVING NEAR A COPPER-REFINING PLANT IN ROUYN-NORANDA, QUEBEC

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The objective of the study is to assess the possible health effects of toxic effluents on the population of Rouyn-Noranda by studying their mortality patterns. General and specific death rates in Rouyn-Noranda for the period 1965-74 will be determined and compared with those observed in control towns (Drummondville and Val d'Or) and in Quebec. The emphasis will be put on lung cancer and respiratory disease mortality.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1853,

CANCER MORTALITY AND DRINKING WATER QUALITY

D.T. Wigle, Canadian Dept. of National Health & Welfare, Lab. Centre for Disease Control, *Tunneys Pasture, Ottawa, Ontario, Canada* K1A 0L2 (D-IARC-79-88)

Cancer mortality rates by sex and site for 100 municipalities will be correlated with water quality. Water samples have been analyzed to determine concentrations of the following: amphibole abestos, chrysotile asbestos, trihalomethanes, total organic carbon, nitrilotriacetic acid, lead, cadmium, zinc, copper, calcium, magnesium and total hardness. For most municipalities, cancer mortality data are available for at least the past 20 years. Cancer mortality rates will be correlated with the water quality data listed above plus other factors (year of fluoridation, source of water).

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1854,

IDENTIFICATION OF OCCUPATIONAL RISK FOR COLORECTAL CANCER

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A cluster of five cases of cancer of the large intestine has been observed. The patients had several features in common, including work in the same department of a textile plant. By examining the frequency of colorectal cancer in the population, on the one hand, and these common features, in particular the same long-term occupational exposure, on the other, the study attempted to determine whether this clustering was only due to chance or to occuptional exposure. Occupational history, familial history of cancer, bowel habits, precureor diseases, and predisposing conditions for all colorectal cancer patients occurring from 1965 to 1976 in the area where the plant is located and in the neighboring areas have been studied. Preliminary results, based on 1,500 colorectal cancer cases, show that colorectal cancer is 10 times more frequent among synthetic textile workers than in the non-exposed population (Gastroenterology, 75, 221, 1978). In order to establish the aetiological nature of this association, a retrospective case-control study with three control groups, related to the factor involved, i.e., occupational exposure to synthetic fiber, has been undertaken. These control groups include patients with cancer other than colorectal cancer, patients with diseases other than cancer, and matched neighborhood controls. This ongoing phase of the work will allow elimination of superfluous factors.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1855,

FRENCH MESOTHELIOMA REGISTER

J. Bignon, Centre Hospitalier Intercommunal de Creteil, Service Hospitalier Universitaire de Pneumologie, *40 Ave. de Verdun, 94010 Creteil, France* (D-IARC-79-165)

To date 197 proved cases of mesothelioma (mainly pleural) have been reported for the period 1965-1978, a moderate increase over time being noted. Occupational and para-occupational asbestos exposure was recorded in 77 percent and 3 percent of registered cases respectively. As the number of cases notified to the register is obviously an underestimate, it is intended to evaluate the annual incidence of this tumour by retrospective registration. Relationships with asbestos exposure and with other pollutants will be sought, and case-control studies for a dose-response relationship with asbestos carried out using retrospective inquiries and measurements of fibres in tissue.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1856,

ESTABLISHMENT OF A REGISTRY FOR DIGESTIVE TRACT TUMOURS IN THE DEPARTMENT OF CALVADOS

C. Chuberre, Centre Hospitalo Universitaire, Service de Chirurgie Digestive, *Av. de la Cote de Nacre, 14033 Caen, France* (D-IARC-79-163)

This Registry has been established to clarify the frequency of these cancers according to site, age, sex, occupation, alcohol and tobacco consumption; to define high risk population groups for each site; and to provide information on the current status of screening (warning signs, diagnostic means, time lag between first symptom and diagnosis and between diagnosis and death). Data are collected from physicians, gastro-enterologists, surgeons, pathologists in towns, hospitals (university hospitals, cancer centres, private and public hospitals), health insurance bodies and the Department Directorate for Health and Social Welfare. Only cases of digestive cancer which have occurred since 1 January 1978 in patients residing in Calvados are included.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1857,

CALVADOS CANCER REGISTRY

J.M. Robillard, Centre Regional Francois Baclesse, Service de Statistiques, *Rte. de Lion-sur-Mer, 14018 Caen, France* (D-IARC-79-164)

The registry compares cancer morbidity in the Department of Calvados with that in the French regions of Bas-Rhin and Doubs, in other regions bordering France (Geneva, Lausanne, Neuchatel, Saragossa) and in more distant parts (Warsaw, Connecticut, Cuba, southern England, etc.). Morbidity time trends are estimated and compared with those observed in other registries. The geographical distribution of cancer within Calvados is examined to study possible aetiological factors (e.g. predominance of lung cancer in areas with asbestos industries). The Registry records cancer cases in the Department as accurately as possible and assists with the planning of screening and prevention in Lower Normandy.

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2.1858,

PRECANCEROUS CONDITIONS OF THE STOMACH

K.S. Varis, Helsingin Yliopisto, Dept. of Medicine, *Fabianinkatu 33, SF00290 Helsinki, Finland*

Atrophic gastritis is a well known risk factor of gastric cancer and severe atrophic gastritis of the body (SAGB) probably carries the highest risk. In the artophic mucosa tissue metabolism is altered, the intestinal mucosa acquiring absorptive characteristics (absorption of carcinogens). Cell maturation and kinetics

are disturbed leading sometimes to the development of epithelial atypia, and the associated achlorhydria may facilitate the development of carcinogenic nitroso-compounds intragastrically. The determination of serum pepsinogen group I (Radio-immuno-assay-method of Samloff), with a very high sensitivity and specificity, is used as a screening method for SAGB. Serum pepsinogen group I determination will also be carried out in a sample of patients with gastric carcinoma to examine possible correlations between SAGB (low serum pepsinogen group I), and the localization and histological type of gastric carcinoma. 100 subjects without any major gastric pathology, such as polyps, peptic ulcer or gastric cancer, will also be studied as part of an international multicentre study proposed by IARC. Gastric biopsies from antrum and body, and samples of gastric juice and blood are taken for estimation of N-nitroso compounds in people living in low or high risk areas.
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1859,

BENIGN BREAST DISEASE - NATURAL HISTORY AND RELATIONSHIPS TO BREAST CANCER

D.V. Vakil, University of Toronto, Faculty of Medicine, Dept. of Preventive Medicine & Biostatistics, *92 College St., Toronto, Ontario, Canada* M5S 1A1 (D-IARC-79-106)

This retrospective cohort study is designed to delineate the natural history of benign breast lesions, and to determine the ways in which the benign and malignant conditions relate in the same individuals. A cohort of 1,713 women who were biopsied between 1968 and 1973 at the Toronto Western Hospital for possible breast cancer and were found to have benign breast disease has been assembled. Genetic, epidemiological and pathological information will be obtained on these women. This data will be analyzed to assemble descriptive information about the natural history of the benign breast lesions in all patients and also in the patients stratified by histoiogical type of the lesion, and by the presence of microcalcification in the mammogram. These women will be followed up to the year 1981 (8 to 13 years) to (1) obtain additional information about the postulated risk factors of breast cancer and (2) determine the subsequent development of benign or malignant breast diseases among them.
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1860,

EPIDEMIOLOGICAL STUDY OF BLADDER CANCER

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The general hypothesis is that there is an association between bladder cancer and a number of environmental factors, including carcinogens encountered occupationally, smoking, medications and beverage intake with specific interest in coffee, other caffeine-containing beverages and artificial sweeteners. Data is also being obtained on consumption of nitrate-containing foods, and independently acquired data on nitrates in drinking water will be related to the respondent's residential history. The study aims to determine the relative contribution of known or suspected factors to the aetiology of bladder cancer. The basic assumption underlying the study is that beverage intake, occupational history, contact with artificial sweeteners etc., can be determined through the use of a questionnaire. A detailed questionnaire seeks lifetime history of occupation, residences, sources of drinking water, contact with certain occupations and chemicals, etc., beverage intake, use of sugar substitutes and foods containing artificial sweeteners, consumption of meats and meat products containing nitrates, history of illnesses including bladder and kidney infections, history of analgesic consumption, and history of tobacco consumption in all its forms. The study is of a case/control nature and includes all newly diagnosed cases of bladder cancer from April 1, 1974 to June 30, 1976 in two geographically distinct areas of Canada where substantial contribution of occupational factors to the causation of bladder cancer is not suspected, namely British Columbia (BC) and the Atlantic provinces of Nova Scotia and Newfoundland. Neighborhood controls were utilized, being matched to the cases by sex, age and area of residence on a one to one basis. The questionnaire was administered to both cases and controls in their own homes by specially trained interviewers. Four hundred and one case/control pairs in BC and 231 in the Atlantic Provinces are available for analysis. Part of this work has now been published.
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1861,

NATURAL HISTORY OF DYSPLASIA OF THE UTERINE CERVIX

A.B. Miller, University of Toronto, *92 College St., Toronto, Ontario, Canada* M5S 1B2 (D-IARC-79-105)

In most models of the natural history of squamous carcinoma of the cervix, dysplasia is regarded as the first recognizable pathological process in an orderly progression from normal to malignant epithelium. Since not all dysplasia become malignant, there is need to clarify the extent to which regression forms part of the natural history of dysplasia. The present study aims at seeking information on the natural history of cytologically identified but untreated dysplasia in comparison with a sample of normal women with smears examined in the same laboratory. An estimated 10,000 women in the case series of moderate or severe dysplasia and 30,000 in the control series will be included. Information is also being sought on the possible association of oral contraceptive use and the risk of progression of dysplasia. Data extraction is currently under progress.
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1862,

EPIDEMIOLOGICAL STUDY OF LARYNGEAL CANCER

A.B. Miller, University of Toronto, *92 College St., Toronto, Ontario, Canada* M5S 1B2 (D-IARC-79-104)

The study is designed to investigate the contribution of known and suspected aetiological factors to laryngeal carcinoma. It is hypothesized that there is an association between laryngeal carcinoma and the smoking of tobacco and that there is a reduced risk for smokers of filter cigarettes. It is also proposed that there is a synergistic effect between alcohol consumption and the smoking of tobacco. A further hypothesis is that there is an association between laryngeal cancer and exposure to asbestos in the environment and occupationally, especially for those who smoke cigarettes. It is also hypothesized that there is an association between cancer of the larynx and exposure to nickel refining and processing. The study is a case-control study with data on past events and exposure obtained from cases and controls by means of a detailed questionnaire which is administered personally to cases and controls in their homes. The study population consists of all newly diagnosed cases with carcinoma of the larynx, March 1, 1977, to April 31, 1978, resident in Southern Ontario and the Sudbury, and North Bay areas in Northern Ontario. Controls are matched to cases by age (plus or minus five years), sex, and neighborhood of residence. Controls are obtained by door to door survey. At the end of 16 months of interviewing, a total of 130 case-control pairs have been interviewed. It is anticipated that a total of 200 case-control pairs will be available for analysis.
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1863,

THE PREVALENCE OF BREAST CANCER AMONG FEMALE FACULTY MEMBERS AND FACULTY WIVES

B.J. Morrison, University of British Columbia, Dept. of Health Care & Epidemiology, *2075 Wesbrook Pl., Vancouver, British Columbia, Canada* V6T 1W5 (D-IARC-79-112)

The object is to determine the prevalence rate of breast cancer among women who are faculty members and among the wives of the male faculty members and compare it with the expected rates from provincial incidence figures. Because of their high socioeconomic class and late child bearing, this group of women may be at a high risk. The rates will be correlated with age at first pregnancy to see if there is an excess rate after correction for this has been made. All faculty members were sent a brief questionnaire and to date over 70% have responded. The data have not yet been tabulated.
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1864,

ANALYSIS OF CERVIX UTERI CANCER MORTALITY RATES IN CHILE

A. Dabancens, Universidad de Chile, Servicio de Citopatologia y Control de Cancer, *1058 Av. Bernardo Ohiggins, Santiago, Chile* (D-IARC-79-115)

The study evaluates the National Cervix Uteri Cancer Control Programme. Standardized mortality rates for this cancer in different regions of the country are related to the percentage of women screened in these regions. A reduction of more than 70% in mortality rates, taking epidemiological factors into account, has been observed in the screened population. The rates per 100 00 for women over age 20 from 1970-1977 in two areas of Santiago show, for unscreened populations, expected rates of 27.90 and 24.54 and observed rates of 47.84 and 27.46, while in the screened populations expected rates are 17.40 and 19.43 and observed 4.64 and 5.71. The study continues.
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1865,

CONTINUOUS FOLLOW-UP OF CANCER INCIDENCE IN FINLAND, BY PRIMARY SITE, SEX, AGE, AND GEOGRAPHICAL SUB-AREA

E.A. Saxen, Finnish Cancer Registry, *Liisankatu 21 B, 00170 Helsinki 17, Finland* (D-IARC-79-153)

The Finish Cancer Registry receives information on all cancer cases diagnosed in Finland. On the basis of this information cancer incidence data will be published in annual reports. In addition, the files of the Registry are continuously used for various kinds of research purposes by the Registry staff and outside researchers.
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1866,

CHILDHOOD CANCER AND PARENTS' OCCUPATION

K.J. Hemminki, Inst. of Occupational Health, Dept. of Industrial Hygiene & Toxicology, *Haartmaninkatu 1, SF00290 Helsinki 29, Finland* (D-IARC-79-148)

The study aims to find out whether any correlation exists between the occupational activities of parents and cancer in their children. The material consists of cancer cases in children under 15 years recorded by the Finnish Cancer Registry in 1959-1968. The parents' occupations were traced from the records of the antenatal clinics. Controls were matched for age and place of birth. The material is being analysed with regard to the occupation of the parents.
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1867,

INTESTINAL MICRO-ECOLOGY IN NORDIC COUNTRIES

O.M. Jensen, Centre International de Recherche sur le Cancer, Unit of Epidemiology & Biostatistics, *150 Cours Albert Thomas, 69372 Lyon Cedex 2, France*

The project continues to collect information in relation to two sets of hypotheses: (1) Metabolic hypothesis - specific dietary consituents, e.g., fat or type of meat, are related to fecal bacterial flora, metabolities of bile acids and steroids in the feces and in turn to colon cancer risk differences. (2) Fiber deficiency hypothesis - it has been postulated that high intake of fiber (especially from cereals) results in increased fecal bulk and is protective against colon cancer. These hypotheses are being examined in a collaborative project comparing urban and rural populations in Denmark and Finland. The populations are compared in terms of present diet, including dietary fiber, mouth-anus transit time, fecal bacteria, steroids and mutagenicty, other characteristics, such as fecal weight.
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1868,

DETERMINATION OF A RISK LEVEL FOR BREAST CANCER AND ITS APPLICATION TO MASS SCREENING

A.G. Bremond, Hopital Edouard Herriot, Clinique Gynecologique, *Pl. d'Arsonval, 69374 Lyon Cedex 2, France* (D-IARC-79-171)

Nationwide X-ray screening is both impracticable and unadvisable. If high risk women were identified, this

examination could be restricted to a smaller number of patients. On the basis of known epidemiological data, a double prospective survey can be carried out among cancer-free control women and those who have had breast cancer. The risk level, determined through a computer program, should select 80 percent of women with cancer and not apply to more than 50 percent of controls.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1869,

ALCOHOL AND CANCER OF THE DIGESTIVE TRACT

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In Calvados, France, individual information on dietary, drinking and smoking habits is being collected from patients with cancer of the digestive tract and from a sample of the general population. The purpose of this case - control survey is to further study the combined effects of alcohol and tobacco on the various anatomical sites within the digestive tract.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1870,

ROLE OF DIETARY FACTORS IN DIGESTIVE TRACT CANCER IN BELGIUM

A.J. Tuyns, Centre International de Recherche sur le Cancer, Unit of Epidemiology & Biostatistics, *150 Cours Albert Thomas, 69372 Lyon Cedex 2, France* (D-IARC-79-185)

Mortality from gastric and rectal cancer was found to be higher in the Flemish part of Belgium than in the Walloon area. This is probably related to dietary differences. A case - control study is being carried out simultaneously in both parts of the country to investigate diet and other factors.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1871,

EPIDEMIOLOGICAL INVESTIGATION ON LARYNGEAL CANCER

A.J. Tuyns, Centre International de Recherche sur le Cancer, Unit of Epidemiology & Biostatistics, *150 Cours Albert Thomas, 69372 Lyon Cedex 2, France* (D-IARC-79-186)

Laryngeal cancer is particularly frequent in the south-west part of Europe. The role of tobacco and alcohol is being investigated in terms of a dose-response relationship and combination of these effects. The study is of the classical case-control type using population controls. Occupational factors are also being studied.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1872,

PRECANCEROUS LESIONS OF THE OESOPHAGUS IN HIGH- AND LOW-RISK AREAS FOR OESOPHAGEAL CANCER

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The objective of this study is to determine the type and prevalence of precancerous lesions of the oesophagus in populations with high and low rates of oesophageal cancer. At autopsy, oesophagi have been collected from patients dying of diseases other than cancer of the oesophagus. The specimens have been processed and examined by the pathologists participating in the study, using standard techniques. Slides from each case are being sent to the IARC for circulation among the pathologists. A blind histopathological evaluation of these will be made, using a standard protocol.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1873,

INTERDISCIPLINARY STUDIES ON NASOPHARYNGEAL CARCINOMA AND ASSOCIATED HUMAN TUMOURS

G. The, Centre National de la Recherche Scientifique, Intl Prog for Epidemiological & Exp Stud on Human Tumors, *15 Quai Anatole, 75700 Paris, France* (D-IARC-79-182)

The objective of the study is to determine the importance of Epstein-Barr virus immunovirological tests for clinical management of nasopharyngeal carcinoma. The specific aims are to evaluate IgA antibodies to EBV in serum and saliva of NPC patients as a marker for prognosis; to evaluate EBV serology and EBV markers in tumour cells as complement to pathology to characterize malignancies arising in the nasopharynx, and to evaluate EBV serology as a tool for diagnosis in metastatic cervical lymph nodes with occult primary, and as a method of early detection in areas having high incidence of NPC. The project will involve the following closely linked sub-projects: (1) a prospective study involving all new NPC patients in Paris, Milan, Tunis and most of the patients in Hong Kong, aimed at assessing the value of EBV immunovirology in the management of NPC, using clinical, pathological and experimental parameters for the evaluation of survival at three and five years after diagnosis; (2) a case-control study involving different types of tumours arising in the nasopharynx as well as in the rest of the upper respiratory tract, with the aim of assessing the strength of the association between EBV and these tumours; this will include comparison of clinical, histopathological, epidemiological and experimental data on the different types of tumours observed; (3) a sub-study in Western European centres and in Tunis to assess EBV serology as a diagnostic tool to detect NPC in patients with cervical metastatic lymph nodes with occult primary; (4) a prospective study in Hong Kong involving the family members of NPC patients to assess the value of EBV serology as a method for early detection of the disease.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1874,

LARGE BOWEL PATHOLOGY IN AUTOPSY SERIES

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GENERAL OBJECTIVES: The general objectives are to study and document in a comparable manner all lesions of the colon and rectum in adult autopsy series in different geographical areas with contrasts in large bowel incidence.

SPECIFIC OBJECTIVES: To investigate and compare the prevalence, distribution and histological types of various lesions of the colon and rectum in autopsy series in certain urban and rural populations of Europe, and where feasible in other geographical areas. Among the lesions studied, the greatest attention will be given to the macroscopic and microscopic features of mucosal lesions, i.e. various types of polyps. Other lesion studies will include cancer, diverticular disease, inflammatory disease and melanosis. In the case of diverticular disease, the emphasis will be on the description of the distribution and the presence of inflammation.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1875,

EPIDEMIOLOGY OF PRIMARY LIVER CANCER

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The study aims to analyse the transmission of viral hepatitis. Horizontal and vertical transmission of the Australia antigen and distribution of the various antigens and antibodies in primary liver cancer families are assessed as well as relationships with other known aetiological factors. The Australia antigen distribution among two population groups, one white, one black (one from the Cap Vert region and one from the borders of the Senegal river), living in the same ecosystem is compared and an evaluation of the role of genetic factors attempted.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1876,

INTERNATIONAL EPIDEMIOLOGICAL STUDY OF LUNG CANCER

R. Flamant, Institut Gustave Roussy, Unite de Recherches Statistiques, *16 bis Ave. Paul Vaillant Cout, 94800 Villejuif, France* (D-IARC-79-196)

This retrospective epidemiological study now includes 600 lung cancer cases, each matched with two controls (for age and sex). Patients are particularly questioned on the following: brands of tobacco used, inhalation of smoke, alcohol consumption and occupational exposure. The same questionnaire is used in the different participating countries. The histological diagnosis of lung cancer must be checked. Controls must be free from smoking-related diseases. The objectives of the study are to examine the different risk factors in both populations (cases and controls), and to compare the findings from different countries.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1877,

MORTALITY BY CANCER IN FRANCE, 1954-1976

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Mortality data based on death certificates, giving site, sex, age, place of residence and social status category have been examined. These data are corrected to take into account the proportion of deaths due to unspecified causes and rates calculated for France by regions, departments and arrondissements. Studies undertaken include national trend analyses, using linear regression methods. Cohort studies and studies of the geographical distribution of cancer in France by regions, departments and arrondissements are being undertaken and geographical distribution by site examined. Analyses have been undertaken to detect similarities between regions.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1878,

HISTOLOGY, IMMUNOPATHOLOGY, AND VIROLOGY OF MALIGNANT LYMPHOMAS (EPIDEMIOLOGICAL COMPARISON BETWEEN WEST GERMANY AND COLOMBIA)

G. Krueger, Universitat zu Koln, Immunopathology Section, *Cologne, Federal Republic of Germany* (D-IARC-79-217)

The objective of the study is to identify various histological and immunological types of malignant lymphomas and correlate their incidence with the frequency of infectious diseases in general and with EBV infection. In particular there is an obvious difference in the occurrence of various types of malignant lymphomas between West Germany and Colombia. There also appears to be a difference in the incidence of infectious diseases between both countries, both bacterial and viral. It is expected that certain types of malignant lymphomas will increase with the increased frequency of infections. The study will identify such tumours and analyse their pathogenesis by comparing the results with those from experimental studies on lymphomagenesis.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1879,

NASOPHARYNGEAL CARCINOMA

G. Krueger, Universitat zu Koln, Immunopathology Section, *Cologne, Federal Republic of Germany* (D-IARC-79-218)

The objective of this study is to correlate the incidence of various types of nasopharyngeal carcinoma with geographical distribution, anti-EBV titers, distribution of lymphocytic types (T and B) in blood and tumour tissue, the course of the disease and prognosis. The investigations will be an extension of our earlier studies (G. Konorza et al.: Distribution of T- and B-cells and of Immunoglobulin-producing Cells in Tumor Tissue of Patients with Nasopharyngeal Carcinoma. To be published in Z. Krebsforsch.).

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1880,

MORTALITY STUDY ON THE OCCUPATIONAL RISK OF ACRYLONITRILE PROCESSING

A.M. Thiess, Badische Analin & Soda Fabrik Ag, Werksaerztliche Abteilung, *Brunckstrasse 56, 6700 Ludwigshafen, Federal Republic of Germany* (D-IARC-79-219)

This study is designed to evaluate the possible carcinogenic potential of acrylonitrile as an occupational risk substance since evidence exists that acrylonitrile may be the cause of lung and colon cancer amongst workers exposed to the chemical. The warning of NIOSH that the product should be handled as a cancer-causing agent in humans is based on preliminary tests on animals and on an epidemiological study carried out in workers exposed to the chemical. The differential mortality of workers involved in the processing of acrylonitrile at different plants of BASF Ludwigshafen investigated by a cohort study including all personnel ever employed at the site of manufacture taking into account the possibility of mixed exposures.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1881,

MORTALITY AND MORBIDITY SURVEY OF OCCUPATIONAL RISK OF ETHYLENE AND PROPYLENE OXIDE IN CHEMICAL PRODUCTION OF BASF, LUDWIGSHAFEN, GERMANY

A.M. Thiess, Badische Analin & Soda Fabrik Ag, *Brunckstrasse 56, 6700 Ludwigshafen, Federal Republic of Germany* (D-IARC-79-220)

Ethylene oxide (EO) is known to be a mutagen in various biological systems like bacteria and animal and human tissues. This has led to a suspicion that EO might constitute a potential carcinogenic risk. A cohort study has been designed to assess cancer incidence in those occupational groups which have been exposed to both ethylene and propylene oxide. The chemical workers ever exposed to the substance are followed up for mortality experience (cause of death) and for morbidity. The follow-up includes careful tracing of retired and resigned persons.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1882,

RADIATION CARCINOGENESIS

K. Neumeister, Staatliches Amt fuer Atomsicherheit und Strahlenschutz, *Waldowallee 117, 1157 Berlin, German Democratic Republic* (D-IARC-79-200)

Epidemiological analyses of radiation-induced carcinoma and leukemia following diagnostic or therapeutic administration of ionizing radiation, including pre- and postnatal exposure in children, and of radiation-induced cancer in multiple primary malignant tumors in the German Democratic Republic have been undertaken.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1883,

EPIDEMIOLOGY OF GYNAECOLOGICAL CANCER OF THE SAARLAND

H. Sachs, Universitaets Frauenklinik, *D6650 Homburg, Saarlands, Federal Republic of Germany* (D-IARC-79-215)

Time trends in gynaecological cancer are being evaluated using the data of the Saarland Cancer Registry.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1884,

THE PROPORTION OF METAL WORKERS AMONG PATIENTS WITH TESTICULAR CANCER AND AGE-MATCHED CONTROLS

W.U. Rhomberg, Medizinische Hochschule Hannover, Dept. of Radiology, *Karl-Wiechert-Allee 9, D3000 Hannover 61, Federal Republic of Germany* (D-IARC-79-210)

Preliminary analyses suggest that the occupational histories of patients with testicular cancer show an unusually high proportion of metal workers. The data have been collected from 64 patients treated in the Medizinische Hochschule between 1967 and 1974. The objectives of the present study are to increase the number of interviews investigating the occupational background of patients with testicular cancer, and to establish a control group consisting of patients with diseases other than cancer, of comparable age and treated in the same hospital as the patients with testicular cancer.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1885,

RISK OF SOMATIC RADIATION DAMAGE - EPIDEMIOLOGICAL INVESTIGATIONS ON RADIATION DAMAGE IN PATIENTS TREATED WITH RA-224

W. Goessner, Gesellschaft fuer Strahlen und Umweltforschung mbH Munchen, Abteilung fuer Pathologie, *Ingolstaedter Landstrasse 1, 8042 Neuherberg, Federal Republic of Germany* (D-IARC-79-228)

In about 2,000 persons treated with radium-224 for ankylosing spondylitis (Bechterew's Disease) or bone tuberculosis, the effects of this particular type of radiation are being investigated. In collaboration with orthopedic hospitals the patients are subjected to follow-up examination. The results of these investigations, in particular the onset of malignant and degenerative disease and causes of death, are evaluated with a view to establishing dose-response. Further knowledge about the risk of radiation cancers in general is thus gained.

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2.1886,

STUDY OF THE POSSIBLE PREVENTIVE EFFECT OF BCG AGAINST CANCER IN ADULTS

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Studies have shown that BCG may have a non-specific preventive effect against mortality due to leukemia in children aged 0 to 4 years. This cohort study aims to determine if BCG could have a preventive effect against cancer in adults by comparing mortality and morbidity from cancer of all types among vaccinated and unvaccinated nurses. Names and addresses of all nurses graduated in the Province of Quebec between 1952 and 1967 were obtained. A questionnaire was sent to each. This questionnaire included questions on age, date of graduation, marital status, BCG vaccination status, names of diseases of all kinds diagnosed since graduation, date of the event, place of diagnosis and treatment, name of physician, smoking habits, number of pregnancies and abortions and finally name and cause of death of classmates known to have deceased since graduation. The BCG vaccination status was verified in the central BCG record of l'Institut Armand-Frappier. Information has been received from 12,856 nurses of a possible total of 21,000, and 453 deaths have been reported. These data will be analyzed, taking into consideration vaccination status, age and time since vaccination.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1887,

CONGENITAL MALFORMATIONS AND NEOPLASMS IN NEWBORNS AND INFANTS

M. Hauge, Odense Universitet, Inst. of Clinical Genetics, *17 Winslowsvej, 5000 Odense C, Denmark* (D-IARC-79-139)

A ten per cent sample of the population of Denmark is being followed from birth through infancy to provide incidence and prevalence figures for congenital malformations and malignant growths. Sources of information include: hospital case records, midwives' reports, death certificates and postmortem reports. Within the area selected all cases having been diagnosed as neoplasms will be traced. Basic population data are available in great detail.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1888,

CASE-CONTROL STUDY IN COPENHAGEN OF URINARY BLADDER TUMORS

J. Clemmesen, Finseninstitutet, Danish Cancer Registry, *Strandboulevarden 49, DK2100 Copenhagen, Denmark* (D-IARC-79-130)

The aim is to undertake a case-control investigation of factors associated with lower urinary tract cancers in Copenhagen (bladder, renal pelvis, ureter, urethra). The following factors will be investigated: tobacco smoking, diet, with particular regard to intake of coffee and artificial sweeteners, use of drugs, in particular analgesics, and occupation. Qualitative and quantitative exposure among newly diagnosed cases (500) will be compared with two independent age-matched and sex-matched control groups drawn from among hospital patients (500) and the total population (1,000), respectively.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1889,

REGISTRATION OF WOMEN WITH PRIMARY AND SECONDARY GENITAL HERPES SIMPLEX VIRUS (HSV) INFECTION

B.F. Vestergaard, Kobenhavns Universitet, Inst. of Medical Microbiology, Dept. of Clinical Virology, *22 Juliane Mariesvej, DK2100 Copenhagen OE, Denmark* (D-IARC-79-136)

Recent observations indicate that women suffering from primary genital HSV type 2 infection represent a high risk group for later development of carcinoma of the uterine cervix. The development of a simple, sensitive and reliable enzyme-linked immuno-specific assay (ELISA) for the exact titration of herpes simplex virus type 1-and type 2-specific antibodies in human sera has made it possible to perform serological HSV type-specific diagnosis of clinical cases of genital HSV infections and identify four categories of patients: (1) primary genital herpes caused by HSV type 2 (HSV infection in an individual who has never had an HSV infection before); (2) primary genital herpes caused by HSV type 1; (3) secondary genital herpes caused by HSV type 2 (genital HSV in an individual who has previously had an HSV type 1 infection); (4) wrong clinical diagnosis (i.e., the serological result indicates that the patient did not have an HSV infection). It is planned, in a period of three years, to diagnose and register as many of the genital HSV infections as possible - hopefully at least 50% of all cases in Denmark seeking medical care. The later follow-up of the registered cases of genital HSV infection will be performed under the screening programs for cervical carcinoma presently being developed in Denmark. The objective of the study is, by a large-scale prospective investigation, to obtain valid information about: (1) The incidence of genital HSV infection in Denmark and the distribution of primary and secondary cases, and (2) the risk of later development of carcinoma of the uterine cervix.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1890,

A RETROSPECTIVE STUDY OF CANCER IN RELATION TO A SPECIFIC ENVIRONMENTAL FACTOR - WATER NITRATE

C. Conrad, KAS Herlev, Dept. of Radiotherapy & Oncology, *Herlev Ringvej, 2730 Herlev, Denmark* (D-IARC-79-138)

The incidence of testis cancer in Denmark has for years been known to exceed that of neighbouring countries (6.0 new cases/year/100,000 males). In this study a small, geographically limited 'hot-spot', possibly of recent origin, with an incidence of 31.7 new cases/year/100,000 males during the last 2 years (01-06-76 - 01-06-78) has been detected. This particular region differs from the rest of the island of Sjaelland (the island where the capital Copenhagen is situated) in one specific respect: the content of nitrate in deep ground-water supplies. The possibility of the formation of carcinogenic nitrosamines from nitrate, nitrite and secondary amines in humans is being examined. Data are now being collected to determine if there is significant rise in the incidence of other cancers, particularly bladder cancer.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1891,

EPIDEMIOLOGIC STUDIES ON MALE LUNG CANCER IN NORTHERN SWEDEN

L.G. Larsson, Regionsjukhuset, Dept. of Oncology, *58185 Linkoping, Sweden* (D-IARC-79-524)

In a study of the geographical distribution of all new male lung cancer cases in the three northernmost counties in Sweden between 1959 and 1971 great differences were found between different regions. Some communities with mining districts or other heavy industry had age-adjusted incidence rates 10-15 times higher than more rural communities. The occupational profile of te cancer cases is being compared with that of a control series matched by age and place of residence. Information about occupa-

tion is obtained both for the cases and for the randomly selected controls through the general population register. For deceased male lung cancer cases registered in the same region from 1972 to 1977, a more detailed case-control study is being performed based on questionnaires to relatives about occupation, employment and smoking habits.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1892,

MORTALITY OF SMOKERS AMONG SWISS PHYSICIANS

O.R. Gsell, Universitaet Basel, Dept. fuer Innere Medizin, *Zwinglist. 21, 9000 St. Gallen, Switzerland* (D-IARC-79-530)

The mortality rates and causes of death for smokers, nonsmokers, and past smokers in Swiss physicians have been examined as part of a study of 1,212 deaths in 3,740 physicians from 1955-1973. All of the 40 doctors with bronchial carcinoma were smokers. The death rate for myocardial infarction in smokers was high for the age-group 35-55, returning to normal over the age of 75. The similarity of mortality rates in cigar and pipe smokers in Switzerlnd with those of non-cigarette smokers (around 20% of the total) is of special interest. The study continues.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1893,

POSTMENOPAUSAL OESTROGEN TREATMENT AND ENDOMETRIAL CANCER

I.R. Persson, Uppsala Universitet, Dept. of Obstetrics & Gynecology, *Box 256, S75105 Uppsala, Sweden* (D-IARC-79-526)

It has been hypothesized that oestrogens are related to development of postmenopausal endometrial cancer. Numerous American case-control studies have shown a substantial increase of risk in connection with oestrogen replacement therapy. The present study is a prospective one which will follow a sample of some 30,000 oestrogen-treated postmenopausal women during an observation period of at least five years to ascertain the incidence of endometrial cancer. The observed incidence in this cohort will be compared to the expected one which will be computed from available cancer statistics. There will be additional studies in this cohort regarding the incidence of mammary cancer and also deep vein thrombosis and gallbladder disease. The large cohort is established by collecting all oestrogen prescription forms from a defined geographical region in the center of Sweden. From these prescription forms the identity-number (a ten-digit number) will be collected and stored with the help of computer facilities. All new cases of endometrial cancer will be collected from different pathology departments which serve the same geographical region. All hysterectomized women in the cohort will be excluded by referring to a special computer-based admission diagnoses register. All cases of endometrial cancer will be examined and interviewed to study the distribution of known risk factors. This will be done in samples of the total oestrogen cohort and samples from a non-treated healthy population.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1894,

EPIDEMIOLOGY OF ANAPLASTIC ENDOMETRIAL CANCER

O.R. Kjellgren, Umea University, Dept. of Gynecological Oncology, *S90187 Umea, Sweden* (D-IARC-79-523)

Following studies of corpus uteri cancer based on all patients in the northern part of Sweden (Acta Obstet. Gynecol. Suppl 65, 77-82, 1977) which defined risk factors, such as age, body weight, menstrual and reproductive history, presence of fibroids, diabetes, hypertension, etc., anaplastic cancers occurring in the region are being compared with other corpus cancers to determine whether these characteristics are similar.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1895,

INVESTIGATION OF THE POSSIBLE INFLUENCE OF AGE AT FIRST BIRTH ON RISK OF BREAST CANCER

L.O. Thoren, University Hospital, Dept. of Surgery, *75014 Uppsala, Sweden* (D-IARC-79-528)

With the aim of examining the possible influence of age at first birth on subsequent risk of breast cancer, information concerning this factor will be collected in all new cases of breast cancer during 10 months within an area with an expected incidence of about 1,000 cases. The same questionnaire will be used for women with breast cancer and for age-matched controls selected from the computerized population register.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1896,

THE EFFECT OF GYNECOLOGICAL SCREENING PROGRAMS ON THE INCIDENCE OF CERVICAL NEOPLASIA

L.G. Lindberg, University Hospital of Lund, Cytodiagnostic Laboratory, *E. Blocket, S22185 Lund, Sweden* (D-IARC-79-511)

Cytological screening programs have a certain effect on the incidence figures of cervical neoplasia, both pre-invasive and invasive. However, a significant effect on mortality figures has been difficult to establish. Using a computerized program and the unique person identification number long accepted by everyone in Sweden, every single investigation and single individual can be easily followed. Preliminary figures indicate that a significant effect can be demonstrated much earlier than previously found among women actively taking part in a screening program.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1897,

CANCER INCIDENCE AMONG CERTAIN GROUPS IN THE ELECTRONIC INDUSTRY

D.H. Vagerce, Huddinge Sjukhus, Dept. of Social Medicine, *S14186 Huddinge, Sweden* (D-IARC-79-505)

The aim of this study is to examine the incidence and mortality of cancer in a group of workers in the electronic industry, and to investigate the ways in which the medical care organization inside the industry deals with occupational hazards.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1898,

WOOD WORKERS AND CANCER

B. Esping, University of Linkoping, University Hospital, Dept. of Occupational Medicine, *58185 Linkoping, Sweden* (D-IARC-79-510)

An excessive incidence of cancer of the nose has been found among wood workers. There are also some indications of an excessive incidence of malignancies elsewhere, but few systematic studies are available. Malignancies of other sites, particularly of the respiratory system, will, therefore, be studied to examine the possible relationship to wood dust exposure. Both the case-control and the cohort approach will be applied in two studies. Various types of wood will be studied with regard to their potential cancer producing properties.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1899,

EXPOSURE TO IRON OXIDE AND CANCER INCIDENCE

O. Axelson, University of Linkoping, University Hospital, Dept. of Occupational Medicine, *58185 Linkoping, Sweden* (D-IARC-79-509)

Several epidemiological and experimental reports suggest that iron oxide is carcinogenic. However, the reported increase in lung cancer mortality among the various populations (miners, foundry workers) with exposure to iron oxide might be due to concomitant exposures, e.g., randon daughters in the mines, polycyclic hydrocarbons in the foundries, etc. High levels of exposure to iron oxides have occurred in a Swedish plant producing sulphuric acid from pyrites. This situation provides another opportunity to evaluate the possible cancer hazard of iron oxides. This is a case-control study, using two controls for each case matched by sex, age and place of residence. It is undertaken within a general evaluation of the relationship between cancer and various occupational exposures in the city of Helsingborg.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1900,

HERBICIDE EXPOSURE AND CANCER INCIDENCE AMONG RAILROAD WORKERS

O. Axelson, University of Linkoping, University Hospital, Dept. of Occupational Medicine, *58185 Linkoping, Sweden* (D-IARC-79-508)

An earlier report (Axelson and Sundell, Work Environ Health 11, 21-26, 1974) indicated a cancer hazard due to exposure to amitrole. Further evaluation has shown that exposure to phenoxy acids might also produce cancer (Axelson, Scand. J. Work Environ Health 4,85-89, 1978) and this is confirmed in another recent study on mesenchymal tumors and exposure to phenoxy acids and chlorophenols (Hardell, Laekartidnignen 75, 3535, 1978). It seems pertinent, therefore, to update the earlier study of a cohort of railroad workers to find out whether or not the increased cancer mortality continued after 1972.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1901,

MORTALITY AMONG FOREST WORKERS

O. Axelson, University of Linkoping, University Hospital, Dept. of Occupational Medicine, *58185 Linkoping, Sweden*

Several studies have shown an increased risk of cancer among people with exposure to various herbicides. Forest workers in Sweden have used phenoxy acids since the beginning of the 1950s and an evaluation of the mortality pattern might show particular features. The study will be descriptive in character and will show the proportional mortality for various causes of death. About 1,030 forest workers are known to have died during the study period, 1968-1977, as recorded on union registers. Using case-control techniques, a second part of the study will examine cause-effect relationships between cancer and exposure to phenoxy acids.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1902,

MINING, SMOKING AND LUNG CANCER

O. Axelson, University of Linkoping, University Hospital, Dept. of Occupational Medicine, *58185 Linkoping, Sweden*

An earlier report (Axelson and Sundell, Scand. J. Work Environ. Health 4, 46-52, 1978) has indicated a greatly increased lung cancer incidence among zinc-lead miners, as has also been found for iron ore miners in Sweden. It seems resonable to suppose that the occurrence of radon and radon daughters in the mines is primarily responsible for the increased lung cancer mortality among miners. Surprisingly it was found that non-smokers were affected as much or even more than smokers, although smokers, on an average, died of lung cancer before the age of 60, whereas non-smokers died over the age of 70. The explanation might be that smokers in underground work tend to get bronchitis, i.e. an increased thickness of the mucosa, which might protect against alpha radiation. Other mining groups are now being studied using a similar technique to confirm or refute earlier findings.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1903,

PRIMARY BRONCHIAL CARCINOMA IN IRAQ

S.F. Al Damluji, University of Baghdad, School of Medicine, Dept. of Medicine, *Baghdad, Iraq* (D-IARC-79-288)

Bronchial carcinoma is the commonest carcinoma in males in Iraq. multi-centre group study involving main centres in this country are contributing in this project. Leading thoracic surgeons, chest physicians, pathologists, cytologists, radiotherapists, and cancer oncologists, from the staff of the Medical College of Baghdad University and Iraqi ministry of health are participating in this project.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1904,

HOSPITAL BASED CANCER REGISTRY IN VISAKHAPATNAM

R. Chintala, Andhra Medical College, Dept. of Pathology, *Visakhapatnam 530002, India* (D-IARC-79-280)

Palatal cancer is very common in this area in both sexes. Among males, penile cancer is also very common. A hospital-based cancer registry was established in 1976 to evaluate the frequency of these cancers. All cancer cases (histologically confirmed in the Department of Pathology) coming from a defined geographical area with a population of one million are collected. The minimum rates per thousand are calculated and standardized by age according to WHO.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1905,

CANCER OF THE BLADDER IN OPIUM ADDICTS

S. Behmard, Pahlavi University, School of Medicine, Dept. of Pathology, *Shiraz, Iran*

The main result of a case-control study of patients with bladder cancer at Shiraz (Pahlavi) University Hospitals was that the risk of developing cancer of the bladder in opium addicts is at least eight times greater than that of the normal population. A prospective study with screening of all opium addicts (by urine cytology for detection of early bladder carcinoma) was thus started at the University. The preliminary results indicate that the risk of developing cancer of the bladder is considerably higher in opium addicts than previously assumed. As of July 1978, 3,500 opium addicts had been screened. The controls, who do not take opium, number 1,750 and are matched by age and sex. A history of smoking habits is obtained. Fourteen histologically confirmed and previously unrecognized cases of bladder cancer have been detected. This early finding indicates that opium addiction should be considered as a carcinogenic agent for cancer of the bladder and further investigation is warranted. Schistosomiasis has not yet been reported in Fars Province and there is little industry.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1906,

MALIGNANT LYMPHOMA (NON-HODGKIN'S) IN EAST-JAVA

D.S. Hoediasmoro, Universitas Airlangga, Faculty of Medicine, Dept. of Pathology, *Jalan Dharmahusada No. 47, Surabaya, East Java, Indonesia* (D-IARC-79-281)

A retrospective study of non-Hodgkin's Malignant Lymphoma (nHML) in the Department of Pathology, Faculty of Medicine, Sourabaya (1973-1976) gave rise to a number of problems. There were many difficulties in investigating possible aetiological factors on nHML. The only factor that could be investigated and regarded as probably having an aetiological correlation was the socio-economic status of the nHML case. The possible correlation between the subtypes of nHML and their response to a certain mode of therapy was difficult to evaluate for various reasons including a limited budget. The study design has been changed and it is now intended to report the relative frequency of sub-types of nHML (histopathological classification), to investigate the age-distribution, to investigate the possible relation with socio-economic levels, and to investigate the geographical distribution. To increase the number of samples investigated, the anatomical site under study has been extended to the whole reticuloendothelial system and the area investigated has been enlarged from the Sourabaya area (town) to East-Java (province).

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1907,

CHILDHOOD CANCER IN EAST JAVA

D.S. Hoediasmoro, Universitas Airlangga, Faculty of Medicine, Dept. of Pathology, *Jalan Dharmahusada No. 47, Surabaya, East Java, Indonesia* (D-IARC-79-282)

This is a relative frequency study of childhood cancer (between 0-12 years of age) found in the Department of Pathology, Faculty of Medicine, University of Airlangga in Surabaya. Most cases in this Department are from the East Java area. Age and sex distribution and geographical variations are to be examined, and the possible correlation with socio-economic conditions will be investigated. Special attention will be given to malignant lymphoma and retinoblastoma. Information on socioeconomic conditions will be obtained by interview.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1908,

ALIMENTARY TRACT CANCER IN EAST JAVA

D.S. Hoediasmoro, Universitas Airlangga, Faculty of Medicine, Dept. of Pathology, *Jalan Dharmahusada No. 47, Surabaya, East Java, Indonesia* (D-IARC-79-283)

This is a relative frequency study of the alimentary tract cancer found in the Department of Pathology, Faculty of Medicine, University of Airlangga in Sourabaya. Age and sex distribution and geographical variations will be examined, as well as possible correlations with socio-economic conditions, occupation and habits, with emphasis on malignant lymphoma and colon carcinoma. Information on socio-economic conditions will be obtained by interview.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1909,

THE SWEDISH CANCER ENVIRONMENT REGISTRY

K. Wiklund, National Board of Health & Welfare, Planning Div., *Linnegatan 87, 10630 Stockholm, Sweden* (D-IARC-79-521)

The persons with tumours who are entered in the Swedish Cancer Environment Registry are those contained in the Swedish Cancer Registry for a period 1961-1973 and verified as being registered in the 1960 Population and Housing Census. During the period from 1 January 1961 to 31 December 1973, the number of cases of cancer at sites 140-205 in the Registry was 376,015. Individuals were indentified by their personal identification number. On linking the files one per cent of entries in the Cancer Registry could not be traced. The information entered in the Registry, obtained from the 1960 Population and Housing Census, concerned the following: occupation, main occupation during the year, economic activity, occupational status, gainful employment, county, municipality or parish, location of place of work (county, municipality, parish), country of birth and education.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1910,

STUDY OF UTERINE CERVICAL DYSPLASIA AND ITS RELATION TO CERVICAL CANCER (SQUAMOUS CELL) - CLINICAL, CYTOPATHOLOGICAL AND VIROLOGICAL

P. Seth, All India Inst. of Medical Sciences, Dept. of Microbiology, *Ansari Nagar, New Delhi 110016, Delhi, India* (D-IARC-79-278)

Evidence on the aetiopathogenesis and biological behavior of cervical dysplasia is mostly controversial. However, it is generally cases of cervical dysplasia which progress to squamous cell carcinoma. A multifaceted approach to the study has been planned in two phases, the first collecting data on the clinical, cytopathological and virological status of dysplastic lesions and cervical cancer and the second to follow up a sizable number of dysplasia cases with adequate controls to understand the biological behavior of the lesions and their progression to cervical cancer. A minimum number of 300 cases of dysplasia and 200 cases of cervical cancer will be registered along with similar numbers of matched controls. These cases and controls will be followed up every 6 months for a minimum period of 5 years. At each follow-up cervical swabs will be collected for cytology (biopsy will be taken from the patients with dysplasia whenever possible). In addition, sera will be collected and screened for herpes simplex virus type 1 and 2 antibodies.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1911,

EPIDEMIOLOGICAL ASPECTS OF A CANCER CONTROL PILOT PROJECT

M. Narayanan, Arignar Anna Memorial Cancer Inst., Dept. of Gynaecology, *Railway Rd., Kanchipuram 631501, Tamil Nadu, India* (D-IARC-79-275)

Within the framework of a program for the early detection of precancerous lesions and early cancer of the uterine cervix, oral cavity, and pharynx, by systematic clinical examination, cytology and biopsy, aetiological and epidemiological studies will be undertaken. The prevalence and incidence of these cancers will also be assessed. Knowledge, attitudes and practices relating to cancer are being examined in relation to a large number of factors including age, sex, religion, occupation, income, etc. Questions are asked about diet, personal habits, reproduction associated factors, etc.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1912,

CANCER REGISTRY IN EASTERN INDIA

J.R. Chowdhury, Chittaranjan National Cancer Research Centre, Dept. of Epidemiology, *37 S.P. Mukherjee Rd., Calcutta, 700026, West Bengal, India* (D-IARC-79-271)

There is no comprehensive cancer registry in Eastern India (West Bengal, Bihar, Assam and Orissa). Cancer patients from these states belonging to various groups with different socio-economic characteristics are referred to cancer hospitals and other hospitals of Calcutta for treatment. A cancer registry has been set up at the Epidemiology Dept. of Chittaranjan National Cancer Research Centre, Calcutta, to provide data for studying aetiology, epidemiology, treatment and end results of malignant diseases. The basic objectives of this registry include: (1) study of frequency distribution of different types of cancer in this area; (2) definition of high risk profiles; (3) determination of trends and aetiological factors.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1913,

CHRONIC ATROPHIC GASTRITIS AND INTESTINAL METAPLASIA IN THE HUNGARIAN AND ITALIAN POPULATIONS

A. Bajtai, Postgraduate Medical School, Dept. of Pathological Anatomy, *Szabolcs u. 33/35, 1389 Budapest, Hungary* (D-IARC-79-241)

Stomach cancer is very frequent in Hungary. The most important predisposing conditions are chronic peptic ulcer, chronic atrophic gastritis with or without intestinal metaplasia and gastric polyps. The main objectives of the study are to identify any links between these high risk lesions and gastric cancer, and the relation of these precancerous conditions to each other. It is proposed to undertake comparative studies in Italy including nitrosamine levels in gastric juices and their relation to the histological alterations of the stomach. Some 200 patients with the listed conditions are being followed as well as non-symptomatic controls.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1914,

A CASE-CONTROL STUDY OF CANCER OF THE PANCREAS IN GREECE

D. Trichopoulos, University of Athens, School of Medicine, Dept. of Hygiene & Epidemiology, *Odos Panepistimiou 30, Athens 609, Greece* (D-IARC-79-236)

The causes of cancer of the pancreas are unknown and the descriptive epidemiology of the disease has not been adequately studied. In this project the general background of affected persons in Athens, Greece is explored in a case-control study. Questionnaries are being filled out and blood samples are being collected from about 200 pancreas patients and a similar number of hospital controls. Sera will be examined for serological markers and biochemical parameters including trace elements.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1915,

OESTROGEN PROFILES IN DAUGHTERS OF BREAST CANCER PATIENTS IN GREECE

D. Trichopoulos, University of Athens, School of Medicine, Dept. of Hygiene & Epidemiology, *Odos Panepistimiou 30, Athens 609, Greece* (D-IARC-79-234)

To account for the major features of the epidemiology of breast cancer, a hypothesis has been developed linking breast cancer risk to oestrogen metabolism. The hypothesis postulates that women who, during the early years of reproductive life, metabolize a low proportion of their oestrogen to oestriol are at

high risk of breast cancer during the remaining years of their lives. Since daughters of breast cancer patients are at increased risk of breast cancer, it should be expected that these women would have low oestriol ratios. Urine samples are being collected from 100 daughters of breast cancer patients hospitalized in Athens. Oestrogen profiles and other hormone metabolites are being measured in Melbourne or Boston.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1916,

THE CHRACTERIZATION OF RISK CONDITIONS OF GASTRIC CARCINOMA AND THEIR DYNAMIC BEHAVIOUR IN REPRESENTATIVE SAMPLES

M. Siurala, (No Performing Organization Reported), *Finland* (D-IARC-79-146)

Three hundred eleven first-degree relatives of 73 gastric carcinoma patients and 358 relatives of probands computer matched from a general population, plus a representative sample of surgically treated stomach patients with age and sex matched controls from a population sample are studied. The dynamic behaviour of gastritis, intestinal metaplasia and HCl secretion is studied in the series described above. The study employs dynamic mathematical methods based on stochastic principles and uses hybrid computer with multicompartment modelling. Special reference is paid to the dynamic behaviour of these parameters in families with histologically different types of gastric carcinoma.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1917,

CANCER MORTALITY ALONG A TRAFFIC ARTERY

W. Blumer, (No Performing Organization Reported), *Switzerland* (D-IARC-79-537)

During an observation period of 18 years it was found that cancer mortality among all persons living adjacent to a highway was six times higher than that of the inhabitants of a traffic-free quarter. The soil content of polycyclic hydrocarbons along the traffic artery was 12 times greater than in the traffic-free section, and it could be proved that these hydrocarbons originated from automotive emissions. In the course of the next few years the condition of the still surviving inhabitants adjacent to the traffic artery will be examined. The possibility that other factors could be responsible for the excessive frequency of deaths due to cancer along the traffic artery will also be considered. Further analyses will determine whether a decrease in emissions and therefore decrease in cancer mortality take place.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1918,

AETIOLOGY OF PRIMARY SARCOMAS AND PULMONARY HAMARTOCHONDROMAS

C. Gebauer, Johannes Gutenberg Universitat Mainz, Medical Clinic, *Langenbeckstrasse 21, D6500 Mainz, Federal Republic of Germany* (D-IARC-79-145)

The relation between carcinogenic exposures and the 104 pulmonary hamartochondromas diagnosed in 1959-1974, 192 histologically typed carcinomas of the lung in 1961 and 41 primary pulmonary sarcomas diagnosed between 1957 and 1974 in the regional pulmonary clinic of Zschadrass is being assessed. Controls are selected from a defined district, near Leipzig, with 35,300 inhabitants aged 20-80 years, which is within the area served by the clinic. This area contains an urban residential district, a rural area, and an industrial zone. Among the factors considered are the smoking of cigarettes; air pollution as determined by residence in urban, rural and industrial areas; exposure to radiation in underground mining; chronic lung diseases, notably chronic bronchitis, tuberculosis and silicosis; family history of cancer; blood groups. The various histological types of lung cancer are compared with the sarcomas and hamartochondromas.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1919,

BURKITT TUMOUR PROJECT

F.K. Krumah, U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, Viral Oncology Section, *Accra* (D-IARC-79-230)

For more than on decade many aspects of research into Burkitt's lymphoma have been studied at this centre. Tumour specimens are provided to research groups and a serum bank on all patients throughout their illness is maintained. Epidemiological studies have included geographical variation and a longitudinal follow-up of the natural history of Epstein-Barr Virus infections. Current studies include HL-A typing of patients and controls and cross sectional serosurveys for malaria and EBV antibodies among rural and urban populations.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1920,

COMPARATIVE EPIDEMIOLOGICAL STUDIES

I. Karacsony, Onkologiai Gondozo Intezet, *Alkotmany u. 18, 8400 Ajka, Hungary* (D-IARC-79-239)

International differences in mortality from cancer of selected organs -lung, skin, stomach, breast, cervix uteri - are being studied with a view to developing causal hypotheses.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1921,

COMPARATIVE STUDY OF ALCOHOLISM AND CANCER OF THE HEAD AND NECK

W.S. Lowry, Queens University of Belfast, Dept. of Oncology, *Belfast, Northern Ireland, United Kingdom*

One hundred patients with a diagnosis of head and neck cancer were investigated carefully for a history of alcoholism in the U.S.A. Most patients with cancer of the tongue, tonsil and oropharynx were alcoholics. About one half of the patients with supraglottic carcinoma were alcoholics. In the nasopharynx and true vocal cords, there was no association with heavy drinking. The study is now being extended to Ireland since the Irish ethnic group allegedly accounts for a considerable proportion of the American drinking problem. Initial results suggest that this may be exaggerated at least as far as the cancer problem is concerned.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1922,

A CASE-CONTROL STUDY ON CANCER AND MALFORMATION IN CHILDHOOD

R. Puntoni, Universita degli Studi di Genova, Inst. de Oncologia, Dept. of Epidemiology, *Viale Benedetto 15, Pad. B, 16132 Genoa, Italy* (D-IARC-79-320)

The aim of this investigation is to study the relationship between cancer and malformation and maternal exposure to suspected carcinogens (event or factor) during pregnancy. All the cases of cancer and malformation seen at Gaslini Hospital in Genoa for the period 1972-78 (about 500) have been collected. A random sample of children of the same age and sex with different diseases in the same hospital will constitute the control group.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1923,

ASBESTOS-RELATED CHEST DISEASES IN BEDIRLI-YESILOVA-BURDUR

Y.I. Baris, Hacettepe Universitesi, Faculty of Medicine, Dept. of Chest Diseases, *Ankara, Turkey* (D-IARC-79-551)

Bedirli is a village with a population of 643, located in southern Turkey, in the region of the lakes. Preliminary mineralogical studies show that there are tremolite type asbestos fibers in the soil and the white stucco used in the village. 200 people (112 males and 88 females) between 25 and 80 years of age were surveyed. The mean age was 44.4. Pleural, diaphragmatic and pericardial calcified plaques were found in 26 percent; 32.9 percent among males and 20.5 percent among females. Pleural thickening was seen in some of the cases with pleural calcification and in 8 percent of the total population without calcified pleural plaques. This population is being followed to assess risk of mesothelioma and lung cancer.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1924,

EPIDEMIOLOGICAL ASPECTS OF ASBESTOSIS AND MALIGNANT TUMORS

S. Yazicioglu, Diyarbakir University, Medical Faculty, Dept. of Chest Diseases, *Diyarbakir, Turkey* (D-IARC-79-556)

Chrysotile asbestos, freely dug, sold and used by inhabitants of some villages and towns in Turkey, leads to pleural calcification with the eventual complication of malignancy of the respiratory tract. This study aims to gather information concerning malignancies of the upper and lower segements of the respiratory tract and, to some extent, of the digestive system in people of different socioeconomic levels and geographic regions. The biological effects of asbestos will also be investigated in both humans and animals using clinical, experimental and laboratory methods, electron microscopy and mineralogical analysis of the biological material. The groups to be studied are: (1) hospital cases; (2) cases found in screening of the field; (3) animals such as mules and asses (used for transport); (4) laboratory animals such as rats and rabbits. Air and water pollution studies will also be carried out. This study will involve large control groups. Since Turkey is rich in different minerals, this investigation will reveal similar effects, if any, of other elements.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1925,

ENVIRONMENTAL FACTORS IN THE AETIOLOGY OF OESOPHAGEAL AND GASTRIC CARCINOMA

F. Mernik, Bursa University, Medical School, Dept. of Medicine, *Bursa, Turkey* (D-IARC-79-555)

Eastern Anatolia has a high incidence of oesophageal and gastric cancers, compared to Western Anatolia. In the first part of the study this difference was related to local living customs, eating habits, quantity of food, cold climate, poverty, etc. The Marmara regions, an area entirely different from Eastern Turkey, will now be investigated. A map of oesophageal and stomach cancer in Turkey, which does not exist presently, is also being drawn up.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1926,

A MORTALITY STUDY OF CHRYSOTILE ASBESTOS WORKERS

H.F. Thomas, Medical Research Council, Epidemiology Unit, *4 Richmond Rd., Cardiff CF2 3AS, Wales, United Kingdom* (D-IARC-79-583)

This study is examining the mortality, by cause, of 1,800 workers employed for at least six months between 1936 and 1977 at a factory manufacturing chrysotile asbestos construction materials.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1927,

RELATION BETWEEN REGIONAL DIETARY FIBER AND NUTRIENT INTAKES AND COLON CANCER MORTALITY IN GREAT BRITAIN

R. Williams, Medical Research Council, Dunn Clinical Nutrition Centre, *Trumpington St., c/o Addenbrookes Hospital, Cambridge CB2 1QE, England, United Kingdom* (D-IARC-79-580)

There have been suggestions that the intake of dietary fiber is protective against neoplasms of the colon. Previous reports have dealt with international comparisons using estimates of crude fiber intake based on food production figures. This investigation explores associations between fiber intake and cancer of the colon within a defined region (Scotland, England and Wales). Figures for total dietary fiber consumption and the consumption of the components of fiber on a regional basis are computed from the National Food Survey estimates of food consumption (1969-73) and the fiber analyses of Southgate. Figures for nutrient intake and the consumption of certain foodstuffs are also included in the analysis. These are compared with truncated age-standardized death rates from cancer of the intestine (excluding rectum) for the same period.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1928,

A FOLLOW-UP STUDY OF WORKERS IN FLAX MILLS

P.C. Elwood, Medical Research Council, Epidemiology Unit, *4 Richmond Rd., Cardiff CF2 3AS, Wales, United Kingdom* (D-IARC-79-581)

The aim of the study is to relate mortality in flax workers to occupation and dust exposure over a 16 year period. In 1962 a study was conducted by Elwood and others of 2,528 flax workers employed in Northern Ireland. A modified form of the Medical Research Council questionnaire was administered, simple respiratory measurements were made and a detailed survey of dust levels was conducted. An attempt is now being made to trace each worker seen in 1962. If dead, the certified cause of death will be ascertained and related to occupation, dust exposure and probably some of the measurements made in 1962.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1929,

MONOGRAPHS ON CLINICAL AND EPIDEMIOLOGICAL ASPECTS OF MALIGNANT DISEASE IN A POPULATION OF 5 MILLIONS

J.A. Waterhouse, Regional Cancer Registry, *c/o Queen Elizabeth Med. Ctr., Birminghan B15 2TH, England, United Kingdom* (D-IARC-79-577)

A series of monographs is being prepared, each one dealing with a single site, or with a group of closely related sites, where, by examining at the same time both epidemiological and clinical features in extenso, an attempt is made to provide an overall view of the occurrence and treatment of the disease in the region as a whole. By including all cases, rather than a selected series from a central hospital, the degree of variation of treatment and survival can be shown. One of the results it is hoped to obtain is an improved sense of regional solidarity, leading to greater interest and participation in region-wide schemes to up-grade treatment standards and thus improve prognosis. Comparisons of incidence by geographical or other subdivisions of the region can also be used as possible indicators of etiological factors.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1930,

HERPES VIRUSES IN CHILDHOOD CANCER

G.T. Stematsky, Ministry of Health, Central Virus Lab., *P.O. Box 8255, Tel Aviv, Israel* (D-IARC-79-309)

Groups of children with various tumor types are being tested by the indirect immunofluorescence test for the presence of antibodies to Epstein-Barr virus (EBV), cytomegalovirus (CMV), herpes type 1 and 2 and varicella-zoster (VZ) in order to obtain information on primary infections and on frequency of reactivation or reinfection with these viruses in sick as well as healthy children. Analysis of serological profile correlated with age, sex, ethnic origin and clinical data will be carried out.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1931,

CORRELATIONS BETWEEN DIETARY FACTORS AND PRE- AND POST-MENOPAUSAL BREAST CANCER

B. Modan, Chaim Sheba Medical Center, Dept. of Clinical Epidemiology, *Bitan 27, Tel Hashomer, Ramat Gan, Israel* (D-IARC-79-312)

Epidemiological studies have shown the possible role of nutritional patterns in the etiology of breast cancer. Our study will try to determine the role of diet and/or nutritional status in the incidence, pathogenesis and natural history of pre- and post-menopausal breast cancer. This study is based on 720 newly diagnosed cases of cancer of the breast and 1,440 matched controls. Each case will be matched to two types of control: (1) non-malignant and non-gastrointestinal surgical patients from the same wards and (2) neighborhood. Controls will be matched on age and year of immigration to Israel (within five years), and country of origin. Analysis will be done separately for the main ethnic groups, as well as for pre- and post-menopausal women. Correction for such factors as age at first pregnancy, parity, weight, and height will be applied. A list of 243 food items will be included in the questionnaire, comparison of cases and controls will pertain to: (1) individual food items and (2) groups of foods combined on the basis of common nutritional components.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1932,

EPIDEMIOLOGICAL STUDY OF GASTROINTESTINAL CANCER

B. Modan, Chaim Sheba Medical Center, Dept. of Clinical Epidemiology, *Bitan 27, Tel Hashomer, Ramat Gan, Israel* (D-IARC-79-313)

A case-control study has been conducted on 167 stomach cancer and 300 intestinal cancer cases (198 colon cancer, 73 rectum and 25 other intestinal cancers). There were two matched controls. An increased consumption of starches among the patients with gastric cancer, and a decreased consumption of fiber among patients with colon cancer has been demonstrated. Other environmental factors, such as smoking habits, bowel habits, diet, past illnesses, occupation and years of study, past concentration camp history and symptomatology related to the cancer are being analyzed as well as assessment of characteristics related to survival.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1933,

MORTALITY STUDY OF UK ACRYLONITRILE WORKERS

D.B. Douglas, Health & Safety Center, *97 Horseferry Rd., London SW1P 2DY, England, United Kingdom* (D-IARC-79-613)

The study takes the form of an examination of the mortality pattern of 1,200 acrylonitrile polymerization process workers who were first exposed to acrylonitrile in 1968 or earlier in six factories in the UK. Data on job histories and exposure levels will be used to allocate workers to defined exposure groups. Mortality from all causes of death, together with selected causes including cancer of lung, brain and large intestine will be considered.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1934,

CANCER IN ISRAEL - SELECTED SITES AND HISTOLOGY

R. Steinitz, Israel Center for Registration of Cancer & Allied Diseases, *18 20 King David St., Jerusalem, Israel* (D-IARC-79-302)

The incident cases of cancer in Israel in 1961-1972 for which histological examination was undertaken will be analyzed by site and histology along the lines of Tables 45 and 46 of the report of the Third National Cancer Survey (Third National Cancer Survey: Incidence Data, national Cancer Institute Monograph 41, March 1975).

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1935,

ROLE OF INFANT FEEDING PRACTICES AND ENVIRONMENTAL FACTORS IN DEVELOPMENT OF THE GUT FLORA

B.S. Drasar, University of London, London School of Hygiene & Tropical Medicine, Dept. of Medical Microbiology, *Keppel St., London WC1E 7HT, England, United Kingdom* (D-IARC-79-614)

Studies in which the diet of individual adults has been changed, have failed to demonstrate those alterations in the flora that were expected as a result of comparisons of people in low and high colon cancer risk areas. The role of breast feeding, diet at weaning and environment in the establishment of the adult flora is being examined. The hypothesis being tested predicts that the flora detectable in adult life is the result of early feeding practices and once established is very resistent to change. Thus the metabolic potential of the flora and hence colon cancer risk would be fixed early in life. Breast fed infants and post weaning children in Malumfashi, Nigeria are compared with those in London, United Kingdom. Nutritional and environmental assessments are also being undertaken. Breath methane in children and adults are being evaluated as epidemiological indicators.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1936,

LONG-TERM FOLLOW-UP OF PERSONS EXPOSED TO SCALP IRRADIATION IN CHILDHOOD

B. Modan, Chaim Sheba Medical Center, Dept. of Clinical Epidemiology, *Bitan 27, Tel Hashomer, Ramat Gan, Israel* (D-IARC-79-310)

Approximately 11,000 individuals irradiated between 1948-1960, for control of tinea capitis, and two matched control groups (almost 16,000 people) are being retrospectively followed through national registries and medical records. The irradiated group has been found to have a significant excess of malignant and benign head and neck tumors, especially of the brain, parotid gland and the thyroid.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1937,

BREAST CANCER MORTALITY CHANGES IN A SCREENED POPULATION

B.A. Thomas, Jarvis Breast Screening, *Stoughton Rd., Guildford, Surrey, United Kingdom* (D-IARC-79-594)

In the Guildford Breast Screening Project, one the British Breast Cancer Screening Trials, some 25,000 women aged 45-65 are being invited to attend screening centers (fixed and mobile) for clinical examination of the breasts and mammography using the Medichrome low radiation dosage system. General practitioner age/sex registers are being used as the basis for the recruitment of all women in the age group. Personal and medical data, particularly obstetric, breast feeding, and hormonal histories, past breast problems and family histories of breast cancer are being obtained from each woman. These invitations will be repeated two-yearly from updated registers with clinical examination only, carried out by a specially trained nurse, undertaken in the intermediate years. The doctors carrying out the main screening examinations will also read the mammograms, which will be classified according to Wolfe's duct patterns with a view to the determination of mammographic high risk groups. Prevalent, incident and interval cancers will be studied and long-term follow-up undertaken. Mortality rates in this district will be compared with those in other trial and control districts.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1938,

THE INFLUENCE OF HORMONE REPLACEMENT THERAPY ON THE INCIDENCE OF BREAST CANCER IN WOMEN

A.M. Stark, Queen Elizabeth Hospital, Dept. of Gynaecological Oncology, *Gateshead NE9 6SX, Tyne & Wear, United Kingdom* (D-IARC-79-589)

The demand by women for hormone replacement therapy is increasing. Breast cancer is acknowledged to be hormone-dependent. This is a long-term project to assess the influence of hormone replacement therapy on the incidence of breast cancer in women. A cohort of 300 women is being screened for breast cancer by clinical examination, thermography and mammography before commencing hormone replacement therapy and re-examined at three months and annually thereafter. The control group consists of 300 women matched for age, parity, hormonal status, and family history of breast cancer.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1939,

HIGH INCIDENCE OF CATTLE CANCER - POSSIBLE INTERACTION BETWEEN ENVIRONMENTAL CARCINOGEN AND PAPILLOMA VIRUS

W.F. Jarrett, University of Glasgow, School of Veterinary Medicine, Dept. of Veterinary Pathology, *Bearsden Rd., Glasgow G61 1QH, Scotland, United Kingdom* (D-IARC-79-593)

The objective is to study the possible co-carcinogenic effects of papilloma virus and bracken fern in inducing alimentary cancer and urinary bladder tumours in cattle. High incidence areas in the upland beef farms of Britain have been demonstrated and the overall incidence in beef cows appears to be of the order of 2.5 to 5 percent per year. high percentage of these animals have pre-existing multiple alimentary papillomas. Virus has been extracted, purified and transmitted from these. An epidemiological study of the farms is in progress to elucidate the latent periods for papilloma induction and to attempt

to clarify the sequential stages of cancer development. The relationship between these cancers and human cancers is being examined to determine whether an increased risk is observed in affected farms.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1940,

EPIDEMIOLOGY OF BLADDER CANCER IN WEST YORKSHIRE

R.A. Cartwright, Yorkshire Regional Cancer Org., *Leeds LS16 6QB, England, United Kingdom* (D-IARC-79-598)

Yorkshire has one of the highest mortality rates in the United Kingdom for bladder cancer with an SMR for males in 1969-73 of 114. Incidence and mortality are unevenly distributed within the area and the aim of the project is to account for the high mortality and the variation in incidence. The study is a case-control investigation of prevalent and incident cases for certain hospital areas within the Yorkshire area, including Bradford and Kirklees. The controls are neighbourhood and hospital in type. A questionnaire has been constructed which explores personal habits, past medical history and occupational history in depth. Details of the natural history of the bladder cancer are also recorded. The first phase of the study, dealing with prevalent cases, will be complete in 1979, whilst the incidence study will continue for some years beyond that date. It is hoped that at least 600 cases will be interviewed in the first phase of the study.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1941,

RISK FACTORS IN BREAST CANCER

R.A. Cartwright, Yorkshire Regional Cancer Org., *Leeds LS16 6QB, England, United Kingdom* (D-IARC-79-600)

A study is being undertaken of all new cases which attend a special 'breast lump' clinic. Interviews are being conducted before diagnosis in an attempt to assess risk factors in the pathogenesis of breast cancer and the subsequent course of the disease. Questions are asked about family history, past medical history, pregnancies and other breast lesions, as well as noting clinical details of the present lesion. The study and follow-up will continue for several years.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1942,

AGE-TIME-COHORT ANALYSES OF MORTALITY

J.C. Barrett, University of London, London School of Hygiene & Tropical Medicine, Dept. of Medical Statistics & Epidemiology, *Keppel St., London WC1E 7HT, England, United Kingdom* (D-IARC-79-604)

This method of mortality analysis was first described in J. Hygiene (Camb.) 71, 253-59, 1973. It consists of the simultaneous use of age, time and cohort factors. Of the three factors, age at death, epoch of death and epoch of birth, one seems almost superfluous. It is nevertheless worthwhile to include all three, allowing for the constraints that the redundancy imposes. This procedure is being applied to published data for England and Wales on breast cancer, bladder cancer and prostate cancer mortality, 1951-1970.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1943,

CASE-CONTROL STUDY OF MALIGNANT MELANOMA

V.S. Beral, University of London, London School of Hygiene & Tropical Medicine, Dept. of Medical Statistics & Epidemiology, *Keppel St., London WC1E 7HT, England, United Kingdom* (D-IARC-79-607)

A case-control study of women aged 16-49 with malignant melanoma has been set up. 400 cases and 800 controls with be interviewed. The main aim of the study is to examine the relationship of oral contraceptive use to the risk of developing malignant melanoma. In addition, information about exposure to sunlight, occupation and reproductive history is being collected; the relationship of these factors to melanoma risk, and their inter-relation with oral contraceptive use will be examined.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1944,

NATIONAL REGISTRATION OF CHILDREN WITH RETINOBLASTOMA IN JAPAN

K. Minoda, University of Tokyo, Branch Hospital, Dept. of Ophthalmology, *3-28-6 Mejirodai, Bunkyo-ku, Tokyo 112, Tokyo, Japan* (D-IARC-79-396)

Retinoblastoma is the most common intraocular malignant tumor in Japan. To investigate epidemiology, genetics, pathology and clinical aspects of retinoblastoma in Japan, the national registration of retinoblastoma children in Japan was started in 1975 by the committee for National Registration of Retinoblastoma Children, consisting of 44 ophthalmologists and three other scientists. Interim reports have appeared in Acta Soc. Opthalmol. Jpn. 80: 1648, 1976 and in the proceedings of the International Symposium on Retinoblastoma, Jpn. Opthalmol. 22, No. 3, 1978.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1945,

A RETROSPECTIVE COHORT STUDY ON MALIGNANT NEOPLASMS IN WORKERS OF A CHROMATE MANUFACTURING PLANT IN TOKYO

T. Okubo, Jichi Medical School, Dept. of Environmental Health, *3311-1 Yakushiji, Minami, kawachi-machi, Tochigi-ken 32904, Japan* (D-IARC-79-399)

The plant chosen for study is the larger of the two chromate manufacturing plants in Japan. In recent years, 24 lung cancer cases have been reported among the chromate workers of the plant. Since the plant was in continuous operation during the period 1915-1975, the follow-up period of over 50 years is longer than that of previous reports. Various types of personnel records as well as payrolls were used to create the cohort; follow-up is carried out by the Japanese family registration system 'koseki'. Measurements of the working environment have been conducted in the plant since 1958, and it is expected that this study will show clearly any dose-response relationship.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1946,

CHLOROMETHYL-METHYL ETHER STUDY

R.I. McCallum, University of Newcastle Upon Tyne, Dept. of Occupational Health & Hygiene, *6 Kensington Terr., Newcastle Upon Tyne NE1 7RU, United Kingdom* (D-IARC-79-633)

OBJECTIVE: To determine whether workers in two factories manufacturing bis-chloromethyl ether in United Kingdom have an excess lung and nasal cancer mortality.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1947,

GENITAL CANCER STUDIES

Unknown, Office of Population Censuses & Surveys, Medical Statistics Div., *10 Kingsway, St. Catherines House, London WC2B 6JP, England, United Kingdom* (D-IARC-79-640)

OBJECTIVE: To study causes of death of husbands whose wives have contracted cancer of cervix.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1948,

MORTALITY STUDY OF TALC WORKERS

Unknown, Office of Population Censuses & Surveys, Medical Statistics Div., *10 Kingsway, St. Catherines House, London WC2B 6JP, England, United Kingdom* (D-IARC-79-638)

OBJECTIVES: Study of effects of talc on persons who have been employed in manufacturing cosmetics and other talc-containing products, 1953 onwards.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1949,

SURVEY OF CHILDREN'S TUMORS

Unknown, Office of Population Censuses & Surveys, Medical Statistics Div., *10 Kingsway, St. Catherines House, London WC2B 6JP, England, United Kingdom* (D-IARC-79-639)

OBJECTIVE: To conduct a retrospective epidemiological survey of children's tumors in a regional hospital area, 1954-1973.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1950,

MORTALITY STUDY OF ASBESTOS FRICTION WORKERS

M.L. Newhouse, University of London, London School of Hygiene & Tropical Medicine, T.U.C. Centenary Inst. of Occupational Health, *Keppel St., London WC1E 7HT, England, United Kingdom* (D-IARC-79-635)

This is an old established plant chiefly devoted to the manufacture of brake linings. Apart from two periods of approximately two years each, more than 30 years ago, only chrysotile asbestos has been used. Identification data on current and past employees are available, and with the assistance of the National Register the vital status of past employees will be established and the cause of death, as stated on the death certificate, ascertained. Mortality in this population will be compared with that of the population of England and Wales. Dust estimates are available only since 1969 but by means of simulation experiments dust exposure at various times will be estimated and a case-control study of deaths from lung cancer will be undertaken following the methods of Liddel and Macdonald.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1951,

YOUNG PATIENTS WITH UTERINE CANCER

K. Masubuchi, Cancer Inst. Hospital, Dept. of Gynaecology, *1-37-1 Kamiikebukuro, Toshima-ku, Tokyo 170, Tokyo, Japan* (D-IARC-79-395)

In recent years, there have been many reports on cervical cancer in young women. The objective is to study cervical carcinoma and corpus carcinoma in young patients epidemiologically and also to analyze some specific features of the diseases. Among about 8,000 cases of cervical carcinoma treated in the Department of Gynaecology, the Cancer Institute Hospital in Tokyo, since 1949, patients under 39 years of age are picked out and examined. Non-cancer patients operated upon at the same time and of the same age are selected as a control group.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1952,

CANCER AND THE INDUSTRIAL ENVIRONMENT

O.L. Lloyd, University of Dundee, Ninewells Medical School, Dept. of Community & Occupational Medicine, *Dundee DD1 9SY, Scotland, United Kingdom* (D-IARC-79-586)

Environmental influences, many of them industrial, have been held to be responsible for the vast majority of human cancers. This study aims to analyze the patterns of mortality within relatively small populations in Scotland to identify areas where the incidence (or mortality) of specified cancers is abnormally high. It is intended to investigate the environment of these areas in order to try and identify possible carcinogenic factors. It is hoped that the occupational experience of the deceased can be evaluated in order to determine whether or not carcinogenic factors were in the occupational environment or in the more general environment. Evaluation of the environment will be assisted by the collaboration of the Scottish Occupational and Environmental Health Service, Ninewells Medical School, Dundee.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1953,

A STUDY OF THE CANCER MORTALITY IN WHITES, COLOREDS AND ASIANS IN SOUTH AFRICA, 1949-1969

J.S. Harington, National Cancer Assn. of South Africa, Cancer Research Unit, *9 Jubilee Rd., Johannesburg 2000, Transvaal, South Africa* (D-IARC-79-482)

In the cancer mortality study, rates for Whites, Coloreds and Asians for the period 1949-1969, were analyzed, and a changing pattern was found. Some comparisons with other countries were made, and the risk for each race group was delineated for cancers at the commonest sites. This study is being continued.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1954,

HASHIMOTO'S THYROIDITIS - A POSSIBLE RISK FACTOR FOR LUNG CANCER AMONG JAPANESE WOMEN

N. Maruchi, University of Tokyo, Faculty of Medicine, Dept. of Health Administration, *7-3-1 Hongo, Bunkyo-ku, Tokyo 113, Tokyo, Japan* (D-IARC-79-394)

In order to study the epidemiological association of Hashimoto's thyroiditis to malignancy, the autopsy protocols for the period of 1959-1974 were examined at the Tokyo University Hospital. The study cases consisted of 1,896 women, among whom 107 had lymphocytic infiltration and/or fibrosis in the thyroid. The study cases were classified into several groups by major cause of death including breast cancer and lung cancer. Although there was little significant relation between these changes in the thyroid and breast cancer, a significant association between the changes in the thyroid and lung cancer was identified in the autopsy study. This finding suggests that Hashimoto's thyroiditis and related changes could be a risk factor for lung cancer among Japanese women.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1955,

GENITAL CANCER STUDIES

Unknown, Office of Population Censuses & Surveys, Medical Statistics Div., *10 Kingsway, St. Catherines House, London WC2B 6JP, England, United Kingdom* (D-IARC-79-641)

Causes of death of wives whose husbands died from cancer of penis 1964-73.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1956,

STUDIES ON THE ETIOLOGY OF CHILDHOOD TUMORS

H.B. Marsden, University of Manchester, Childrens Tumor Registry, *Oxford Rd., Manchester M13 9PL, England, United Kingdom* (D-IARC-79-657)

This is a population-based study on the incidence of childhood malignancy. Details of all cases of malignancy occurring in the child (0-14 years) population (approximately 1 million) in the North West Regional Health Authority have been collected since 1954. Clinical records and microscopic slides are retained for study. Time-space clustering analysis is being carried out. Factors which may be of etiological significance in childhood malignancy, with emphasis on genetic and environmental aspects, including drugs in pregnancy and parental occupation, are being investigated. A detailed study of family histories is being made with particular emphasis on congenital malformations and malignancies in family members. The quality of life in long-term survivors is being assessed.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1957,

GYNECOLOGICAL TUMOR REGISTRY

E.G. Daw, North Manchester General Hospital, Dept. of Obstetrics & Gynaecology, *Crumpsall, Manchester M8, England, United Kingdom* (D-IARC-79-653)

All gynecological tumors seen in the northern district of Manchester are registered using a standard registration form. The data collected are subjected to systematic review. A prospective review of chemotherapy regimes used for carcinoma of the ovary is being undertaken, as well as a retrospective review of carcinoma of the cervix and corpus uteri.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1958,

COMPLETENESS OF CANCER REGISTRATION

I. Leck, Christie Hospital & Holt Radium Inst., Regional Cancer Epidemiology Unit, *Wilmslow Rd., Withington, Manchester M20 9BX, England, United Kingdom* (D-IARC-79-656)

Since 1972, the data recorded for cancer patients registered with the Regional Cancer Epidemiology Unit in Mancester (covering a population of over 4 million) have included first treating hospital, hospital to which referred (if any), and dates of registration as well as of first treatment and death. Various possible measures of completeness of registration are being developed and applied to these data, including: 1) Proportion of cases registered by first treating hospital among those registered by hospital to which referred; 2) Ratio of number of cases actually registered to an estimate of the total number diagnosed, calculated on the assumption that the proportion of cases diagnosed in survivors, that is not registered, is the same as the proportion of deceased cases that is only registered because of death. Several methods of estimating the later proportion are being evaluated.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1959,

CHLOROMETHYL-METHYL ETHER STUDY

R.I. McCallum, University of Newcastle Upon Tyne, Dept. of Occupational Health & Hygiene, *6 Kensington Terr., Newcastle Upon Tyne NE1 7RU, United Kingdom* (D-IARC-79-661)

OBJECTIVE: To determine whether workers in two factories manufacturing chloromethyl-methyl ether in United Kingdom have an excess lung and nasal cancer mortality.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1960,

BLADDER. CANCER MORTALITY IN CERTAIN AREAS AND INDUSTRIES

J.M. Davies, Inst. of Cancer Research, Division of Epidemiology, *Clifton Ave., Sutton SM2 5PX, England, United Kingdom* (D-IARC-79-699)

A number of towns have been selected, most of which are important centers for industries suspected of giving rise to a bladder cancer risk. As a first step male and female bladder cancer mortality rates in these towns over some 25 years will be compared with national and regional rates. As a second step a total of some 3,000 death certificates of male residents dying with bladder cancer ('cases') will be matched with 'control' death certificates of male residents dying from other causes at the same ages and dates; the occupations of cases and controls will be compared, using the occupations recorded on the death certificates.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1961,

TRIAL OF EARLY DETECTION OF BREAST CANCER

J. Chamberlain, Inst. of Cancer Research, Division of Epidemiology, *Clifton Ave., Sutton SM2 5PX, England, United Kingdom* (D-IARC-79-697)

This is an observational trial which aims to determine the effectiveness of alternative early detection programs in reducing mortality from breast cancer. Two populations of approximately 25,000 women aged 45-64 will be offered screening by clinical examination and mammography, two further populations of the same size and age distribution will be offered intensive education in breast self-examination, and at least four additional similar populations, serving as comparisons, will be offered no additional detection services over and above what is normally provided as good current practice. The field-work of the trial will continue for eight years and mortality from breast cancer will be measured in all populations for at least ten years.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1962,

EVALUATION OF OCCUPATIONAL HAZARD MONITORING SYSTEMS

J. Bell, Inst. of Cancer Research, Division of Epidemiology, *Clifton Ave., Sutton SM2 5PX, England, United Kingdom* (D-IARC-79-696)

The establishment of information systems for monitoring health of employees (particularly in the oil and chemical industries and those using their products) is under consideration and, in some cases, implementation. However, it is not clear a priori what data must be collected and how they should be analyzed to highlight hazards. Computer simulation of an industrial hazard monitoring system is proposed to answer these questions and to evaluate the potential usefulness of the various systems that have been suggested.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1963,

ASBESTOS LUNG AND MESOTHELIOMA SURVEY IN THE UNITED KINGDOM

J.C. Wagner, Medical Research Council, Pneumoconiosis Unit, Dept. of Pathology, *c/o Llandough Hospital, Penarth CF6 1XW, Wales, United Kingdom* (D-IARC-79-684)

The aims of this program are to: (1) determine the number of patients dying in 1976 from primary pleural or peritoneal mesothelioma in the United Kingdom, (2) obtain samples of tumor from each autopsy to confirm the diagnosis and determine histological types, (3) examine lung tissue from each autopsy in order to estimate whether asbestos is present and, if present, the amount and type(s), (4) examine control material for the presence of asbestos comprising (a) tumor and lung tissue from the next case of bronchial carcinoma to come to post mortem, of the same sex and within five years of age of the mesothelioma patient(s) and (b) lung tissue from the next case of cerebrovascular accident to come to post mortem, of the same sex and within five years of age of the mesothelioma patient(s), in 1977 samples of lung alleged to be associated with asbestos exposure, from surgical cases of lung cancer and from post mortem cases with pleural plaques seen at two centers.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1964,

FOLLOW-UP STUDY OF WOMEN EXPOSED TO DIETHYLSTILBOESTROL IN PREGNANCY AND THEIR OFFSPRING

M.P. Vessey, University of Oxford, Dept. of Social & Community Medicine, *S. Parks Rd., Oxford OX2 6HE, England, United Kingdom* (D-IARC-79-678)

In the early 1950s, a randomized double-blind controlled trial of the prophylactic use of stilboestrol in pregnancy was conducted at a London teaching hospital. The study involved over 1,000 primigravidae and the treatment group received stilboestrol according to the Smith and Smith regimen. The participants in the study and their offspring are now being identified and traced, and death certificates are being obtained for those who have died. Information about the health of survivors will be sought from general practitioners.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1965,

EPIDEMIOLOGY OF OVARIAN CANCER

P. Smith, University of Oxford, Dept. of the Regius Professor of Medicine, *S. Parks Rd., Oxford OX2 6HE, England, United Kingdom* (D-IARC-79-677)

This is a case-control interview study with 200 cases and 400 matched controls (patients with other cancers and patients with non-malignant, non-gynecological conditions) to investigate risk factors for ovarian cancer with particular reference to reproductive factors (fertility and use of oral contraceptives).

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1966,

RECORD LINKAGE FOR DRUG MONITORING

D.C. Skegg, University of Oxford, Dept. of the Regius Professor of Medicine, *S. Parks Rd., Oxford OX2 6HE, England, United Kingdom* (D-IARC-79-676)

There is an urgent need for improved methods of detecting unwanted effects of medicines, especially

delayed effects such as the induction of cancer. A study is being carried out to assess the feasibility of using record linkage for monitoring drugs prescribed by general practitioners. It is hoped to develop methods which could be used in people, all prescriptions dispensed during a two-year period have been linked with records of hospital admissions and deaths (in or out of hospital). For another population of 9,000 people, prescriptions have been linked with records of illnesses seen by the general practitioners. In both cases, the data are being analyzed to identify associations between drugs and diagnoses. A full-scale record linkage scheme would need to cover a larger population and to continue indefinitely; it would be especially suitable for detection of carcinogenic effects of drugs.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1967,

MORTALITY IN CHRYSOTILE ASBESTOS TEXTILE WORKERS - IMPLICATIONS FOR HYGIENE STANDARDS

J. Peto, Imperial Cancer Research Fund, Cancer Epidemiology Unit, *9 Keble Rd., Oxford OX1 3QG, England, United Kingdom*

The eventual risk of developing mesothelioma, lung cancer or asbestosis at the current asbestos hygiene standard (2 fiber/ml in the UK) is not known. Dust levels were rarely measured more than 20 years ago, and more recent exposure has not yet caused a detectable excess of cancer. Dust measurements have been made routinely in this factory since 1951, however, and levels from 1933 to 1950 have been estimated. The principal objective is the study of dose and time relationships for mesothelioma and lung cancer, so that the eventual effects of low asbestos exposure can be predicted from the observed effects of relatively high exposures. 1,100 workers exposed for 10 or more years are being followed up through factory and national records. In addition, mesotheliomas in 25,000 previous and current employees are being traced by matching employment records with the UK National Mesothelioma Register to relate incidence to level of exposure and period and duration of employment. Employment records of mesothelioma cases and matched controls will be compared to assess the risks associated with particular processes in the factory.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1968,

CANCER INCIDENCE AMONG EMPLOYEES IN THE CHEMICAL INDUSTRY

A.O. Ahlbom, Huddinge Sjukhus, *S14186 Huddinge, Sweden* (D-IARC-79-504)

The aim of the study is to assess the association between chemical exposure at work and leukemia and brain tumors. The study is based on the Swedish Cancer Register. This was linked to the census of 1960 which included information about occupation. The material consists of cases reported to the Register during the period 1961 to 1973.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1969,

LUNG CANCER MORTALITY IN A POPULATION EXPOSED TO CHROMIUM DUST POLLUTION

G. Axelsson, Goteborgs Universitet, Dept. of Environmental Hygiene, *411 Vasaparken, S40010 Goteborg, Sweden* (D-IARC-79-501)

The population in a community in Sweden is exposed to air pollution which, to a significant degree, originates from a ferro-chromium industry. The total amount of chromium in the air is 50-200 times higher than background values elsewhere. Death rates in 1961-1975 in the exposed parishes will be compared to those in areas of the same size without chromium emission.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1970,

AFLATOXIN AND LIVER CANCER IN SWAZILAND

F.G. Peers, Malkerns Research Station, *P.O. Box 4, Malkerns, Swaziland* (D-IARC-79-500)

Prior studies in Swaziland in 1971 and 1972 established a correlation between liver cancer and dietary aflatoxins, the exposure and disease incidence varying in four topographical areas (Peers et al., Int. J. Cancer, 17, 167-176, 1976). Since then, extensive efforts have been made by the Grain Storage Unit of the Swaziland Ministry of Agriculture to improve 'on farm' storage and in particular to prevent rodent and insect damage. Studies will be made to evaluate how much this improved storage has affected the fungal contamination of dietary staples and hence the dietary aflatoxin exposure and whether this is likely to have a significant effect on the liver cancer incidence. Additional studies will be made to determine the primary sources of the aflatoxin in whole diets, and whether intensive efforts at controlling fungal contamination of dietary staples can be economically effected. Studies will also be made of likely confounding factors, and whether aflatoxins in body fluids can be used as a more direct epidemiological assessment of exposure.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1971,

INVESTIGATION OF MORTALITY AND MORBIDITY PATTERNS IN CADMIUM WORKERS IN THE UNITED KINGDOM

G. Kazantzis, Central Middlesex Hospital, Dept. of Community Medicine, *Acton Ln., Horace Soules Hall, London NW10 7NS, England, United Kingdom* (D-IARC-79-630)

Cadmium is a metal carcinogenic in animal experimental studies. Limited observations in man suggest that there may be an increased mortality from cancer of the prostate and of the lung in cadmium workers. The study will, in the first instance, seek to ascertain causes of death in cadmium workers, with particular reference to malignant disease and renal pathology. All persons who have worked with regular exposure to cadmium for a minimum period of one year in selected industries will be included in the study. A retrospective register of cadmium workers from records held by the respective companies will be compiled, and mortality data on this defined population obtained and compared with that of an appropriately matched control group.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1972,

SECOND PRIMARIES POSSIBLY ASSOCIATED WITH CIGARETTE SMOKING

S. Dische, Mount Vernon Hospital, Regional Radiotherapy Centre, *Northwood HA6 2RN, England, United Kingdom* (D-IARC-79-663)

A series of patients with bladder cancer has been treated using radio-sensitizing methods. Ninety-six percent of the males have a history of cigarette smoking. These patients are followed with special care to determine thefrequency of other diseases. Carcinoma of the bronchus has been the most frequent cause of death other than carcinoma of the bladder. The experience of the general population is used for comparison purposes.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1973,

LONG TERM SURVEILLANCE OF MORTALITY AND CANCER INCIDENCE IN WOMEN RECEIVING HORMONE REPLACEMENT THERAPY (HRT)

S.A. Adam, University of Oxford, Dept. of Social & Community Medicine, *S. Parks Rd., Oxford OX2 6HE, England, United Kingdom* (D-IARC-79-664)

In the proposed investigation women seen at 20 menopause clinics in different parts of the country who (1) are currently using HRT and have been using it continuously for at least one year, or (2) are no longer using HRT, but used it in the past for six months or less, will be recruited and followed up indefinitely using the facilities of the National Health Service Registries. Mortality rates and cancer incidence rates experiences by the short-term and long-term users of HRT will be computed from time to time and comparisons will be made with national mortality and cancer incidence data. Cancer of the endometrium and cancer of the breast are sites of particular interest, as well as cardiovascular disease. It is hoped to recruit around 10,000 women over the next three years.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1974,

ETIOLOGICAL FACTORS IN MALIGNANT MELANOMA OF THE SKIN

S.A. Adam, University of Oxford, Dept. of Social & Community Medicine, *S. Parks Rd., Oxford OX2 6HE, England, United Kingdom* (D-IARC-79-665)

A case-control study is being conducted to investigate the role of light, genetic factors, and certain drugs, including oral contraceptives, in the etiology of melanoma of the skin. Cases among women under 50 years of age are to be identified through cancer registries, hospital discharge records, and death certificates. The general practitioner of the case will be interviewed and three controls, matched for age, sex, and marital status, will be selected from his records. All cases and controls will be sent a postal questionnaire.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1975,

STUDY OF THE RELATIONSHIP IN INDIVIDUALS BETWEEN CERTAIN CANCERS AND OTHER DISEASES

J.A. Baldwin, University of Oxford, *S. Parks Rd., Oxford OX2 6HE, England, United Kingdom* (D-IARC-79-666)

The files of linked medical records of the Oxford Record Linkage Study, covering an 8-year period, are being analyzed to ascertain whether persons with certain cancers are at increased risk of having or having had other diseases or disorders. Expected numbers are computed after standardization for variables such as age, sex, period at risk, variation with time and migration out of the area. It is hoped that the study will be able both to identify events or long-standing diseases which might be associated with subsequent malignancy and to ascertain conditions which by their association with the cancer might be considered as having a common etiology with the cancer.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1976,

A STUDY OF THE EPIDEMIOLOGY, ENDOCRINOLOGY, PATHOLOGY AND RESPONSE TO ENDROCINE TREATMENT FOR BREAST CANCER IN BRITISH AND JAPANESE WOMEN

J.L. Hayward, Imperial Cancer Research Fund, Breast Unit, *Lincolns Inn Field, c/o St. Bartholomew Hospital, London WC2A 3PX, England, United Kingdom* (D-IARC-79-623)

Breast cancer is less common in Japan than in the United Kingdom, occurs predominantly in young women and probably carries a better prognosis. To obtain more information this collaborative study has been set up to investigate the epidemiology, endocrinology, pathology and response to endocrine therapy of breast cancer in British and Japanese women. In addition, endocrine function in normal Hawaiian-Japanese women and patients with breast cancer and the pathology of breast tumors in Hawaii are being studied.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1977,

STUDY OF HAIR DYE USERS

S.D. Lawler, Inst. of Cancer Research, Dept. of Cytogenetics & Immunogenetics, *Fulham Rd., London SW3 6JJ, England, United Kingdom* (D-IARC-79-631)

The aim is to find out whether there is an increase in chromosome damage, sister-chromatid exchanges and frequency of micronuclei after an individual dyes his or her hair, and, if so, whether the levels subsequently revert to normal. It is also planned to measure the amount of hair-dye in the blood at various times.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1978,

EPIDEMIOLOGY OF ORAL SQUAMOUS CELL CARCINOMA

N.W. Johnson, University of London, London Hospital Medical College, Dept. of Oral Pathology, *Turner St., London E1 2AD, England, United Kingdom* (D-IARC-79-629)

Over 300 cases of oral squamous cell carcinoma treated at the London Hospital Medical College are

being analyzed in a case characteristics study which aims to determine high risk groups and to establish what factors affect prognosis (e.g., site, age, sex, etiology, size of lesion at presentation, rate of tumor growth and histopathological category). The study is both retrospective and prospective. A modification of the TNM grading and staging system is being evaluated. Data are analyzed using the statistical package for the social sciences with corrections for age employing both the Peto and Peto method and the Cox method.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1979,

CORRELATION BETWEEN CONSUMPTION OF DAIRY PRODUCTS AND HUMAN LEUKEMIA AND LYMPHOMA

G. Mititelu, Agricultural School, Dept. of Zootechnology, *M. Kogalniceanust. 3, 6575 Husi, Romania* (D-IARC-79-473)

In a previous analysis, a positive correlation was found between the number of cattle per 100,000 population and the incidence of human leukemia-lymphoma (r equal 0.89 for Hodgkin's disease and 1.0 for lymphatic leukemia in males in Scandinavia). The present study examines possible correlations in two countries between incidence of human leukemia-lymphoma and per capita consumption of dairy products, using data extracted from 'Cancer Incidence in Five Continents' Vol. III and the Unit of Statistics, F.A.O. - Rome.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1980,

EPIDEMIOLOGY OF PRECANCEROUS AND EARLY NEOPLASTIC LESIONS OF THE UTERINE CERVIX AND CORPUS

S. Munteanu, Institutul Oncologic Cluj-Napoca, Dept. of Early Diagnosis of Uterine Cancer, *34-36 Republicii, 3400 Cluj-Napoca, Romania* (D-IARC-79-472)

The objective is to examine the relations between age at first sexual intercourse, age at first birth, marital status, number of births before age 19 and other known aetiological and epidemiological factors and cervical and corpus neoplasia. A form containing 38 groups of questions, all coded, is filled in by any patient attending the Colposcopy Early Diagnosis Clinic, an out-patient clinic in the Oncological Institute. The following investigative methods are used: Physical examination, various cytological and biopsy examinations, colposcopy, and a thorough inquiry into sexual activity: these are repeated periodically. About 2,500 patients with various benign and malignant cervical lesions and 300 patients with endometrial carcinoma have been recorded and are involved in a long-term follow-up study.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1981,

CANCER OF THE OESOPHAGUS

D.G. Hamilton, South African Inst. for Medical Research, Dept. of Morbid Anatomy & Histopathology, *Hospital St., P.O. Box 1038, Johannesburg 2000, Transvaal, South Africa*

Cancer of the oesophagus is one of the commonest tumors in African Blacks but it is infrequent in Whites. Recent work indicates that there may be a difference in tissue trace elements between these two population groups and this might affect serum antioxidant activity. The study aims to quantitate trace elements in White and Black patients by analysis of serum, hair and tissues. Trace elements of particular interest are zinc, iron and calcium. A special subgroup of the Black patients are those with cancer of the oesophagus. Atomic absorption spectrophotometry and neutron activation analysis are being used for trace element studies. A technique measuring the ability of serum to inhibit oxidation in brain tissue assesses its antioxidant activity. Possible further developments of this study will be the effects of dietary modification on tissue trece elements and serum antioxidant activity.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1982,

OCCUPATIONAL CANCER RISK ESTIMATION IN CHEMICAL INDUSTRY

B. Barhad, Academia de Stiinte Medicale, Inst. of Hygiene & Public Health, Dept. of Occupational Medicine, *Strada Biserica Amzei 29, Bucharest, Romania* (D-IARC-79-464)

A survey to establish the number of workers exposed to carcinogenic chemicals has been carried out in several large plants in the chemical industry. The data have been correlated with levels and lengths of exposure and cancer morbidity. The study aims to develop better methods of circulating information about workers exposed to carcinogenic substances, taking into account movement of the worker population, retirement and the expansion of the chemical industry, and to apply primary and secondary preventive measures to exposed individuals.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1983,

CYTOLOGICAL MONITORING OF WORKERS EXPOSED TO AROMTIC AMINES IN A SYNTHETIC DYES PLANT

L. Melinte, Academia de Stiinte Medicale, Inst. of Hygiene & Public Health, Dept. of Occupational Cytopathology, *Strada Biserica Amzei 29, Bucharest, Romania* (D-IARC-79-468)

Biennial cytological screening, together with wet urinary sediment examination and the urological control (cystoscopy) have been conducted since 1970 to study the effect of occupation on urinary bladder cancer. The results are correlated with age, sex, smoking habits, length of exposure and exposure levels. The cases discovered in the early phase have a high survival rate.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1984,

MORBIDITY SURVEY IN RELATION TO OCCUPATIONAL EXPOSURE TO VINYL CHLORIDE

A. Tarpa, Ministry of Chemical Industry, Labour Protection & Hygiene Centre, Dept. of Prevention of Occupational Diseases, *59 Pop de Basesti, 73244 Bucharest 3, Romania* (D-IARC-79-469)

Since 1975, over 700 workers exposed to vinyl chloride at three industrial plants in Romania have been examined every year. The survey entails health questionnaires, medical examinations, biochemical, immunological and other health indices, such as respiratory and X-ray investigations and genetic studies. Serum are estimated AFP and CEA. The aim of this study is to define the general effects (including carcinogenic properties) of vinyl chloride exposure.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1985,

RISK IN WORKERS EXPOSED TO BENZENE

A. Tarpa, Ministry of Chemical Industry, Labour Protection & Hygiene Centre, Dept. of Prevention of Occupational Diseases, *59 Pop de Basesti, 73244 Bucharest 3, Romania* (D-IARC-79-470)

The aim of the study is to develop a prospective study of workers exposed to benzene in several petrochemical and insecticide plants in Romania. It is proposed to examine especially blood pathology by haematological, biochemical and radioimmunological methods, and to correlate these results with the levels and lengths of exposure. The group, at present consisting of over 600 workers, will be followed up for the next few years.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1986,

GASTRIC CARCINOMA IN THE NORTH OF PORTUGAL - A RETROSPECTIVE STUDY

D. Serrao, Hospital de S. Joao, Dept. of Pathology, *Asprela, 4200 Porto, Portugal* (D-IARC-79-463)

Patients with the intestinal type of gastric cancer and those with the diffuse type will be questioned about diet and place of residence, occupation and socio-economic status. The answers will be compared with those obtained from patients with colo-rectal cancer. Immunological status in both groups will also be examined.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1987,

LUNG CANCER MORBIDITY IN WORKERS EXPOSED TO INDUSTRIAL CHEMICALS

R. Maties, Academia de Stiinte Medicale, Inst. of Hygiene & Public Health, Dept. of Occupational Medicine, *Strada Biserica Amzei 29, Bucharest, Romania* (D-IARC-79-466)

The aim of the study is to evaluate the relation between lung cancer and occupational exposure to chromium salts and asbestos. Parameters of exposure which may have an influence on morbidity levels are identified and the relation of possible risk factors other than occupation (smoking habits, residence, previous morbidity) to lung cancer morbidity examined. The project consists of a retrospective study on lung cancer morbidity and mortality among workers exposed to asbestos and bichromates in two plants which have been in operation for more than 30 years, and a prospective follow-up of workers actually exposed. The results of periodical screening (standard chest radiographs, sputum cytology, clinical examination) are recorded and offer a comprehensive description of the changes in the health status.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1988,

URINARY CYTOLOGICAL INVESTIGATIONS FOR DETECTION OF BLADDER CANCER AMONG RUBBER WORKERS EXPOSED TO PHENYL-2-NAPHTHYLAMINE

R.M. Herivan, Ministry of Chemical Industry, Labour Protection & Hygiene Centre, Cytology Laboratory, *59 Pop de Basesti, 73244 Bucharest 3, Romania* (D-IARC-79-465)

The objective is to monitor the incidence of urinary bladder cancer in subjects exposed to phenyl-2-naphthylamine in the rubber industry. Cytological exfoliative screening with Giemsa stain and Papanicolaou's classification is used for early detection.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1989,

PRIMARY LUNG CANCER INCIDENCE IN A HIGH RISK GROUP IN AN INDUSTRIAL POPULATION

R. Krzysko, Regional Lung Diseases Control Centre, Unit of Operational Research, *Szamarzewskiego 62, 60569 Poznan, Poland* (D-IARC-79-456)

On the basis of current concepts of a group at high risk for lung cancer, a population suitable for study has been selected. Within this group personal history data are collected and routine cytology and mass miniature radiography (MMR) examinations performed every four months. An estimated 40,000 persons will be available for study, and the cohorts will be followed up for the next five years. There will be a control group consisting of 50,000 persons who have a routine yearly MMR examination. All the data will be finally analyzed in the Unit. Occupational hazards will be simultaneously analyzed by the Environmental Health Unit. It is hoped that epidemiologically significant factors, which may point to a more precise definition of the concept 'at high risk' for lung cancer, will be determined.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1990,

MORTALITY FROM CANCER IN POZNAN IN THE YEAR 1978

T. Walter, Akademia Medyczna, Inst. of Social Medicine, Dept. of Epidemiology, *Fredry St. 10, 61701 Poznan, Poland* (D-IARC-79-457)

Death certificates will be used as the basis of a statistical analysis of age, sex and seasonal distribution of all types of cancer in the town of Poznan which has a population of 500,000.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1991,

RELATION BETWEEN URBAN AND INDUSTRIAL FACTORS AND MALIGNANT NEOPLASMS IN AN UPPER SILESIA CITY

B. Zemla, Inst. of Oncology, Cancer Epidemiology Unit, *Armii Czerwonej 15, 44100 Gliwice, Poland* (D-IARC-79-452)

The city of Zabrze has been divided into ten districts differing in level and character of industralization.

Correlations are made between stomach and lung cancer incidence in native and migrant populations, classified by sex, age, residence, and quality of water supply (including hardness, content of nitrite, nitrate, iron, magnesium, manganese, silicon), as well as air pollution, mainly levels of aromatic hydrocarbon emissions, and other environmental factors.
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1992,

THYROID CANCER IN AN ENDEMIC GOITER ZONE

P.A. Rolon, Registro Nacional de Patologia Tumoral, Dept. of Pathology, *G. Arias y Tte. Rodi, Asuncion, Paraguay* (D-IARC-79-446)

The Republic of Paraguay is a region of iodine-deficiency endemic goiter, the frequency being some 30-40% in adults with foci where the disease is even more common. Iodinization of salt began recently. The objective of this study is to determine the incidence of thyroid cancer for the period 1960-1969 and to evaluate the effect of salt iodinization. It is known that the incidence of goiter is decreasing; similar decrease has been observed in Switzerland and Mendoza Province in Argentina. It is hoped that the study of thyroid nodules in a zone of endemic goiter may demonstrate whether there is a direct relationship between goiter and carcinoma. A preliminary study showed a high frequency of anaplastic tumors in Paraguay compared with the Province of Mendoza, possibly due to a failure to differentiate the papillary and follicular forms resulting from lack of iodine.
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1993,

MALIGNANT TUMORS IN A NATIVE POPULATION UNDER MEDICAL SURVEILLANCE

P.A. Rolon, Registro Nacional de Patologia Tumoral, Dept. of Pathology, *G. Arias y Tte. Rodi, Asuncion, Paraguay* (D-IARC-79-448)

The relationship between cultural factors, social habits and cancer is being studied in a primitive ethnic group of 10,000 persons under the care of a qualified medical doctor. This population is stable and utilizes hospital service provided by the Mennonite settlers in the Paraguayan Chaco. Relative frequency data for cancer for each five-year age-group will determined. The information available consists of clinical and laboratory records as well as histopathological diagnosis. The frequency of cancer will be compared with the habits of this population and with data available in the National Registry of Tumour Pathology. It is realized that results could be biased by excess of easily accessible lesions. However, the regular surveillance and the possibility of examining deep-seated organs should reduce such bias.
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1994,

MALIGNANT MELANOMA AND GEOGRAPHICAL SITUATION

P.A. Rolon, Registro Nacional de Patologia Tumoral, Dept. of Pathology, *G. Arias y Tte. Rodi, Asuncion, Paraguay* (D-IARC-79-447)

The geographical location of the Republic of Paraguay, in the same latitude as South Africa and Australia, permits study of the anatomical localization of malignant melanoma and the relative importance of cultural and racial characteristics. The Tumour Pathology Registry of Paraguay and the Institute of Pathological Anatomy centralize all histologically diagnosed cancers in the country. Previous study of this material concentrated on the frequency of localizing on the sole of the foot, as the habit of walking barefoot is frequent among the rural population. Cases and clinical details from 1960 are in the Institute files and the period 1976-1980 is now being studied.
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1995,

CERVICAL CANCER EPIDEMIOLOGY IN PANAMA

W.C. Reeves, Gorgas Memorial Lab. of Tropical & Preventive Medicine, Dept. of Virolog/Epidemiology, *P.O. Box 2016, Balboa Heights, Canal Zone* (D-IARC-79-444)

Uterine cervical cancer rates have been increasing in many developing countries. This is particularly marked in the Republic of Panama, which has the highest reported cervical cancer incidence in the world (130/100,000 per year). In addition to his high overall risk, cervical cancer clusters in one province and invasive disease involves an unusually young age cohort. This study aims to identify and evaluate the risk factors associated with the disease in Panama. All hospital and clinic charts from cervical cancer cases verified histologically in Panama between 1974-1977 are being reviewed and key epidemiological information and clinical data are abstracted onto a standardized cancer registry form. This information will be used to define and describe the marked geographical clustering consistently observed in Panama. Results from this initial analysis may be used to augment or modify a case-control study to be conducted in Herrera Province. The case-control study will collect detailed epidemiological information and sera from all surviving cervical cancer cases diagnosed between 1947-1977 and neighborhood/age matched controls. The information will be gathered and used to test the association of past herpes group virus infection, prior sexual practices, patient drug exposure (including in utero), geographical and other factors with the occurrence of cervical cancer.
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1996,

POPULATION-BASED PANAMANIAN NATIONAL CANCER REGISTRY

W.C. Reeves, Gorgas Memorial Lab. of Tropical & Preventive Medicine, Dept. of Virology/Epidemiology, *P.O. Box 2016, Balboa Heights, Canal Zone* (D-IARC-79-445)

Cancer has been recognized as one of the three principal causes of death in Panama since 1968. In recognition of this, Panama initiated National Cancer Registry in 1974. This existing registry records all histologically diagnosed cancers in the Republic by annually reviewing all tissue diagnoses from medical facilities which operate pathology services. The registry includes only minimal clinical/epidemiological information which is recorded on index cards. This study intends to convert the current National Cancer Registry into an internationally standardized format and to maintain the registry on a computer system. Hospital and/or clinic charts from all patients with diagnosed cancer between 1973-1977 are currently being reviewed, abstracted and put into the standardized format. Clinical data obtained from charts of patients diagnosed after 1977 will be recorded immediately in the registry. The standardized registry includes all the information recommended in the WHO Handbook for Standardized Cancer Registry as core data, most of the information recommended as optional data, and additional locally important information. Information from registry forms is punched on cards for computer-based storage and data processing. The computer system currently in operation is the Conversational Computer Statistical System developed at the University of Washington, Seattle. Such conversation will allow a detailed epidemiological description of cancer incidence throughout the Republic of Panama. It is specifically intended to investigate the aetiology of uterine cervical cancer, which has an inordinately high incidence in Panama.
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1997,

INCIDENCE OF PRIMARY CARCINOMA OF THE LIVER IN METROPOLITAN MANILA

J. Baltazar, University of the Philippines, Inst. of Public Health, Dept. of Epidemiology & Biostatistics, *625 Pedro Gil St., Ermita, Manila, Philippines* (D-IARC-79-449)

The marked international variation of the incidence of primary liver cancer probably indicates environmental differences in the population-at-risk. In the Philippines, although autopsy studies had suggested a higher frequency of liver cancer compared to other tumors, incidence data are not available. This population-based study aims to describe the incidence pattern of the disease in a metropolitan area where medical facilities are adequate. From the records of the Central Tumor Registry of the Philippines and from death certificates primary liver cancer cases which were diagnosed during a two-year period, 1975-1976, and which were residents of the study area will be identified. The minimum criterion for diagnosis is clinical evidence of the disease. Overall disease rates as well as those specific for age, sex and administrative subdivisions within the study area will be estimated.
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1998,

NASAL CARCINOMA IN NICKEL WORKERS

W. Torjussen, Central County Hospital Vest Agder, Dept. of Otolaryngology, *4601 Kristiansand, Norway* (D-IARC-79-441)

The objective of the investigation is to study the influence of occupational nickel exposure on the nasal mucosa and body fluids. Plasma, urine and standardized biopsy specimens from the nasal mucosa from 318 nickel workers, 15 retired nickel workers and 57 controls were analyzed for nickel by atomic absorption spectrometry. The biopsy specimens were also graded histologically to reveal precancerous and cancerous changes by applying light and electron microscopical examinations. Histochemical methods were applied to localize the metal within the tissue. A clinical evaluation by rhinoscopy was used to grade the macroscopic changes of the nasal mucosa. Smoking habits and amounts smoked, duration of nickel exposure, type and amounts of airborne nickel exposure and age were evaluated. Multiple regression analysis was performed to explain the histopathological changes and the rhinoscopical findings by independent variables such as nickel exposure, smoking habits, concentrations of nickel in plasma, urine and nasal mucosa, working categories and age.
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.1999,

FREQUENCY OF PRIMARY LIVER CELL CANCER (PLCC) IN A VILLAGE POPULATION IN RELATION TO CARRIAGE OF HEPATITIS B VIRUS (HBV) AND ITS MARKERS

Y.M. Fakunle, Ahmadu Bello University, University Hospital, Dept. of Medicine, *Zaria, Nigeria*

The aim of this study is to determine the frequency of hepatitis virus and PLCC in a population. It is assumed that other environmental factors, mycotoxins, etc., will exert a similar influence on the population. Individuals with and without markers of HBV will be followed over a long period to detect the development of PLCC. It is hoped that the study will throw light on the role of HBV in the causation of PLCC.
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2000,

ANALYSIS OF NORWEGIAN DIETARY SURVEY DATA

E. Bjelke, Universitet i Bergen, Inst. of Hygiene & Social Medicine, *5016 Bergen, Norway* (D-IARC-79-440)

The aim of the study is to examine data on diet, alcohol intake, chewing of tobacco or use of snuff, and data on height and weight to assess the relationships of these factors to subsequent cancer incidence and mortality. Data obtained on other variables, such as place of residence, smoking and physical activity will be considered in the analysis. In this on-going prospective study in Norway, about 1,000 new cancer cases among men are now available for diet-cancer analyses. About 1,000 additional cancer cases in females are available for the height/weight analyses. These analyses are part of a larger project, encompassing case-control studies on diet and gastrointestinal cancer carried out previously, other analyses of the prospective study data, and a parellel prospective study in the USA.
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2001,

NORTHERN BREAST GROUP - BREAST CANCER SURVEY

R. Kay, Auckland University, School of Medicine, Dept. of Surgery, *P.O. Box 2175, Auckland, New Zealand* (D-IARC-79-424)

The purpose of the study is to study the epidemiology of breast cancer in a multi-racial society in New Zealand. This comparison of case characteristics is both between races and within a race. The controls for the latter are 1,000 women attending general practices in Auckland, New Zealand. They will be matched by age and locality with the breast cancer cases. An average of 280 new cases of breast cancer per annum occur in Auckland. Importance is attached to socio-economic groups, height-weight ratios, diet, parity, history of contraceptive practices and previous breast disease. High risk families in Caucasian and Polynesian communities are under review.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2002,

POPULATION SCREENING FOR CERVICAL CANCER

P.G. Vooijs, Katholieke Universiteit Nijmegen, Lab. of Cytopathology, Dept. of Pathology, *Geert Grooteplein Zuid 24, Nijmegen, Netherlands*

Cytological screening of the uterine cervix has proved to be a reliable method for detection of early cervical cancer. The degree of acceptance and effectiveness of such a screening program in the Dutch female population is still unknown. To investigate this question, 3 test regions have been created in the Netherlands. One of these is the region around the city of Nijmegen, where women in the age group of 35-54 years are screened every 3 years. The first screening, examining a total of 72,500 women, was done between 1976 and 1979. A second 3 year period will start in August 1979. The accuracy of cytodiagnosis, acceptance of the screening test by the female population, reasons for non-participation and efficacy of organizational procedures are examined. In a long-term follow-up the effects on morbidity and mortality will be calculated. In the whole area (300,000 inhabitants) cervical cancer morbidity is registered.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2003,

ESOPHAGUS CANCER IN KENYA

A. Wasunna, University of Nairobi, Dept. of Surgery, *P.O. Box 30197, Nairobi, Kenya* (D-IARC-79-403)

This is a study of case characteristics of carcinoma of the esophagus in Kenya. It is a collaborative project including the Department of Surgery and Pathology, University of Nairobi. Data are collected from all patients with esophageal cancer in Kenyatta National Hospital, Nairobi, and in the provincial hospitals of Kisumu, Western Kenya, and Nyeri in the Central Kenya, where the disease appears to be especially frequent. Questionnaires are administered to all histologically confirmed cases. A standard protocol suitable for computer analysis is being used in the study. In the last 12 months 47 new cases of the disease have been documented at the Kenyatta National Hospital alone. There is now clinical follow-up data on 500 patients at the Kenyatta National Hospital.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2004,

LEUKEMIA AND LYMPHOMA IN KOREA

S. Kim, Seoul National University, University Hospital, Dept. of Pathology, *28 Yungundong Chongro-ku, Seoul, Republic of Korea* (D-IARC-79-404)

Chronic lymphoid leukemia and Hodgkin's disease have a very low incidence among Koreans. However, some recent reports indicate an increase in Hodgkin's disease. The study aims to identify the true genetic background and immunological characteristics.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2005,

RELATION BETWEEN AIR POLLUTION AND CANCER

J. Meilof, National Inst. of Public Health, Epidemiology & Regional Laboratories Division, *P.O. Box 1, Antonie Van Leeuwenhoeklaan 9, 3720 BA Bilthoven, Netherlands* (D-IARC-79-411)

In this collaborative project of the International Agency for Research on Cancer and the National Institute for Public Health (RIV) correlation study of air pollution and cancer will be developed which will exploit the unique automated system of air pollution monitoring existing in the Netherlands. The pollution data collected are such that it is possible to produce an integrated average exposure to sulphur dioxide, the oxides of nitrogen, ozone and carbon monoxide for a large number of areas covering the entire country. The Netherlands National Vital Statistics Office will be consulted for information on cancer and other death rates for the areas considered to be meaningful for atmospheric pollution exposures. The Automated Pathological Diagnoses Storage and Retrieval System (PALGA) has an important potential for epidemiological studies as the information about cases of cancer is based on histological diagnoses.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2006,

NUTRITION AND CANCER OF THE COLON - A CASE-CONTROL STUDY IN SPECIFIC GEOGRAPHIC REGIONS OF THE NETHERLANDS

P.F. Guchteneire, Inst. of Social Oncology, *Dr. Molewaterplein 50, Postbus 1738, 3000 DR Rotterdam, Netherlands* (D-IARC-79-417)

Mortality rates for cancer of the colon have been increasing in the Netherlands, as in most Western countries. The standardized mortality rates for colon cancer have been reviewed for the different regions of Holland, and an excess mortality was found in the southern part of the country as compared to the northern part. Dietary differences between the northern and southern provinces could in part be responsible for this variation. A study has been designed to investigate in selected geographic regions the role of nutrition in the causation of cancer of the colon. Nutrient intake data from newly diagnosed colon cancer patients obtained by means of a dietary history questionnaire will be compared to that obtained from hospital and population controls. The effect of socio-economic factors on dietary habits is taken into consideration. Microbiological and biochemical investigations are being considered. A pilot study has been completed.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2007,

DISTRIBUTION OF SITE-SPECIFIC CANCER MORTALITY IN THE NETHERLANDS

P.F. Guchteneire, Inst. of Social Oncology, *Dr. Molewaterplein 50, Postbus 1738, 3000 DR Rotterdam, Netherlands* (D-IARC-79-418)

The objective of the study is to utilize mortality figures to define geographical variations in cancer mortality within the Netherlands. Mortality rates will be standardized for age and sex. Probability testing will be done to assess the significance of high and low mortality rates. The country has been divided into 80 units to make it possible to control for different socio-economic factors. A graphic representation in maps will be made automatically. Computer programs are being developed.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2008,

PRENATAL EVENTS AND CANCER RISK IN THE OFFSPRING

D. Dukkers van Emden, Universiteit van Amsterdam, Dept. of Neonatology, *Spui 21, Amsterdam, Netherlands* (D-IARC-79-410)

The objective is to examine the relationship between use of anti-epileptic drugs or viral infection during pregnancy and cancer risk in the offspring. A follow-up study has been done of the outcome of 249 pregnancies in epileptic women undergoing treatment with anticonvulsants. The children were born 1963-1977. Three children were stillborn, none died subsequently. Postmortem examination in six cases showed multiple congenital abnormalities, no signs of malignancy. In the remaining group of 237 children, one boy, born in 1966, developed Hodgkin's disease (stage I) in 1973. His mother had used phenytoin, phenobarbital and primidone in high dosages during the entire pregnancy. No other malignancies were found in the group. A follow-up study is being done of a small group of children born 1974-1976, with posible congenital infection. So far one possible case of congenital leukemia has been found in a child with possible congenital cytomegaly infection. No other malignancies have been found in the group to date.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2009,

HEPATITIS B VIRUS AND HEPATOCELLULAR CANCER

K. Okita, Yamaguchi University, School of Medicine, Dept. of Internal Medicine, *1144 Kogushi, Ube City, Yamaguchi, Japan* (D-IARC-79-400)

The distribution of hepatitis B-associated antigen and antibody and the incidence of hepatocellular cancer in Yamaguchi Prefecture are being examined. The data obtained will be compared with those from Taiwan where there is a greater number of hepatitis B antigen carriers and a higher incidence of hepatocellular cancer among the population.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2010,

EPIDEMIOLOGY OF NASOPHARYNGEAL CARCINOMA IN JAPAN

S. Sawaki, Yokohama City University, School of Medicine, Dept. of Otorhinolaryngology, *3-46 Urafune, Minami-Ku, Yokohama 232, Kanagawa Ken, Japan* (D-IARC-79-401)

The incidence of nasopharyngeal carcinoma is highest in the populations of Southern China, while in Japanese it is very low. This descriptive epidemiological study of nasopharyngeal carcinoma in Japan aims to discover the reason for this difference. The nasopharyngeal carcinoma cases, observed in the major hospitals of the whole of Japan are reported to this laboratory each year. Age and sex distributions, geographical variation and ethnic background will be examined. Histological sub-classifications of the reported cases are being made, and relationships to Epstein-Barr virus infection (anti-VCA-anti-body titers, etc.) examined.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2011,

ESTIMATION OF PREVALENCE OF CANCER IN JAPAN

K. Aoki, Nagoya University, School of Medicine, Dept. of Preventive Medicine, *65 Tsurumai-cho, Showa-ku, Nagoya 466, Aichi ken, Japan* (D-IARC-79-360)

A one day nation-wide survey of all patients in one tenth of all hospitals and 1/100 of all dispensaries randomly selected throughout Japan has been conducted every year. The date of the survey is the second Wednesday in July. A one month survey of all patients discharged from the same hospitals and dispensaries in June has been carried cut at the same time. Information on more than 300,000 patients except those attending dental clinics, is reported each year. Using these data, the prevalence of cancer in Japan will be estimated.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2012,

CASE-CONTROL STUDY OF ESOPHAGEAL CANCER

K. Aoki, Nagoya University, School of Medicine, Dept. of Preventive Medicine, *65 Tsurumai-cho, Showa-ku, Nagoya 466, Aichi ken, Japan* (D-IARC-79-361)

A high incidence of deaths from esophageal cancer has been recorded in Wakayama Prefecture, where some dietary factors are suspected as carcinogenic agents. Aichi Prefecture has had a low death rate for the same three decades. The purpose of this case-control study is to clarify the role of dietary factors such as hot tea gruel, bracken-fern and others, and also of socio-economic factors in esophageal cancer. The differences between epidemiological features of the esophageal cancer patients in Wakayama and Aichi are to be compared. One hundred fifty cases of esophageal cancer and 300 controls in

Aichi and 100 cases and 200 controls in Wakayama are to be interviewed. Cases are the patients admitted into major hospitals in Nagoya and Wakayama cities. Controls are selected from all patients admitted to the same hospitals, matching age, sex, residence, and date of admission, excluding patients with cancer.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2013,

EPIDEMIOLOGICAL STUDY ON CANCER PATIENTS

T. Hirohata, Kurume University, Dept. of Public Health, *67 Asahi-Machi, Kurume City 830, Fukuoka, Japan* (D-IARC-79-355)

In cooperation with a large hospital in Kyushu, pilot case-control studies examining exposure to unusual chemicals and employment in unusual occupations are being conducted.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2014,

EPIDEMIOLOGICAL STUDY ON CANCER PATIENTS

T. Hirohata, Kurume University, Dept. of Public Health, *67 Asahi-Machi, Kurume City 830, Fukuoka, Japan* (D-IARC-79-356)

In cooperation with a large cancer hospital (600 beds) in Kyushu, case-control studies of occupational and medical exposures are being carried out.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2015,

GEOGRAPHICAL VARIATIONS AND TIME TRENDS OF CANCER MORTALITY IN JAPAN

T. Kuroishi, Aichi Cancer Center Research Inst., Division of Epidemiology, *81 1159 Kanokoden Tashiro-cho, Chikusa-ku, Nagoya 464, Aichi, Japan* (D-IARC-79-365)

Mortality from some malignant neoplasms in Japan shows marked variations in geographical distribution and secular trends. This study aims to describe mortality from cancers of 18 sites for each prefecture and smaller administrative districts in Japan (1969-1976) and to find possible cancer risk factors by examining geographical and chronological relationships between mortality from cancers of various sites and various environmental factors, such as air pollution, food intake, smoking, socioeconomic factors, etc.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2016,

ANALYSES OF GEOGRAPHICAL VARIATIONS AND TIME TRENDS OF MORTALITY FROM MALIGNANT LYMPHOMAS IN JAPAN

H. Shimizu, Aichi Cancer Center Research Inst., Division of Epidemiology, *81 1159 Kanokoden Tashiro-cho, Chikusa-ku, Nagoya 464, Aichi, Japan* (D-IARC-79-371)

The aim of this study is to discover aetiological factors in malignant lymphoma. As a first stage the geographical distribution of mortality from reticulum-cell sarcoma, lymphosarcoma, Hodgkin's disease and other neoplasms of the lymphoid tissue was generally high in the south-western parts of Japan for both sexes in 1969-1976. The geographical distribution of malignant lymphoma was similar to that of lymphatic leukemia in the same period in Japan. The mortality rate of Hodgkin's disease has been calculated for each city and town in two prefectures with a high mortality and several clusters were found in districts around a bay or in small islands in southern parts of Japan. It is considered that these malignancies of the lymphatic and hematopoietic tissue might be caused by similar agents. Pathological information has been collected from Japan Autopsy Reports and this will be analyzed to explore causal factors of the disease. It is also planned to collect and analyze the medical records of malignant lymphoma patients in the Aichi Cancer Center Hospital.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2017,

LUNG CANCER MORTALITY AND AUTOMOBILE EMISSIONS

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To examine the causal association between exposure to vehicular emission and lung cancer, the mortality rates for lung cancer (1969-1974) were analyzed among inhabitants living in the areas within 100 meters from main streets on which more than 1,000 cars pass daily from a.m. to 7 p.m. in Nagoya City. Traffic volume was used as an indicator of the degree of exposure to exhaust gas. The preliminary results show an increase in the standardized mortality ratio (SMR) of lung cancer in parallel with the traffic volume for males. However, for females the SMR was highest in the intermediate areas and did not parallel the traffic volume. No apparent relationships were observed between proximity to streets and lung cancer mortality. Mortality adjusted by smoking history, history of hazardous exposure and residential history showed similar results. The study continues.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2018,

RELATIONSHIP BETWEEN AIR POLLUTION AND CANCER IN JAPAN

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This study aims to clarify the relationship between air pollution and cancer mortality. Sulphur dioxide (SO_2) and nitrogen oxide (NO_2) levels and dust fall were used as indices of air pollution. The average value of each pollutant for each of the 46 prefectures (1967-1975) was related to the age-adjusted mortality rates of cancers of the lung, oesophagus, stomach, breast and uterus (1975) for the corresponding prefecture. In examining relationships between air pollution and cancer mortality, smoking was also taken into account. The relationship between SO_2 and lung cancer and breast cancer in females and that between NO_2 and lung cancer in both sexes and breast cancer in females was statistically significant after taking into account the proportion of smokers.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2019,

EPIDEMIOLOGICAL STUDY OF STOMACH CANCER

H. Kurita, Nagoya City University, School of Medicine, Dept. of Public Health, *Furo-Cho Chikusa-ku, Mizuho-ku, Nagoya shi 467, Aichi Ken, Japan* (D-IARC-79-364)

Japan has a very high incidence of stomach cancer. The aim of this study is to examine the aetiology of stomach cancer from a clinical and epidemiological point of view. Stomach cancer patients who visit the Aichi Cancer Center Hospital are interviewed to obtain epidemiological information, and this information is analyzed in relation to the clincial picture of each of the patients, including blood group types and past history. Healthy people undergoing gastric cancer mass survey or similar examinations are used as controls.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2020,

EPIDEMIOLOGY OF CANCER OF THE MAXILLARY SINUS

A. Hiyama, Center for Adult Diseases, Dept. of Field Research, *3-3 Nakamichi 1-Chome, Higashinari-ku, Osaka 537, Japan, Japan* (D-IARC-79-378)

Cancer of the maxillary sinus is a rare disease, but its incidence in Japan is the highest in the world according to data from the International Agency for Research on cancer. Preliminary results of a case-control study reveal that cancer of the maxillary sinus is strongly associated with chronic sinusitis. A follow-up study of patients diagnosed as having chronic sinusitis is planned in order to examine whether there is an increased risk malignant change in these cases.

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2.2021,

ESTIMATION OF UNREPORTED SURVIVING CANCER CASES IN A REGISTRY AREA

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The estimation of the number of unreported surviving cancer cases in the registration area is always an important subject for all population-based cancer registries, because this information cannot be obtained from death certificates. By using two methods developed in the registry, it was estimated that Osaka Cancer Registry has been covering 88-92 percent of the total cancer cases in the Osaka area. Completeness of registration will be estimated for selected sites in Osaka and in areas of other registries.

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2.2022,

THE LATE RADIATION EFFECTS OF ATOMIC BOMB EXPOSURE IN THE POPULATION OF HIROSHIMA AND NAGASAKI, JAPAN

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The Atomic Bomb Casualty Commission (ABCC) in Japan was organized in 1947 under the supervision of the U.S. National Academy of Sciences (NAS) to detect late radiation effects in the people of Hiroshima and Nagasaki exposed to the 1945 atomic bombs. In 1975 ABCC was reorganized as the Radiation Effects Research Foundation (RERF), a private non-profit foundation funded equally by Japan and the United States. The RERF offices, laboratories, and examination facilities are maintained in both Hiroshima and Nagasaki, where adult health examinations, autopsies, clinical research, and epidemiological studies are conducted. The basic population for the epidemiological and autopsy studies numbers about 70,000 persons. Biennial clinical examinations are conducted on about 15,000 survivors and their controls in the two cities. A number of important radiation-related clinical disorders and abnormalities have been detected in the atomic bomb survivors, including increased frequency of lenticular opacities, thyroid tumors, leukemia, chromosome aberrations in the peripheral lymphocytes, and slight impairment of growth and development of those exposed early in life. Microcephaly and mental retardation have been noted in some of those exposed in utero, especially if significant exposure occurred during the early period of gestation. Recent findings indicate an increased incidence of solid tumors among the more heavily irradiated survivors, most apparent for breast and lung cancers; this may extend to cancer of stomach and other sites. The RERF plans to continue its health examination, mortality, and autopsy programs. Particular attention in the clinical examination population is now being focused on early cancer detection, cancer education, alteration of immunologic competence, and acceleration of aging. The tumor and tissue registry programs in Hiroshima and Nagasaki complement the RERF studies for the detection of radiation-induced tumors.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2023,

ANALYSIS OF MASS HEALTH EXAMINATION FOR UTERINE CERVICAL CANCER IN JAPAN

H. Yanagawa, Jichi Medical School, Dept. of Public Health, *3311-1 Yakushiji, Minami, kawachi-machi, Tochigi-ken 32904, Japan* (D-IARC-79-349)

The effectiveness of mass health examinations for uterine cervical cancer is being evaluated by the aid of mathematical models based on the standard examination system widely employed in Japan. Epidemiological data such as incidence, and prevalence rates of early and later stages, and mortality rates from cervical cancer were collected from 18 local cancer institutions. The evaluation of the mass examination is made according to the interval between examinations, coverage rate in the population, and selection of high risk populations.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2024,

PATHOLOGICAL SURVEY OF TUMORS OCCURRING IN NARA PREFECTURE

Y. Tsubura, Nara Medical University, Dept. of Pathology, *840 Shijo cho, Nara-ken 634, Kashihara Shi, Japan* (D-IARC-79-348)

The frequency of the various types of tumors occurring in Nara Prefecture are surveyed by the registration of pathological autopsies and surgical specimens. The anatomical and age distribution of these neoplasms in Nara Prefecture is being compared with that in Japan as a whole and other countries.

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2.2025,

CANCER OF THE BREAST - A CASE-CONTROL STUDY

S. Sivayoham, National Cancer Registry, Dept. of Health Services, *385 Deans Rd., Colombo 10, Sri Lanka* (D-IARC-79-495)

Cancers of the breast form 10% of all cancers in Sri Lanka. In this epidemiological investigation it is proposed to study as risk factors parity, age at first pregnancy, age at first full-term delivery, breast feeding history, age at menarche and menopause in the local female population. The cases will be drawn from the Cancer Institute, Maharagama, and the General Hospital, Colombo, and the control group from the non-cancer in-patients of the General Hospital in Colombo.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2026,

CANCER OF THE ESOPHAGUS - A CASE-CONTROL STUDY

S. Sivayoham, National Cancer Registry, Dept. of Health Services, *385 Deans Rd., Colombo 10, Sri Lanka* (D-IARC-79-496)

Cancer of the esophagus forms 9% of all cancers in Sri Lanka, with an age-adjusted incidence of 12.0 for males and 14.9 for females. The unique feature is the very high incidence of esophageal cancer among females, although the females of this country are very rarely addicted to alcohol and smoking (suspected carcinogens). The objective of the epidemiological investigation is to study the association between possible risks, betel chewing, tobacco chewing, anemia and malnutrition, socio-economic levels, smoking, the consumption of alcoholic drinks and esophageal cancer. The cases will be drawn from the Cancer Institute, Maharagama, and the General Hospital, Colombo, and the control group from the non-cancer inpatients of the General Hospital, Colombo.

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2.2027,

CANCER OF THE OROPHARYNX - A CASE-CONTROL STUDY

S. Sivayoham, National Cancer Registry, Dept. of Health Services, *385 Deans Rd., Colombo 10, Sri Lanka* (D-IARC-79-497)

The data available from the Sri Lanka National Cancer Registry show that oropharyngeal neoplasms constitute 39% of all cancers in Sri Lanka. The age-adjusted rates, when compared with other cancer registries, are very high, if not the highest. For example, the age-adjusted rate for mouth cancers is 56.7 for males and 20.5 for females, many times higher than that provided by any other registry. The objective of the present epidemiological investigation is to study the association between possible risk factors, betel chewing, smoking, the consumption of alcoholic drinks, oral hygiene, socioeconomic factors, and oropharyngeal cancers in Sri Lanka. The cases will be drawn from the Cancer Institute, Maharagama, and the General Hospital, Colombo, and the control group from non-cancer inpatients of the General Hospital, Colombo.

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2.2028,

A PROSPECTIVE SURVEY OF CANCER IN LESOTHO 1970-1974

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1,223 cases of cancer have been collected between 1970 and 1974. The crude rates and epidemiology of the main cancers (cervix, breast and liver) are being determined with the help of the recently published Lesotho Census of 1976. Analysis of the questionnaires completed by the patients show that they are more traditional, less educated and poorer than a similar group of healthy controls. Furthermore, cancer of the cervix patients ingest substantially more fermented porridges and drinks which have been recently shown to contain the mycotoxin zearalenone.

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2.2029,

LEUKEMIA IN SUDAN

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Only a few preiminary studies, consisting of small numbers of cases, have been published on the incidence of leukemia in the Sudan. This vast country has unparalleled variations in environment and ethnic backgrounds. The present study aims to assess the incidence of the different types of leukemia by age and sex and their regional distribution within the Sudan and to find out whether there is any association between environmental factors and the incidence of leukemia. A personal history which includes the locality and the patient's tribe is taken for all the leukemia cases seen during the period of the study. These cases are examined by one or more of the study collaborators and clinical diagnosis is made. The latter is confirmed by peripheral blood count and a bone marrow examination which are carried out in the hematology department of the University of Khartoum. Cytochemical staining is used in the controversial cases. The findings are recorded on special cards and at the end of the first part of the study 256 cases have been collected.

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2.2030,

COHORT STUDY OF CHROMIUM-EXPOSED WORKERS

R. Puntoni, Universita degli Studi di Genova, Inst. de Oncologia, Dept. of Epidemiology, *Viale Benedetto 15, Pad. B, 16132 Genoa, Italy* (D-IARC-79-321)

In the Liguria region there is a factory that produces both hexavalent and trivalent chromium salts. The workers in the factory are exposed to large doses of chromium. An investigation of the causes of death among about 1,300 workers employed in the period 1 January 1958 to 1 January 1978 is being undertaken. The expected deaths will be calculated on the basis of the death rates for the people living in the two villages surrounding the factory.

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2.2031,

COHORT STUDY OF REFINERY WORKERS

R. Puntoni, Universita degli Studi di Genova, Inst. de Oncologia, Dept. of Epidemiology, *Viale Benedetto 15, Pad. B, 16132 Genoa, Italy* (D-IARC-79-322)

In the town of La Spezia there is a big refinery. The workers, approximately 500, at this refinery are exposed to several petroleum derivates. Many of these chemicals are well-known carcinogens, for instance polycyclic hydrocarbons. An investigation into the causes of death of those workers is being carried out and data on all the causes of death in the period 1960 to 1977 compiled. For comparison, the expected number of deaths will be estimated from age-specific male death rates for the La Spezia population during the same period.

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2.2032,

MORTALITY EXPERIENCE AMONG POLYCHLORINATED BIPHENYL WORKERS

P.A. Bertazzi, Universita degli Studi di Milano, Inst. of Occupational Health, Dept. of Epidemiology, *Via San Babila 8, 20122 Milan, Italy* (D-IARC-79-324)

Animal experiment studies and some human data support a possible association between polychlorinated biphenyls (PCBs) exposure and cancer in man. The aim of the study is to assess mortality in the period 1955-1975 among workers employed in a capacitor and transformer industry operating since 1947. The personal records of the 2,317 workers employed since the beginning of manufacture have been obtained from the factory. For each subject date and place of birth, date of entry and leaving the industry and type of work performed are available; date, place, and primary cause of death will be ascertained from death certificates. The sex, age and cause-specific mortality of people living in the same city where the factory is located will be used for comparison.

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2.2033,

PRIMARY INTRACRANIAL TUMORS IN TRIESTE

C. Bianchi, Universita degli Studi di Trieste, Fac. di Medicina, Inst. of Pathological Anatomy & Histology, *via Stuparich 1, Trieste, Italy* (D-IARC-79-335)

Cases in which a diagnosis of primary intracranial tumor is made at biopsy or autopsy in the Province of Trieste will be collected. Detailed personal and medical data will be obtained for each case from the patient or relatives by personal interview. In this, attention will be focused on the following points: diet, tobacco and alcohol habits, residence at different periods of life, occupational history, contacts with animals, vaccinations, viral diseases, diagnostic and therapeutic radiations, drug use, etc.

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2.2034,

A FOLLOW-UP STUDY OF LEPROSY PATIENTS

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It is known that there is a high cell-mediated immune response in tuberculoid leprosy, whereas such a response is absent in lepromatoid leprosy. Recently DDS (diamino-diphenyl-sulfone), which is used to treat leprosy, has been found to be carcinogenic in animal experiments. The aim of this study is to examine the mortality of leprosy patients with special reference to malignant neoplasms. Some 2,000 patients admitted to a leprosarium, from 1956 to 1977, are analyzed by types of the disease and their mortality experience is compared with that of the general population in Japan. The data will also be analyzed in terms of possible carcinogenicity in patients treated with the drug.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2035,

EPIDEMIOLOGY OF THYROID CANCER

G. Maaarelli, Universita degli Studi di Sassari, Inst. of Morbid Anatomy, *Via Matteotti 58, 07100 Sassari, Italy* (D-IARC-79-333)

It is intended to check the incidence of thyroid cancer in Sardinia in order to identify incidental clustering and the relationship to environmental iodine concentration. The survey will use the diagnoses from the three Departments of Pathology on the island.

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2.2036,

EPIDEMIOLOGY OF MALIGNANT LYMPHOMAS

G. Massarelli, Universita degli Studi di Sassari, Inst. of Morbid Anatomy, *Via Matteotti 58, 07100 Sassari, Italy* (D-IARC-79-332)

Sardinia is an island in the Mediterranean. Its inhabitants, due to geography, history and socio-economic conditions, could be considered as homogeneous in genetic characteristics and customs. Beta-thalassemia and Echinococcus granulosus infection are endemic diseases. The incidence of malignant lympho-

mas in sardinia will be studied to evaluate incidental clustering and relationship to endemic pathology. The survey will use the diagnoses from the three departments of pathology on the island.
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2037,

EPIDEMIOLOGY OF CHILDHOOD CANCER IN THE PROVINCE OF TORINO, ITALY

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A special registry of cancers in children (ages 0-14) among residents in the Province of Torino (total population at the 1971 census 2,287,016, of which 497,223 were ages 0-14) has been operating since 1965. Possible sources of reports are periodically visited and controlled to ensure that reporting of cancers in children to the Cancer Registry is complete. Data for 1965-1974 have been submitted for publication. Rates are similar to those of other industrialized countries in the Western world. Incidence and mortality rates of cancer at different sites have been calculated for the city of Torino and the rest of the province as well as for different areas within the province. Only neurogenic tumors show some geographical differences. By July 1979 collection of cases will be completed for the period up to December 1978. Trends in incidence, mortality and lethality rates are being investigated as well as the distribution of cancer in children among the autochthonous population as compared to the population immigrating from other parts of Italy.
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2038,

EPIDEMIOLOGY OF BREAST CANCER

G. Massarelli, Universita degli Studi di Sassari, Inst. of Morbid Anatomy, *Via Matteotti 58, 07100 Sassari, Italy* (D-IARC-79-334)

The incidence of breast cancer in Sardinia will be studied in order to identify incidental clustering and the relationship to other pathology. The survey will use the diagnoses from three departments of pathology on the island.
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2039,

EPIDEMIOLOGY OF KAPOSI'S SARCOMA IN SARDINIA

D.M. Cerimele, Universita degli Studi di Sassari, Dept. of Dermatology, *Viale Mancini 5, 07100 Sassari, Italy* (D-IARC-79-330)

The main goal of the present research is to analyze the incidence of Kaposi's sarcoma in Sardinia and to establish whether generalized forms of the disease, like those described in Uganda, are present and to what extent. Kaposi's sarcoma in Sardinia does seem to be more frequent than in other parts of Italy and is certainly more frequent than in the other countries of Europe. The study will investigate the distribution of Kaposi's sarcoma in Sardinia to see if the disease is more common on the coast or in the interior part of the island and if the disease is associated with other diseases such as diabetes, malaria, tuberculosis, Mediterranean anemia, Hodgkin's disease or other lymphomas. An examination of cell-mediated immunity in patients affected by Kaposi's sarcoma has been started to investigate whether there is a correlation between the generalization of the disease and a possible impairment of the cell-mediated immunity.
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2040,

ENVIRONMENTAL FACTORS AND THE DEVELOPMENT OF SKIN CANCER

D.M. Cerimele, Universita degli Studi di Sassari, Dept. of Dermatology, *Viale Mancini 5, 07100 Sassari, Italy* (D-IARC-79-331)

There is ample evidence that environmental factors and particularly prolonged exposure to the rays of the sun play a significant role in the development of skin cancer. This study intends to determine the actual incidence of skin cancers in Sardinia, and the degree to which environmental and constitutional factors are involved. A questionnaire, developed for the present study, collects information from skin cancer patients on place of birth, place of residence during last ten years, place of present residence, color of the skin, eyes and hair, capacity to tan and time of exposure to the sun. Patients treated are followed up in order to establish if people who develop skin cancer are prone to develop new cancers of the skin or inner organs in the future.
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2.2041,

SURVIVAL OF BREAST CANCER PATIENTS RELATED TO RISK FACTORS

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Survival rates for patients with breast cancer have been reported to be different not only due to the extent of the disease and efficiency of the treatment but also in connection with some other factors. This research is based on samples from the previously presented case -control study, consisting of 500 breast cancer cases who have undergone initial treatment in the period 1967-1973. The surveillance system is introduced by the Estonian Cancer Registry. The aims of the study are to evaluate the relationship between certain risk factors (family history, age at first birth, age at menarche, some allied diseases) and probability of survival.
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2042,

IS ANGIOSARCOMA OF THE LIVER ASSOCIATED WITH VINYL CHLORIDE MONOMER EXPOSURE IN SOUTH AFRICA?

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In South Africa the main producer of polyvinyl chloride plastic has two factories. It has been manufactured at Umbogintwini since 1950, but at the Midlands factory for only eight years. The present labor force is being monitored by liver tests and clinical and radiological examinations. Ex-employees are being traced, especially those from Umbogintwini, in whom, if they were exposed to vinyl chloride monomer, the possible latent period of 20-30 years has now been reached.
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2043,

THE PECULIARITIES OF MALIGNANT TUMORS SPREADING IN THE BYELORUSSIAN SSR AND STUDY OF FACTORS INFLUENCING THE RISK OF THE DISEASE

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The aim of the investigation is to study high-risk population groups for the early detection and prevention of cancer. A system of centralized data processing of all patients with malignant tumors detected in the Republic is maintained with the help of a computer and special forms of medical documentation containing the necessary information of the basis of 31 points (sex, age, residence, nationality, profession, diagnosis, stage, histological type, form of treatment, outcome, etc.).
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2044,

NATIONAL PLAN FOR POPULATION-BASED CANCER REGISTERIES IN SPAIN

J.M. Francia Vina, Ministerio de Sanidad y Seguridad Social, Seccion di Enfermedades Cronicas, *Plaza de Espana 17, Madrid 13, Spain* (D-IARC-79-492)

The National Cancer Registry Plan involves the setting up of four population-based cancer registeries (Oviedo, Seville, Tenerife and Valladolid) which will be connected with the two already existing (zaragoza and Navarra). Considering the considerable geographical, cultural and socio-economic differences between these regions which represent large areas of spain, the interpretation of observed differences is of very great epidemiological interest. In addition, the registry organization intends to analyze the requirements for oncological health care in Spain and to coordinate the elaboration of program of primary prevention.
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2045,

AN ASSESSMENT OF ORCEIN-POSITIVE STAINING IN THE LIVERS OF PATIENTS WITH HEPATOCELLULAR CARCINOMA

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Several studies in Africa have shown that there is a high incidence of HBAg positivity in the non-neoplastic liver in subjects with hepatocellular carcinoma. This is also apparent in several studies from Southern Africa with particular reference to the Shangaan miners working in tha South African gold mines and coming originally from Mozambique. In these, approximately 30-40% of the subjects with hepatocellular carcinoma also show orcein-positive staining for HBAg in the non-neoplastic liver. However, a random study of hepatocellular carcinomas diagnosed at Baragwanath Hospital itself has failed to demonstrate similar findings. It should be pointed out that the population served by Baragwanath Hospital is derived from Soweto, a large urban center twelve miles south west of Johannesburg. The majority of these subjects have, therefore, been in an urbanized situation for some considerable time. A random study of something like 36 hepatocellular carcinomas showed only two with orcein positivity in the non-neoplastic liver. This study should be expanded into a prospective one, because if these findings are confirmed, the importance of the hepatitis B virus in the aetiology of hepatocellular carcinoma must diminish. It is possible that, although these subjects may be HBAg surface antigen-negative, they may turn out to be core antigen-positive.
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2046,

INCIDENCE OF SELECTED CANCERS IN SERBIA

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The incidence of neoplasms of bone, connective tissue, skin and breast is being studied by age and sex in an area with 265,000 inhabitants in the Serbian Republic.
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2047,

OCCUPATIONAL CANCER AND CARCINOGENESIS PROMOTION

E. Boyland, University of London, London School of Hygiene & Tropical Medicine, Dept. of Occupational Health, *Keppel St., London WC1E 7HT, England, United Kingdom*

The relationship of local depigmentation of hair to other biological effects, particularly tumor promotion.
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2048,

EPIDEMIOLOGY AND HISTOLOGICAL AND ELECTRON MICROSCOPIC DIAGNOSIS OF THYROID CANCER - IODINE PROPHYLAXIS

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OBJECTIVE: To study endemic goiter, particularly with regard to systematic iodine prophylaxis by means of iodinizing salt, established in 1960.
APPROACH AND PROGRESS: In the Swiss endemic goiter area an analogous salt prophylaxis was introduced about 30 years ago. In this tumor material some interesting changes in morphology and clinical behavior have been noticed, and the results published.
We revised our histological tumor material from the years 1952-1975 and classified the specimens according to the WHO schedule, using uniform criteria. The exact morphological diagnosis (including number of infiltrations of the tumour capsule and blood vessels) was correlated with the clinical course of the disease. The total number of reclassified carcinomas was 453.
Furthermore we studied the epidemiological criteria of these carcinomas (sex, age, incidence) in contrast

to the 10423 non-malignant thyroid tumors. In order to determine the value of diagnostic improvement influencing the morphological pattern of thyroid tumors, we studied the preoperative clinical findings of the non-malignant thyroid tumors (symptoms, radiology, scintigrams, cytology) and correlated these data with the morphological features (weight, macroscopy, histology). For selected years (before and after the introduction of iodine prophylaxis) we studied the lymphocytic infiltration of the thyroid specimens and found a severe increase in this alteration after iodine prophylaxis. To evaluate this dependency of the morphology and biology of thyroid neoplasms on the specific endocrine situation we studied 25 thyroid carcinomas by means of electron microscopy. In differentiated carcinomas we often found disorganization of cytoplasmic organelles such as hyperplasia or hypertrophia of a single organelle type (mitochondria, lysosomes, rough and smooth ER, cytoplasmic vesicles). These findings will allow us to study the physiologic function of the respective cytoplasmic organelles.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2049,

CANCER AMONG RUBBER WORKERS AND ESTIMATION OF CANCER RISK BY URINARY THIOETHER EXCRETION OF WORKERS

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OBJECTIVES: 1. To determine the risk of cancer and risk at mortality among workers at a Finnish rubber factory. 2. Urinary thioether excretion is correlated with exposure under working conditions. 3. Whether urinary thioether excretion is correlated with incidence to cancer among rubber workers.

APPROACH: Epidemiological methods are used to evaluate cancer incidence and mortality by cause of death in groups of workers with different exposure. Urinary thioether excertion is correlated with work conditions and with risk of cancer for purpose of prevention.

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2.2050,

OCCUPATIONAL, ATMOSPHERIC AND DIETARY FACTORS AND HABITS ASSOCIATED WITH EPIDERMOID CARCINOMA OF THE BUCCAL CAVITY IN CHILE

O. Inzunza Hernandez, Hospital Jose Joaquin Aguirre, Asignatura de Fisiopatologia, *Av. Santos Dumont 999, Santiago, Chile* (095)

OBJECTIVE: Information is available in the world literature on factors associated with buccal cancer, such as alcohol and tobacco consumption, diet and other habits. Given the ethnic, geographic, cultural and social differences between Chile and the countries producing this information, we propose to study the factors associated with buccal cancer in this country. The final objective is to apply the information obtained to the diagnosis of a population at high risk of developing buccal cancer and to implement in those persons preventive methods and early diagnosis of the neoplasia. We believe that based upon this analysis we will be able to detect mutagens for further study.

METHODS: 1) Analysis of morbidity and mortality statistics for buccal cancer throughout the country, studying the extent of the sample, distribution by anatomic site, distribution by geographic site, etc. 2) Analysis of the type of diagnosis, e.g., clinical, radiographic, histopathologic, type of pathology, degree of extension of the lesion, etc. 3) Using records of various treatment centers, compile a list of patients who are alive, who have epidermoid carcinoma of the buccal cavity or premalignant or potentially cancerous lesions. 4) Selection of a control group, two controls per cancer patient, comprised of individuals with the following similar characteristics: race, age, level of education, place of residence, occupation. 5) Interview of patients and controls to include: time of development of the lesion, prior diseases, teething, family history, occupation, place of residence, diet, habits, etc. 6) Tabulation and discussion of results.

PROGRESS: We have completed steps 1 and 2 and we are currently compiling a list of patients with epidermoid carcinoma of the buccal cavity.

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2.2051,

MELANOMA, ITS AETIOLOGY AND EPIDEMIOLOGY, AND THE MECHANISM OF SPONTANEOUS REGRESSION

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OBJECTIVES: (a) The exact relationship of solar exposure with the development of melanoma. (b) The nature of regression: spontaneous regression occurs chiefly in melanoma with a intra-epidermal component, and it is characterized by a lymphocytic infiltrate. The process may cease before the tumor is completely destroyed, the lymphocytes disappear and fibrosis occurs. The regression process does not affect metastatic melanoma except for metastases in the skin.

APPROACH: (a) The apparent anomalies in the site-incidences in Queensland may be due to wearing transparent clothing. This has to be investigated. (b) To determine which type of lymphocyte is principally involved.

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2.2052,

A STUDY OF THE USE OF TOBACCO AND ALCOHOL BY MALES AND FEMALES OF TRANSKEI

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Cancer of the oesophagus occurs at very high frequency in Transkei. There is evidence that the use of commerical pipe tobacco smoked either in pipes or as hand-rolled cigarettes may be responsible, or partly responsible, for the disease. To investigate this, a field study of geographical regions having higher and lower incidence rates (than the overall rate) of oesophageal cancer in the resident population of Transkei was carried out. Nine hundred detailed questionnaires are now being analysed and results will shortly be available.

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2.2053,

ANALYSIS OF CANCER EXPERIENCE IN THE FRAMINGHAM HEART STUDY

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The Framingham Heart Study has followed 5209 persons since 1949 by means of biennial examinations and hospital and death record surveillance. The primary aim has been to identify personal characteristics and physiological measurements related to the occurrence of heart disease. Data on other major illnesses have also been obtained. The analysis of cancer experience in this cohort will relate the incidence and mortality from cancer at each specific site to a wide variety of measurements accumulated during the last 25 years of follow-up.

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2.2054,

RADIATION ASSOCIATED THYROID CARCINOMA

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An attempt is being made to find patients who had radiation to the thyroid area in childhood, study them intensively by clinical and laboratory means, and detect the presence or absence of thyroid carcinoma. Patients who have possible tumors as a result of radiation are treated by thyroidectomy. The natural history of the thyroid tumors and the value of surgery, prophylactic thyroid hormone suppression, and radioactive iodide therapy of the neoplasms, as well as immunological methods for control of metastatic disease, are being studied.

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2.2055,

JAPAN-HAWAII CANCER STUDY

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In recent years the Japanese in Hawaii have experienced cancer incidence and mortality rates which are intermediate to the rates of indigenous Japanese and US-Whites. Because genetic variables are presumably held constant in comparisons between native and migrated Japanese, this shift in the cancer experience of the 'Westernized' Japanese in Hawaii strongly suggests that environmental factors play a major role in oncogenesis. Furthermore, this spontaneous sociomedical experience among the Japanese provides a unique opportunity to isolate specific environmental, biochemical and pathologic variables which may be etiologically associated with different types of cancerous lesions. Of special interest is the observed reciprocal relationship of gastric and colorectal cancer among the migrant Hawaii Japanese. They have manifested a falling rate for gastric cancer and a rising trend for malignant colorectal tumors. The study has utilized the examined population of the Honolulu Heart Program, which consisted of 8,006 men of Japanese ancestry who were born from 1900 through 1919 and seen from 1965 to 1968 in Hawaii. Approximately 6,800 of the men have since returned for a repeat examination, and these are the men now under surveillance in the Japan-Hawaii center study. There are three major end points in this surveillance: (1) The occurrence of new cases of cancer; (2) Deaths due to different types of cancer; (3) Appropriate pathologic findings from surgical specimens or necropsies.

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2.2056,

EPIDEMIOLOGICAL ANALYSIS OF EFFECTS OF RADIUM

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Epidemiological studies are being conducted in order to determine the health effects of exposure to radium. Persons exposed to radium in various parts of the United States are being traced from records of radium dial companies and from other sources. Follow-up of persons located includes determination of vital status and analysis of causes of death (obtained from death certificates) for all, and medical examination, measurements of body radioactivity, and analysis of autopsy reports or materials for part of the group. Analyses of morbidity and mortality are made within the group in relation to body burden of radium. Dose-response patterns are being determined for bone sarcomas with reference to bone sarcomas and carcinomas of the mastoids and the paranasal sinuses. Further analyses will involve other diseases. Mortality and morbidity in specific subgroups of radium cases (e.g., radium dial workers ascertained from employment lists) are being compared with U.S. statistics, with consideration of sex, and other demographic characteristics. At present, about 2,000 persons have been located and measured for radioactivity. Studies of the health of the offspring of certain groups (i.e., female radium dial workers) are also planned.

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2.2057,

CANCER MORTALITY IN THE LAST TWENTY YEARS IN SPECIFIC COUNTIES AND CITIES OF MINNESOTA

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Since 1956, the Reserve Mining Company has been dumping its taconite residues containing asbestos fiber into Lake Superior, which is the source of the Duluth, Minnesota, water supply. There is no doubt that asbestos workers experience many times more malignancies in different sites (mesothelioma, lung and possibly gastrointestinal tract) than the general population. Analytical study of the cancer pattern in the Duluth population (exposed) and other counties and cities of Minnesota (non-exposed) in the last 20 years by age, sex and specific sites is being undertaken.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2058,

RISK OF LEUKAEMIA IN CHILDREN WHOSE MOTHERS HAD EXPOSURE TO VIRUS DISEASES IN PREGNANCY

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The aim of the study is to determine whether virus is responsible directly or indirectly in initiating leukemia in children under 15 years of age. Data on the health histories of leukemic children and random controls and their families from the Tri-State Leukaemia Survey carried out in the three states New York, Maryland, and Minnesota between 1959 and 1962 are being analyzed to ascertain whether there is any increase in the risk of developing leukaemia in those children whose mothers had exposure to virus diseases of the siblings during pregnancy.

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2.2059,

OVARIAN CANCER IN ROCHESTER, MINNESOTA, 1935-74

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The primary objective of this study is to determine and analyze the incidence and outcome of ovarian cancer in Rochester, Minnesota during the 40-year period from 1935 through 1974.

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2.2060,

CANCER EPIDEMIOLOGY AND BIOSTATISTICS PROGRAM

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The three components of the program are: 1) A cancer surveillance program which provides prompt reporting and detailed demographic data on all new cancer cases at 177 hospitals in Los Angeles County, representing 95% of the County's acute hospital beds; 2) A core administrative staff for design and implementation of epidemiologic field studies; 3) A biostatistics resource laboratory providing service consultation, and collaboration in support of basic, clinical and epidemiologic research and providing capability for documenting and evaluating cancer center activities and the impact of its regional cancer control.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2061,

SEARCH FOR AN ETIOLOGICAL AGENT IN HODGKIN'S DISEASE AND RELATED LYMPHOPROLIFERATIVE DISEASES

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There have been several recent reports of familial and non-familial clustering of Hodgkin's disease. The unusual aggregations suggest the possibility that Hodgkin's disease is caused by an environmental agent, possibly a horizontally transmitted virus. Results of HL-A typing indicate that out of a total population, only a subset is susceptible to development of Hodgkin's disease upon exposure to this hypothetical environmental agent. Some of these more susceptible individuals may possibly be found among the members of families with multiple cases of malignant lymphoproliferative diseases. The University of Southern California, school of Medicine, Cancer Research Program is currently involved in trying to identify these most susceptible individuals. In order to follow up the earlier studies of Hodgkin's disease as well as to obtain new information on the other malignant lymphomas, a broad study has been initiated of all malignant lymphoproliferative neoplasms diagnosed during 1972 and 1973 in Los Angeles county. The approximately 2,400 (ALL 180, CLL 24, multiple myeloma 360, Hodgkin's disease 440 and non Hodgkin's lymphomas 1,160) neoplasms expected during this two-year period are being studied in detail. The basis for the histological diagnosis will be reviewed by Dr. Lukes and his co-workers and, as a minimum, the pathological slides on all Hodgkin's and non-Hodgkin's lymphomas during 1972 will be reviewed.

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2.2062,

THE RELATIONSHIP OF SOCIOECONOMIC TRENDS TO BREAST CANCER AND FEMALE GENITAL CANCER

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Epidemiological studies of the socioeconomic distribution of cancer have tended to show an inverse relationship with socioeconomic status, except for breast cancer. These studies, however, were conducted at specific points in time, rather than concentrating on changes in time trends. The present study determines age-specific trends in mortality due to female breast and female genital cancer (including total female genital cancer, uterine and specifically cervical, and ovary-fallopian tube) for the United States, Great Britain and Sweden during 1921-1968. Breast cancer mortality shows inverse relations to national economic fluctuations for the United States and Britain, but not for Sweden, at lags of 2-6 years, while inverse relations with national economic indicators are seen for cancer of the female genital organs for all three countries at lags of 5-9 years. Among alternative explanations are involvement of endocrine factors and psychophysiological stress.

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2.2063,

NATIONAL HUMAN MONITORING PROGRAM FOR PESTICIDES

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The National Human Monitoring Program for Pesticides is responsible for determining incidences, levels, and other evidence of pesticide exposure in the general population of the conterminous United States, and for identifying changes and trends. This programme currently comprises two major projects. The older of these consists of the collection and organochlorine pesticide residue analysis of adipose tissue samples collected from residents of cities selected according to a proportionate stratified-random design. For each of these 40 areas an annual quota reflecting age, sex, and race distribution at the most recent national census is defined. Approximately 1,600 human fat specimens are scheduled for collection annually. In addition to the individual results of the multi-residue analysis, data collected for each person sampled include: age, race, sex, geographic location, occupation, height, weight, and diagnoses at the time of sampling. All data are managed electronically, making retrievals of any of the above possible. More recently, in cooperation with the Public Health Service's Health and Nutrition Examination Survey II (HANES II), blood serum and urine are being collected from a sub-sample of 7,500 persons in the general population of 75 cities over a 3-year period to yield baseline data on levels of selected organochlorine insecticides in serum. Urine analysis will provide information on organophosphate and phenoxy herbicides, and other new classes of pesticides. A wide range of epidemiological studies is planned.

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2.2064,

HEALTH EFFECTS OF ASBESTOS EXPOSURE IN NAVAL SHIPYARD WORKERS

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A retrospective cohort of 9,000 male shipyard workers employed at the Pearl Harbor Naval Shipyard in 1950, and subsequently through 1968, has been identified. Complete work histories have been obtained for each man, as well as records of environmental levels of asbestos. Follow-up of these men for their vital status as of 1974 is in progress. Mortality from all causes, respiratory diseases, and site-specific cancer will be compared with that expected based on the mortality experience of the Hawaii population of comparable age, sex and race. Smoking histories will be obtained from the living cohort in Hawaii, who will then be followed prospectively for morbidity and mortality over the next several years. The possible synergism between smoking and asbestos exposure in the risk of cancer will also be examined.

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2.2065,

EVALUATION OF PERIODIC BREAST CANCER SCREENING BY MAMMOGRAPHY

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OBJECTIVES: A. To determine whether a simple screening technique (x-ray mammography) can diagnose breast cancer early. B. To determine if the very early diagnosis of breast cancer is really useful in improving long-term survival. C. To investigate through a prospective study of the women screened, the relationship of a wide range of paraeeters to the development of breast cancer. This is a combination statistical-epidemiological-medical study in which a study population receiving mammography at annual intervals and a control group (each group comprising 30,000 women) are being routinely followed for breast cancer experience through internal Health Insurance Plan files and through review of death certificates. Details of the techniques are given in a paper describing the methodology and initial findings of this study entitled, 'Evaluation of Periodic Breast Cancer Screening with Mammography' by Sam Shapiro, Philip Strax, and Louis Vent, Jama 195:731-738, 1966. During one reexamination cycle 40 cc of blood was taken from women in the study population and stored. Findings to date strongly suggest the usefulness of annual screening which includes mammography. Over the short run period of 6 years of follow-up, women in the study group had about one-third less mortality from breast cancer than those in the control group. The differential between control and study cases in fatality from breast cancer is almost entirely due to the exceptionally low rate among the cases detected through screening. Both the clinical examination and mammography contributed to this favorable situation but mammography, with a fatality rate of only 2% among cases detected in the absence of positive clinical findings during screening, was especially important.

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2.2066,

CONNECTICUT TUMOR REGISTRY

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The aims of the registry are to provide complete registration of all malignant and certain benign tumors diagnosed in residents of Connecticut; publish statewide cancer incidence data by primary site, age, sex and year of diagnosis; analyze survival data by site, stage of disease and treatment; provide data to Connecticut Cancer Epidemiology Program for site/histology specific analyses; provide data to the SEER-National Cancer Institute Program for national comparisons and analysis.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2067,

BARRIER CONTRACEPTIVE PRACTICE AND MALE INFERTILITY AS FACTORS IN BREAST CANCER IN MARRIED WOMEN

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A case-control study is in progress to test the hypothesis that a reduced exposure to human seminal factors in the early reproductive life of women is a risk factor in breast cancer. Seminal factors can be reduced or eliminated in intercourse and/or in the ejaculate by (1) using barrier contraceptive techniques (condom, withdrawal, celibacy, long-term abstinence) and (2) male infertility. The population under study consists of 153 consecutive breast cancer patients, married and ever-married white women 35-60 years of age. The controls, 168 women with the same characteristics, matched by age and social status, come from the outpatient clinics of the same institution. Information is obtained by interview. Based on aggregate data, the relative risk-ratio of exposure to the hypothetical semen factor deficiency is 4.7 times greater in breast cancer group than in the controls. When the contraceptive methods alone are taken into account, the relative risk ratio increases up to 5.3 times. The male factor,

especially male subfertility, does not seem to play such a major role: the ratio of marital infertility is 1.5 times greater for the reference group than for the controls. About 16 percent of the women using barrier methods and 3.4 percent of women using non-barrier contraceptive methods (diaphragm, pill, IUDs, rhythm, tubal ligation and other) would develop breast cancer. The risk of developing breast cancer within the same population in the United States is about 5 times greater in women who use barrier methods than in women who use non-barrier contraceptive methods. The reduction of the incidence of breast cancer by eliminating the barrier contraceptive techniques would be not less than 50 percent in the entire population. The possibility of preventive measures within an accepted and adequate family planning program is emphasized. Analysis continues.
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2.2068,
LONG-TERM MORTALITY OF STEELWORKERS
C.K. Redmond, University of Pittsburgh, Graduate School of Public Health, Dept. of Biostatistics, *4200 5th Ave., Pittsburgh, Pennsylvania* 15260 (D-IARC-79-1034)
The objective of this study is the identification of work areas, occupations, and processes within the steel industry that are associated with unusual mortality from specific diseases indicative of health hazards in the work environment. Two cohorts of steelworkers consisting of all male workers employed at seven U.S. steel plants in 1953 and 1961 respectively have been followed for mortality through 1970 with less than 1 percent untraced. Mortality rates for specific causes of death among men employed in various jobs and work areas are compared to rates for the total steelworker population with adjustment for age, race, and calendar year at risk. Reports have been prepared on coke oven workers, crane operators, and open hearth workers. Other work areas will be the subject of future reports. Methodological studies have also been prepared that discuss proportionate mortality versus mortality rates, effects of utilizing different kinds of control groups, and retiree mortality patterns as they compare to the total population-at-risk. Current phase of this investigation is concerned with updating vital status of all workers and re-evaluating the trends in cause-specific mortality patterns among men employed as coke oven workers, a group which has been demonstrated previously as having excess cancer mortality of several sites.
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2.2069,
VIRGINIA TUMOR REGISTRY
B.B. Peace, State Bureau of Vital Records & Health Statistics, *P.O. Box 1000, Richmond, Virginia* 23208 (D-IARC-79-1064)
A central registry collecting uniform data from several (32 at present time) Virginia hospitals, computerizing this information. Survival data are obtained on all cancer patients.
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2.2070,
MORTALITY EXPERIENCE OF PRINTING PRESSMEN IN THE UNITED STATES AND CANADA
E.C. Hammond, American Cancer Society Inc., Dept. of Epidemiology & Statistics, *777 3rd Ave., New York, New York* 10017 (D-IARC-79-936)
With the assistance of the Printing Pressmen's Union, a cohort of all members of this union in 1960 has been established (this particular cohort contains some 65,000 individuals). The mortality experience of the individuals concerned is being examined. As in other studies, expected deaths will be age, year and sex specific. In a second study, a cohort has been established of all members of the union local in New York City which includes all printing pressmen employed by newspapers and similar shops ('web pressmen') in 1954. Although this cohort contains fewer than 2,000 individuals, it will be possible to undertake virtually complete tracing of all its members and to undertake detailed consideration of appropriate hospital and pathological data. Again, expected deaths will be compared with those observed, by cause. A preliminary analysis has been completed.
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2071,
THE SEROEPIDEMIOLOGY OF THE EPSTEIN-BARR VIRUS (EBV)
W. Henle, Childrens Hospital of Philadelphia, Division of Virology, *34th St. & Civic Ctr. Blvd., Philadelphia, Pennsylvania* 19104 (D-IARC-78-952)
The aims are (1) to provide further evidence for an aetiological role of EBV in Burkitt's Lymphoma (BL) and nasopharyngeal carcinoma (NPC); (2) to relate the spectra and titres of antibodies to EBV-determined antigens with the clinical status, the prognosis and the effectiveness of therapy of these two malignancies; (3) to ascertain the antibody status prior to the development of BL in a prospective study of BL in the West Nile district of Uganda; (4) to determine the effects of immunosuppressive diseases, such as Hodgkin's disease, or of immunosuppressive therapy, as used on organ transplant patients, on latent, persistent EBV infections and the EBV-related antibody patterns; (5) to evaluate the demonstration of EBV-associated nuclear antigen in the carcinoma cells of NPC biopsies as an aid in the diagnosis of this malignancy.
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2072,
CANCER SURVEILLANCE SYSTEM
D.J. Thompson, University of Washington, School of Public Health & Community Medicine, Dept. of Biostatistics, *4000 15th Ave. N.E., Seattle, Washington* 98105 (D-IARC-79-1070)
As part of the SEER program (surveillance, epidemiology and end results) of the National Cancer Institute, the aim is to collect from defined population of 2.3 million data on incidence and survivorship of all major forms of cancer.
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2073,
THE RELATIONSHIP OF UVB (ULTRAVIOLET) RADIATION TO CANCER OF THE SKIN IN MAN
F. Urbach, Temple University, School of Medicine, Dept. of Dermatology, *3322 Broad St., Philadelphia, Pennsylvania* 19122 (D-IARC-79-1028)
There is strong circumstantial evidence that skin cancer in man is causally related to chronic exposure to solar ultraviolet radiation. series of automatic, integrating UVB meters has been designed, built and installed in various locations. These meters measure sunburn-effective UVB continuously. Measurements of UVB are being compared to either incidence or prevalence of skin cancer in selected areas sufficiently differing in insolation in order to determine the relationship of UVB, stratospheric ozone concentrations and physical sunlight exposure to the induction of skin cancer in man.
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2074,
CANCER OF THE CERVIX IN BUFFALO AND KENMORE
S. Graham, State University of New York, Buffalo Campus, School of Social Science & Admin., Dept. of Sociology, *3435 Main St., Buffalo, New York* 14214 (D-IARC-78-718)
Early marriage, multiple marriages, early age at first pregnancy, number of pregnancies, and a variety of other factors have been found to be associated with cancer of the cervix. This study examines these associations on a community-wide basis utilizing cases of cancer of the cervix reported from all of Buffalo and suburban Kenmore, to the New York State Tumor Registry. Interviews were conducted between 1959 and 1963 for cases and a control group of women forty and over residing in random sample of households in Buffalo and Kenmore. Of particular concern in the analysis will be the comparison of approximately 1,300 white, non-Jewish controls. Analyses, which are about complete, follow a multivariate approach to assess the relative importance of those factors associated with the diseases and other approaches which consider more than one factor at a time. Briefly, we found, as have other investigators, that early marriages, early pregnancy, and having multiple marital partners enhances risk. A new finding is that cases have used the vaginal douche more frequently and over a longer period of time than controls. A paper reporting findings is being prepared.
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2075,
NATIONAL CANCER INSTITUTE PROGRAM OF CANCER SURVEILLANCE, EPIDEMIOLOGY AND END RESULTS (SEER PROGRAM)
M.H. Myers, U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst., Biometry Branch, *9000 Rockville Pike, Bethesda, Maryland* 20205 (D-IARC-78-697)
The SEER Program was developed in response to the National Cancer Program requirements for assessing, as currently as possible, the magnitude of the cancer problem in the United States and for identifying factors related to cancer risk and/or patient survival. The 'cancer problem' has been interpreted to include: (1) newly diagnosed cancer cases that might have been prevented by altering host or environmental conditions, and (2) deaths due to cancer that might have been prevented by earlier cancer diagnosis coupled with optimal therapeutic approaches. Therefore, the SEER Program has among its objectives: (1) To assemble and report on a periodic basis, estimates of cancer incidence in the United States. (2) To monitor annual cancer incidence to identify unusual changes in specific forms of cancer occurring in groups defined by parameters of geographical, demographic and social characteristics of the population. (3) To provide continuing information on changes over time in extent of disease at diagnosis, trends in therapy and associated changes in cancer patient survival and (4) To promote the development of hypotheses and specific studies designed to identify cancer aetiological factors (environmental/occupational, sociocultural, etc.) and factors related to patient survival.
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2.2076,
STATISTICAL METHODS IN CANCER EPIDEMIOLOGY
N. Mantel, George Washington University, Biostatistic Center, Dept. of Statistics, *7979 Old Georgetown Rd., Bethesda, Maryland* 20014 (D-IARC-79-852)
The spontaneous occurrence of cancer in humans, or induced occurrence in laboratory animals, reflects the interplay of many variables. Also multivariate in nature are the factors influencing survival times or remission times of individuals with cancer, whether treated or left untreated. The multivariate statistical problems which arise may relate to identifying individually important variables which may be causative, making prognosis of survival or other predictions for cancer patients with a specified multivariate vector, and seeking to identify optimal therapeutic procedures for such patients. Data available for such analyses may be prospective or retrospective in nature, and for the prospective case will generally involve incomplete observations. Recent developments in mathematical models and statistical approaches for relating response to multivariate regressors, specifically models involving hazard functions and generalized logistic regression, open the way to handling such problems, and it is the effective use of such models and approaches that I plan to study. In some instances these approaches may bear modification as, say, using a classification approach when data are abundant but variables to be studied few in number. I anticipate that tie-ins with other problems of cancer epidemiology will develop. Related, or variant methods, may be appropriate in the study of potential environmental carcinogens. Methods for safety evaluation of such agents represent a preventive epidemiology approach.
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2.2077,
CANCER OF THE PANCREAS
B. MacMahon, Harvard University, Boston Campus, School of Public Health, Dept. of Epidemiology, *55 Shattuck St., Boston, Massachusetts* 02115 (D-IARC-79-865)
The study is designed to evaluate quantitatively the environmental factors suspected to be associated with the aetiology of cancer of the pancreas, and to investigate other possible risk factors. For each case, two controls are selected at the same hospital. Both index cases and controls are interviewed on demographic variables, past medical history and social and occupational history. The population will consist of approximately 500 cases and 1000 controls.
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2078,

RESPIRATORY EFFECTS OF CHLOROMETHYL ETHERS

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A prospective study of 125 male workers at a chemical plant by periodic chest x-rays and questionnaires was conducted from 1963 to 1968 to investigate the suspicion that some were exposed to a carcinogen. In 1965 a spirogram was done in 103 men. Follow-up has been continued since 1968. Retrospective studies during 1971-74 revealed that 88 men had been exposed to chloromethylmethylether (CMME) containing bis-chloromethyl ether as a contaminant. Each man was assigned an exposure index and the men were divided into a non-exposed and three exposed groups according to the magnitude of the index. The groups were similar except that the most heavily exposed group had more non-smokers and more light cigarette smokers than the other groups. The prevalence of chronic cough and expectoration increased with increase in exposure index. Mean ventilatory function was normal in all groups. Exposure diminished with time as the process was increasingly contained. From 1963 to 1968 the prevalence of chronic cough decreased while the prevalence of dyspnea increased. Eleven men developed lung cancer in the 10 year period from 1963 to 1972 inclusive and there was a strong dose-response relationship. Of the 20 most heavily exposed men, 30 percent developed lung cancer. There was an inverse relationship between smoking habits and the risk of lung cancer. All of the cancers were small cell in type. Observation of the cohort is continuing.

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2.2079,

EPIDEMIOLOGY OF HISTOLOGIC TYPES OF LUNG CANCER

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The continued annual increases in lung cancer mortality seem excessive in view of the static smoking behavior during the past decade, suggesting that other environmental influences need more study. A pilot study of incidence during 1968-1972 among residents of three counties in the Portland metropolitan area identified 2,002 cases. Most were smokers (97% in males, 80% in females); a minority had a family history of cancer (males 32%, females 42%). The different histological types exhibited major differences in their socioeconomic, geographical, and occupational risk patterns, suggesting that perhaps they should be regarded as distinct diseases. Major sex differences in socioeconomic patterns of risk suggested the importance of occupational confounding among men. Occupational risk differences between both sexes far exceeded those noted with other risk factors, suggesting that occupational factors deserve primary emphasis in future efforts in lung cancer control. Several occupations had high risk for three or more histological types, but much more common was the situation in which only a single histological type was excessively frequent in the presence of an unremarkable rate for total lung cancer. Thus the identification of occupational hazards for lung cancer will become significantly more sensitive if histology-specific rates are used rather than total rates. It is hoped to extend this study through 1977 and beyond and to initiate more limited investigations of specific occupational and industrial hazards. Correlations with community air quality indices will also be sought.

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2.2080,

STUDY OF ANIMAL CONTACTS IN LEUKEMIA

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Recent evidence has suggested that there may be significant relationships between leukemia occurring in household pets and that occurring in humans. The present analysis, conducted in collaboration with Dr. Hipolito Pabon of Colombia, is based upon the Tri-State Leukemia Survey of a decade ago. Detailed animal contact histories of large number of leukemic children as well as controls were taken. The results are being analyzed in terms of the numbers and types of animal contacts among the leukemic children and controls during their life-times as well as during the relevant pregnancies of the mothers. All the data in this study has been processed and a master card has been prepared for the analysis of the findings.

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2.2081,

PROSTATIC CANCER EPIDEMIOLOGY WITH SPECIAL REFERENCE TO THE UNITED STATES AND JAPAN

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Former international studies have shown that there is a rapid increase in the incidence rates of prostatic cancer for persons over 50 years of age; 80% of the cases occur in persons age 65 and older; mortality rates have been highest among U.S. Non-whites followed by South Africa, France, Canada, and U.S. Whites, with Japan having the lowest rate; in Israel a higher mortality has been reported among occidental than among the oriental population; and there is a positive statistical association between prostatic cancer and pancreatic cancer, and a negative association with stomach or liver cancer. An attempt will be made to discover factors related to the development of prostatic cancer with special emphasis on reported differences in the incidence and mortality rates in the United States and Japan data for the period 1950 through 1975. The reliability of the mortality and morbidity reports have been evaluated and it is suggested that suspected aetiologic factors such as sexual activity, cigarette smoking, and fat intake will be compared among patients and controls in the two countries.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2082,

ETIOLOGY OF HUMAN CANCER

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The objective is to study the epidemiology of human neoplasms and to develop etiologic hypotheses through close bedside observation of individual patients. Adult and pediatric cancer patients are interviewed for clues to the etiology of their cancer. Clues identified through the interviews are pursued in clinical and epidemiological studies. In addition, laboratory studies have been carried out in several families with strong histories of cancer to identify possible inherited defects or environmental risk factors.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2083,

EPIDEMIOLOGY OF CANCER IN A LARGE NON-SMOKING POPULATION

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Approximately 73 percent of the population residing in the State of Utah are members of the Church of Jesus Christ of Latter-Day Saints (LDS, commonly called Mormons). The Church proscribes the use of alcohol, coffee, tea, and tobacco. Using a population-based cancer registry with data from 1966 onward, cancer incidence is estimated to be 20 percent less in the LDS than the non-LDS within the state. Major contributions to this decrease are made by cigarette-associated sites. However, unexplained differences in the area of uterine cervical cancer, stomach and colon cancer exist. Decreases in cancer unrelated to religion are also noted, such as cancer of the pancreas. Currently, analysis of registry is being carried out to better characterize the differences by socioeconomic class, urban-rural differences, etc. In the near future, case-control studies to better identify specific etiologic agents will be mounted in ovarian cancer, cervical cancer, pancreatic cancer, and colorectal cancer.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2084,

EPIDEMIOLOGICAL STUDIES ON THE FREQUENCY OF TUMORS IN FISH FOUND IN POLLUTED WATERS AND THOSE FOUND IN UNPOLLUTED WATERS

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An ongoing (1967) study to show that the presence of carcinogens in water directly influences the incidence of tumors in fish and mammals (including human beings) utilizing such waters for extended periods.

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2.2085,

CANCER MORTALITY AMONG WORKERS EXPOSED TO CUTTING OIL MIST

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The objective of this study is to determine the cancer experience of workers exposed to cutting oil mist. The study group is comprised of 24,000 men who worked for at least one year in a blue-collar job at a particular plant during the period 1938-1967. Follow-up for mortality was completed through 1967 with less than 5 per cent untraced. Cause-specific mortality rates for men exposed for varying periods of time at different oil mist exposure levels are compared to mortality rates for the general U.S. population and to rates for a non-exposed group from the same plant. Future emphasis will be on detailed cancer sites and specific respiratory diseases. Follow-up of the cohort is being extended beyond 1967.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2086,

EPIDEMIOLOGIC SURVEY ON HAWAII RESIDENTS

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In 1975, a brief epidemiological questionnaire was added to the on-going Health Survey of Hawaii, a representative, statewide survey patterned after the US National Health Survey. About 6,000 households are surveyed annually, and the epidemiological questionnaire will be administered for a period of 5 years. This questionnaire seeks information on smoking, drinking and dietary habits, which can be related to various demographic data (age, sex, race, place of residence, education, income, etc.), which are collected routinely in the survey. Data from the first year of the epidemiological survey are now being analyzed in relation to some of the interesting differences observed in cancer incidence and mortality among the various ethnic groups in Hawaii. The cohort developed through this survey will be followed prospectively for cancer risks in relation to antecedent dietary and smoking habits.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2087,

FAMILIAL AGGREGATION OF HODGKIN'S DISEASE

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Using all cases in Hodgkin's Disease in five counties during a four-year period, the secondary familial occurrence rate will be determined and compared with expected rates in the general population from (1) the same geographic area and time-period; and (2) extrapolated estimates of earlier rates for the same area. California Tumor Registry cases 1970-1973, numbering 440, serve as the source of cases. A mail survey questionnaire serves as the investigating tool.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2088,

PROGRAM IN BIOMETRICS OF CANCER EPIDEMIOLOGY

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The principal objective of the program is to continue to develop, apply, and disseminate the kind of statistical technology which will be of immediate practical use in epidemiological investigations and other phases of cancer control. However, there is a gradual shift in emphasis from the technical or technological aspects to the serious strategic problems which limit the effectiveness of research in cancer epidemiology.

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2.2089,

EPIDEMIOLOGY OF HEPATIC ANGIOSARCOMA

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This project started about four years ago with the discovery of the association between hepatic angiosarcomas and long-term exposure of industrial workers to vinyl chloride. Subsequently, a survey of pathologists in the USA was conducted and to date about 250 cases of human hepatic angiosarcoma have been identified and the slides reviewed. As noted, some of these cases were caused by vinyl chloride. Other cases were caused by or associated with exposure to Thorotrast or to arsenical compounds. The majority of the cases have no known environmental or industrial aetiology. The epidemiological study which is continuing involves obtaining detailed work and exposure histories from all these patients or from their living relatives. The pathological aspects of the study are conducted by Drs. Thomas, Popper and Teller. The epidemiological aspects are under Dr. Falk and other epidemiologists at the Center for Disease Control in Atlanta, Georgia.

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2.2090,

CANCER AND ORAL CONTRACEPTIVES

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In 1970, mail questionnaires were sent to 97,364 married women in the Boston metropolitan area inquiring about their oral contraceptive usage. A second follow-up questionnaire was sent in 1973 to all users and a matching number of non-users. To evaluate the relationship between oral contraceptive use and breast disease, all women diagnosed with benign or malignant breast disease were identified and matched to the cohort. The surveillance period was 1969 to 1972. A significantly lower risk of fibrocystic disease among long-term users of oral contraceptives for all age and parity strata was found. Hospital surveillance was continued through 1977 and the resulting data are now being analyzed.

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2.2091,

STUDIES OF CANCER EPIDEMIOLOGY IN LATIN AMERICA

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The objective of this project is to identify problems of cancer epidemiology by means of cancer registration schemes and follow some of them with pathology and epidemiology studies in more depth. Special emphasis is given to cancer of the oesophagus, stomach, gallbladder and large bowel. Cancer registries participating in this programme are located in Cali (Colombia), Recife (Brazil), Sao Paulo (Brazil), and La Plata (Argentina).

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2092,

MORTALITY EXPERIENCE OF CERAMIC TILE SETTERS IN THE NEW YORK CONSTRUCTION INDUSTRY

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We have been interested in obtaining information concerning the mortality experience of individuals working in the construction industry in New York, potentially indirectly exposed to asbestos dusts within that industry, but not directly so exposed by virtue of the nature of their own work. One such group has been the ceramic tile setters, a 'finishing trade', working in the same buildings as trades using asbestos materials in other work, but whose own materials do not contain asbestos. We have established a cohort of all ceramic tile setters in the New York construction industry in 1955 who were members of their union for at least five years. This was done with the cooperation of the Tile Setters' Union. The mortality experience of this cohort is being investigated through 1973. A sample of 100 tile setters was also clinically examined.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2093,

CANCER MORTALITY AFTER ARSENICAL THERAPY FOR SYPHILIS

B.S. Pasternack, New York University, School of Medicine, Dept. of Environmental Medicine, *550 1st Ave., New York, New York* 10016 (D-IARC-79-942)

The object of this study is to investigate the role of arsenic in carcinogenesis by comparing the cancer mortality rates for patients who received arsenicals vs. penicillin as syphilitic therapy. Complete clinical records are available for about 2,800 patients treated at Bellevue Hospital in New York City in the early 1940's half of whom were given arsenicals. This is the only project known where precise characterization of human arsenical exposures and comparable controls are available on such a large scale, with a 30-year follow-up. Social security numbers were available for these 2,800 patients, so deaths are being ascertained through the Social Security Administration files. Causes of death will be established through death certificates and hospital records.

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2.2094,

EPIDEMIOLOGY OF CANCER OF THE CERVIX IN HIGH RISK POPULATIONS

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This study examines factors that have been found to be associated with cancer of the cervix: large number of sex partners; contraceptive types which expose women directly to their partners; early age at first intercourse, marriage, and pregnancy, number of pregnancies and use of the vaginal douche. These factors will be examined in women known to be at higher than usual risk of cancer of the cervix: Blacks and, because of their low socioeconomic status, Chicanos. In addition, a number of investigators have inquired into the presence of microorganisms or antibodies to them in patients with cancer of the cervix and in controls. Almost always, cases reveal much larger percentages possessing antibodies to herpes type 2 virus. We wished to examine whether cases could be distinguished from controls on the presence of Herpes in instances where there has been only one sexual partner as well as on instances where there have been many. It would also be of interest to know whether among cases with only one and those with many partners the proportion of women with antibodies is the same, and higher than among controls with one or many partners. If these conditions were obtained, it would suggest that herpes type 2 virus is strongly implicated. Our sources of lower social class Chicano and black women with cancer of the cervix and appropriate controls are the Los Angeles County - University of Southern California Hospital, the Martin Luther King Jr. Hospital in Los Angeles, and California Hospital. Two hundred fifty black patients with invasive disease and a like number of Chicano patients, plus equal numbers in each group of carcinoma in situ will be interviewed. Controls will consist of women patients at the same hospitals, matched on age, with non-neoplastic, non-pelvic diseases. Each case and control will have 15 ml. of blood drawn. Antibody titer to herpes virus types 1 and 2 will be quantitated using a modification of measurement of release of 51 chromium. Data collection is ongoing.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2095,

THYROID CARCINOMA IN NON-ORIENTAL HAWAIIAN NECROPSY POPULATION

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As ascertained in a previous study (Arch. Path., 92, 6-13, 1971) the prevalence of occult thyroid carcinoma in a Hawaiian Japanese necropsy population was 24 percent in 100 consecutive necropsies of Japanese born in Hawaii and Japan. The present study is to determine the prevalence of thyroid (occult) carcinoma in Whites and other races using the same histological and cytological criteria.

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2.2096,

INCIDENCE OF SECOND SQUAMOUS CANCERS OF THE HEAD AND NECK IN SMOKERS AND THOSE WHO HAVE CEASED SMOKING

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The aim of the study is to compare equal groups of individuals who have been smokers and who have been cured of one squamous cancer of the head and neck (excluding skin) dividing them into two subgroups: (1) those who continue to smoke three years after the control of the first cancer; and (2) those who cease smoking with the discovery of their first cancer. The incidence of second cancer in the two groups can then be compared over a long period extending to 20 years or the lifetime of most patients.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2097,

MORTALITY EXPERIENCE OF WORKERS IN THE PAINTING TRADES IN THE U.S. AND CANADA

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Workers in the painting trades have a variety of exposures to known or suspected carcinogenic agents, ranging from asbestos dusts to benzene and other solvents. Vinyl chloride exposure has also been identified in some circumstances. With the cooperation of the Painters' Union in the United States and Canada, we are establishing a cohort of all registered members of the union in 1965. These individuals will be followed prospectively from that point onwards and their mortality experience analyzed. It will probably be possible to categorize the full cohort by trade (general painters, dry wall construction workers, sandblasters, iron painters, paper hangers, wood finishers, paint makers, etc.) and the mortality experience of the various groups will be separately considered. Another cohort of all members of the Painters' Union in New York City in 1960, who had maintained membership for at least five years, is also available and will be studied prospectively from that point to the present. In order to obtain background information concerning types of lesions which may be of particular interest, 1,000 members of the union have already been examined clinically, with appropriate laboratory studies, and another 2,500 men will be studied during the two coming years. In addition, industrial hygiene studies of the environment in the painting trades are being undertaken.

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2.2098,

LONG-TERM PROSPECTIVE OBSERVATION OF ASBESTOS INSULATION WORKERS IN THE NEW YORK METROPOLITAN AREA

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On January 1, 1943, there were 632 members of the Asbestos Insulation Workers' Union in the New York

metropolitan area. The entire cohort has been followed prospectively since. All those alive January 1, 1963, were clinically investigated and, among other things, cigarette smoking habits were recorded. Mortality experience of the cohort is being analyzed. By January 1, 1963, 262 individuals had died and approximately 250 more deaths had been recorded by the end of 1976. In addition, 890 workers joined this union between January 1, 1943, and December 30, 1962, and their experience is also being studied epidemiologically and clinically. Their mortality experience will reflect risk past World War II.

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2.2099,

CANCER EXPERIENCE OF VINYL CHLORIDE POLYMERIZATION WORKERS

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During 1974, over 1,200 vinyl chloride polymerization workers were examined in a clinical survey, and a great deal of clinical, biochemical, x-ray and pulmonary function data recorded. In addition, details concerning vinyl chloride and other chemical exposures were noted, with complete occupational histories (including other than vinyl chloride employment). This cohort of vinyl chloride-exposed workers (approximately 1/5 of the vinyl chloride polymerization workers employed in the U.S.) is being observed prospectively. Their mortality experience will be analyzed and compared with expected deaths by cause.

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2.2100,

NATIONAL LARGE BOWEL CANCER PROJECT

M.M. Copeland, University of Texas, University of Texas System Cancer Center, M.D. Anderson Hospital & Tumor Inst., *c/o Texas Medical Ctr., Houston, Texas* 77030 (D-IARC-79-1042)

To establish correlations between geographical distribution of colorectal cancer rates and, e.g., the distribution of dietary, cultural, geochemical phenomena that may lead to a better understanding of the etiology of these cancers and eventually to their prevention. We are especially interested in the relationship between carcinogenic factors (e.g., in animal fat and beef) and protective factors (e.g., antioxidants such as selenium and vitamins) that together give the observed incidence rates.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2101,

MORTALITY EXPERIENCE OF TEXTILE DYERS AND PRINTERS

I.J. Selikoff, City University of New York, Mount Sinai School of Medicine, School of Medicine, Dept. of Community Medicine, *5th Ave. at E. 100th St., New York, New York* 10029 (D-IARC-79-948)

Utilizing pension and welfare fund records of the Textile Workers' Union of America, a cohort is being established of all registrants in this fund in 1960 whose participation had begun in 1950 or before. In this initial investigation, the mortality experience of the entire group will be analyzed for the period 1960-1975. Preliminary study indicates that some 2000 deaths will be available for such analysis.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2102,

EPIDEMIOLOGY OF MALIGNANT MELANOMA

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The objectives include a study of the role of sunlight in the aetiology and tumor progression of malignant melanoma. In addition, there are studies which will be related to family and ethnic factors in malignant melanoma.

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2.2103,

RELATION OF INFECTION WITH HEPATITIS B AGENT TO NEOPLASIA IN PATIENTS WHO HAVE RECEIVED KIDNEY TRANSPLANTS

W.T. London, Inst. for Cancer Research, Fox Chase Cancer Center, *7701 Burholme Ave., Philadelphia, Pennsylvania* 19111 (D-IARC-79-1025)

Patients who received renal transplants have a high incidence of malignant tumours, particularly reticulum cell sarcoma. A prospective study is being undertaken to determine whether the pretransplant presence of HBsAg or anti-HBs has any effect on the subsequent development of tumors.

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2.2104,

EPIDEMIOLOGICAL STUDIES OF URANIUM MINERS AND MILL WORKERS

V.E. Archer, U.S. Dept. of Health & Human Services, Public Health Service, Center for Disease Control, National Inst. for Occupational Safety & Health, Division of Surveillance Health Evaluation & Field Studies, *4676 Columbia Pkwy., Cincinnati, Ohio* 45226 (D-IARC-79-982)

Uranium miners have been found to have an excess of lung cancer and mill workers to have an excess of lymphomas. A much larger group of mill workers is now being studied by a retrospective cohort study to determine the magnitude of the lymphoma excess. Identification of the substance responsible is being attempted. Two groups of uranium miners are being studied, one of about 4,300, and a much larger one of about 15,000. These groups are being used to determine exposure-response curves, and the different factors which influence the shape of those curves; effects of exposure on the sex-ratio of offspring, the effect of age at first exposure on incidence and latent period, and the dose rate effect.

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2.2105,

STUDY OF THE INCIDENCE AND NATURAL HISTORY OF GENITAL TRACT ANOMALIES AND CANCER IN OFFSPRING EXPOSED IN UTERO TO SYNTHETIC ESTROGENS

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Synthetic estrogenic substances (DES) have been administered to pregnant women for approximately three decades, primarily with the intent of preventing spontaneous abortions. From 250,000 to 1,000,000 females and an equal number of males were exposed to DES during gestation. Recently, studies have been reported linking such exposure to DES with development of specific malignancies and other abnormalities of the female lower reproductive tract. Whether significant abnormalities of the genitourinary system also occur among males is not known. The aims of this project are to follow the course of development of persons exposed to DES in utero (and comparison groups of unexposed persons) in order to detect the occurrence of and secure treatment for possible anomalies or malignancies which may arise. Over a period of five years of follow-up, for subgroups at various ages when entering the project, the experience of groups remaining free of all pathology, developing new pathology, continuing with pathology similar to that at entry, or treated in accordance with one or more special protocols, will be analyzed. The risk of these outcomes will be determined among cohorts where DES exposure status is known, and treatment protocols may be devised and implemented for particular outcomes which are observed.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2106,

INCIDENCE AND NATURAL HISTORY OF GENITAL TRACT ANOMALIES AND CANCER IN OFFSPRING EXPOSED IN UTERO TO NONSTEROIDAL ESTROGEN

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This study has been initiated by the National Cancer Institute through contracts with collaborating clinical centers and a coordination center. It is intended to assess, comprehensively, the magnitude and severity of the health hazards to exposed offspring which may result from the administration of exogenous, nonsteroidal estrogens (hereafter denoted 'DES') to pregnant women over the past three decades in the United States. Following review of available medical records in selected areas of the country, exposed offspring will be identified and subsequently contacted; or, subsequent to subjects presenting independently or by referral from physicians, exposure or nonexposure to DES will be verified in retrospect for some proportion of subjects. Through either mechanism, cohorts of known exposed subjects of both sexes will be identified and requested to enter the project. Unexposed cohorts of both sexes will also be contacted. The potential course of subsequent events is identical in the exposed and unexposed cohorts. Through standardized interviews and clinical and laboratory examinations, subjects will be classified at entry to the project as free of relevant pathology to date, or as having currently or by documented past history one or more of several critical diagnoses, generally identified as vaginal adenosis (females only), or neoplasia or malformation of the genitourinary or lower reproductive tracts. Other specific diagnoses of interest may be added. Ascertainment of changes in diagnoses by interview and examination will be repeated regularly over the period of follow-up, which will be a minimum of 5 years for each participant.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2107,

PROSPECTIVE STUDY OF THE RELATIONSHIP OF HORMONAL AND SOCIOLOGICAL FACTORS TO THE DEVELOPMENT OF CANCERS OF VARIOUS SITES

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The objective is to see if serological changes found in cancer patients antedate the development of their disease by comparing serum specimens from patients and controls taken at the same time and before cancer had developed in the patients. Serum was collected in 1974 from nearly 26,000 volunteers in Washington County, Maryland, and stored at minus 100 degree F. In addition to identification data, information was collected on marital status, education, smoking, date of last menstrual period (for women), and medications, with special emphasis on hormonal preparations. A cancer registry has been maintained in the county since 1958. When sufficient numbers of cases have developed since 1974, serum of cases and matched controls will be withdrawn from storage to be examined for hormone, antibody, protein, or trace metal levels, as indicated by previous concurrent case-control studies.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2108,

GEOGRAPHICAL DIFFERENCES IN TRYPTOPHAN METABOLISM OF PATIENTS WITH BLADDER CANCER

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The aim is to study the incidence of abnormal tryptophan metabolism in bladder cancer patients in urban Copenhagen in comparison with patients from rural Wisconsin.

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2.2109,

IDENTIFICATION OF HIGH-RISK OCCUPATIONAL GROUPS

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Evidence from the laboratory as well as from clinical observations and epidemiological studies is substantiating earlier findings on the role of occupational factors in human carcinogenesis. Recent clinical and epidemiological evidence relating environmental exposure to such materials as asbestos, vinyl chloride, radiation, etc. strongly suggests that a major effort should be undertaken to identify occupational agents which may be responsible for human cancer, parkinsonism and other chronic disease. An etiologically

meaningful analysis of occupational histories must have at least two characteristics: first, the analysis must be conducted in such a fashion as to permit comparisons with the findings of previous investigators; and second, the analysis must make identification of potentially dangerous occupational exposures possible. To accomplish these dual purposes, two completely independent analyses of occupational data are being undertaken, the first in accordance with the United States Census Bureau Index of Industries and Occupations, making it possible to compare results with those of previous investigators who have used the same index, and the second classifying all occupational exposures judgmentally, for the purpose of identifying all possible potentially hazardous occupational or industrial categories. After identifying specific occupational hazards in this fashion, previous investigators could be contacted with a view to reanalyzing their data in terms of the potentially dangerous occupations or industries newly identified.

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2.2110,

AN INVESTIGATION OF LYMPHOID TISSUES IN NEOPLASIA

I.I. Kessler, Johns Hopkins University, School of Hygiene & Public Health, Dept. of Epidemiology, *615 N. Wolfe St., Baltimore, Maryland* 21205 (D-IARC-78-663)

This study is designed to measure the risk of subsequent development of cancer in persons who have undergone surgical removal of the vermiform appendix and/or palatine tonsil and to compare this risk with that in a control population. There has been a recent increase of interest in the lymphatic system and its relationships to normal and abnormal growth processes. To this end, we are attempting to trace a cohort of approximately 5,000 persons who were appendectomied and another cohort of similar number who had their tonsils removed at the Johns Hopkins Hospital from 1925 to 1936. When traced, the mortality and, perhaps, incidence of cancer among them will be compared to that of a matching control group undergoing other types of surgery at Johns Hopkins during the same period of time. Both the appendectomy and tonsillectomy cohort have been identified and the basic data relating to them entered into punched cards. The tonsillectomy cohort data are now being validated and preparations made for follow-up as to survival and case-specific mortality.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2111,

AN INVESTIGATION OF THE MALE ROLE IN CERVICAL CANCER

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Studies utilizing a number of different approaches suggest that the male sex partner may play a role in the aetiology of cervical cancer. Demographic analyses reveal higher cervical cancer mortality rates among married and previously married women than among single women or virgins. A possible association between penile and cervical cancer has been demonstrated. Considerable evidence has accumulated on the relationship between cervical cancer and the venereally transmitted genital herpes virus, HSV-2. The results of these studies have increased the likelihood of a significant male role in cervical carcinogenesis. The study is designed to provide an additional test of the venereal hypothesis in the pathogenesis of cervical neoplasia. The approach represents an attempt to answer the following question: Is the risk of developing cervical cancer increased among the wives of men who - at sometime in their lives - were married to other women who developed cervical cancer? The study begins with the identification of a large group of women who had cervical cancer in Greater Baltimore during the past 20 years. The husbands of these women are investigated to the extent of identifying all their previous and subsequent wives ('case' wives). A random sample of 'control' wives, similar to the 'case' wives in demographic and marital characteristics is then selected. The cohorts of 'case' and 'control' wives are traced prospectively to death or survival at a recent point in time. The ultimate risk of cervical neoplasia among the two cohorts is compared, utilizing actuarial techniques. This approach affords a direct test of the role of any venereally transmitted male factor in cervical cancer, whether it be viral, chemical or otherwise.

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2.2112,

TRI-COUNTY STUDY OF CANCER OF THE MOUTH, OESOPHAGUS, PHARYNX, LARYNX, STOMACH, COLON AND RECTUM

S. Graham, State University of New York, Buffalo Campus, School of Arts & Letters, Dept. of Sociology/Social & Preventive Medicine, *3435 Main St., Buffalo, New York* 14214 (D-IARC-79-920)

There have been suggestions that diet, alcohol ingestion, oral conditions, and smoking are related to cancer of the mouth, oesophagus, and stomach, and that alcohol ingestion and smoking are related to cancer of the larynx. These relationships are the subject of this inquiry. To avoid hospital related bias and to obtain detailed information on each case, all new cases in Erie, Niagara and Monroe Counties in New York State will be interviewed. It will take four years to obtain enough (about 300) cases of cancer of the oesophagus and larynx for males, and two years to obtain the buccal and stomach cancer cases necessary for analysis. Cancers of the oesophagus and larynx are so rare in females that the inquiry will be limited to buccal and stomach cancer among females. All controls will be matched on age (within five years) and sex and reside in the neighborhoods of the cases. To obtain all corroborative evidence possible as to dietary habits of subjects, spouses or other individuals who live with or cook for the subjects will be interviewed. A multivariate analysis of the results will be carried out. Data collection has proceeded well in the past year. We have interviewed 744 cases, comprised of 161 mouth, 97 oesophagus, 169 larynx, 28 pharynx, 141 stomach, 111 colon, and 37 rectum cancers. In addition, 599 controls, 112 control spouses and 119 case spouses have been interviewed. Data collection will continue as scheduled over the next year. Preliminary analysis of 100 case/spouse and 100 control/spouse pairs to determine extent of agreement with regard to the subjects' dietary habits is under way.

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2.2113,

SOCIO-ECONOMIC AND DEMOGRAPHIC FACTORS THAT INFLUENCE HEALTH STATUS IN THE VICINITY OF ENERGY (ABBREV)

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The long-range objective of the study is to develop predictive relationships between the socio-economic and demographic characteristics of regional and local populations and the general health status of these populations. Special attention has been given to the identification of the causes of mortality that may be related to the effluents from existing or proposed major energy systems. A procedure for standardizing mortality variations using county-level socio-economic and environmental characteristics is being developed. The relationships between selected measures of population health and socio-economic, demographic, and environmental variables are under examination. The data are derived from 1970 Census Data, 1969-1971 U. S. Vital Statistics, and recent pollution, climate, cigarette and alcohol consumption data. This data base is fully developed for 191 counties within an 80 Km radius of 15 power generation sites. These sites sample the diversity of US socio-economic, demographic, and geographical features. Presently, the data base is being extended to include the entire U.S. Multiple regression analysis of the selected total and cause-specific mortality measures (sex-race specific; age-standardized death rates, expectation of life at various ages, infant mortality) on the various independent variables has explained about on-half of the variance in the health measures. It is anticipated that the resulting equations can assist state and local governments in the anticipation of health care requirements for changing socio-economic and environmental factors.

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2.2114,

CHILDHOOD ENVIRONMENT AND RISK OF HODGKIN'S DISEASE

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The objectives of this study are (1) to evaluate the hypothesis that risk of Hodgkin's disease is a function of factors in the childhood environment which inhibit infectious transmission; in particular, family size, birth order, and social class; (2) to re-evaluate the association between tonsillectomy and Hodgkin's disease; (3) to evaluate occupational exposures and Hodgkin's disease; (4) to establish a serum bank. This is a two-part population-based case-control study. Part I is conducted in a defined population in eastern Massachusetts. A 4 1/2 year incidence case series has been identified and surviving cases interviewed at home. Age- and sex-matched controls are drawn from the general population and similarly interviewed. Siblings of cases comprise a second control group. Sera are obtained from cases and sibs. Part II is conducted in a defined population in Detroit, Michigan. A similar incidence series has been identified and information is gathered from live cases and sibling controls by mail questionnaire.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2115,

RISK OF NEOPLASIA IN NEIGHBORHOOD ASBESTOS DISEASE

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It is known that mesothelioma can occur in relatives of asbestos workers. However, it is not known whether or not mesothelioma or lung cancer occurs with greater frequency in persons with low-level exposure, for example, those living near an asbestos plant. We have established cohort of all males over the age of 18 living within a half mile of an asbestos plant in Paterson, New Jersey, 1942-1943; there were approximately 2,500 such individuals. As a control group, we have listed a cohort of men with identical qualifications in another neighborhood of the same city, with similar social strata, but without an asbestos facility. All members of both cohorts are being traced through 1974 and their mortality experience evaluated. We have successfully traced over 95 percent of both groups. In addition, lung tissue of those who have died is being analyzed for its asbestos content, quantitatively, and settled dust in homes at varying distances from the index factory, taken from attic rafters, etc., is being studied for its asbestos fiber burden. In both the epidemiological and environmental investigations, workers employed in the factory and their families are excluded. The first mortality analyses of these data are now completed. Total mortality, total cancer and lung cancer deaths did not differ in the two neighborhoods 20-35 years after first exposure. Follow-up will continue.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2116,

EPIDEMIOLOGY OF MALIGNANT MELANOMA

S. Graham, State University of New York, Buffalo Campus, School of Social Science & Admin., Dept. of Sociology/Social & Preventive Medicine, *3435 Main St., Buffalo, New York* 14214 (D-IARC-79-921)

The incidence of malignant melanoma has increased markedly over the past thirty years. The male incidence per 100,000 in Upstate New York has increased from 1.3 in 1941 to 3.4 in 1970. In the same period female incidence rates increased as well. This study aims to examine the effect of sunlight exposure, geography, ethnicity, genetics, hormones, exposure to chemical carcinogens and irradiation on the development of the disease. Cases and controls are being interviewed at Roswell Park Memorial Institute. We plan to continue to interview cases as they occur over a period of five years, until we have approximately 800 cases. Control matched 2 for 1 on age and sex with cases are patients with neoplasms probably unrelated to melanoma, e.g., cancer of the lung and colon. Data collection is on-going. We have interviewed 357 melanoma cases and 375 controls. A preliminary analysis is being planned.

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2.2117,

GENITOURINARY CANCER IN MARRIED COUPLES

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The aim of this study was to test the hypothesis that women with cancer of the cervix might be more likely than others to have husbands with cancer of the prostate, penis, urethra, bladder, or testis. The names, ages, and addresses of approximately 2,500 women diagnosed between 1950 and 1954 with cancer of the cervix in upstate New York were obtained from the Tumor Registry of the Bureau of Cancer Control. The names and addresses of husbands of cervix cancer cases were obtained and matched against the Tumor Registry computer tapes which contain names of males with genitourinary cancer in the years since 1950. The number of cases found among husbands will be compared with the number expected in the normal population, using age-specific rates for each site; the observed number of male cases with each cancer was found to be within the expected 95 percent confidence interval range. The number of cases observed at each sexual site, with the exception of penis, was at the low end of the confidence interval for the expected numbers. In the case of the penis, the opposite was true: the expected number was 0.66 and 2 cases were observed. The incidence of genital site cancers in wives of a group of 256 males with cancer of the penis from 1960-1964 is now being examined. Preliminary results suggest a higher than expected incidence of genital cancers in these females.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2118,

MORTALITY EXPERIENCE OF BRAKE REPAIR AND BRAKE MAINTENANCE WORKERS IN NEW YORK CITY

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Investigations have demonstrated that brake repair and brake maintenance workers have significant exposure to asbestos in the course of their work. Random instances of pleural mesothelioma have been observed among such workers. It is not known whether these are indicators of more widespread problems. The matter is of some importance, first because of the large numbers of workers employed in this industry, including those occasionally exposed in brake repair and brake maintenance jobs while more generally occupied in automobile repair and, second, because of the interest in the general question of whether dusts from brake use have biological effects in general as environmental contaminants. We have established a cohort of all members of the United Automobile Workers' Union in New York City employed in brake maintenance and brake repair work in the various garages and automobile preparation facilities in New York, registered on the Union's Rolls for 1960 and having been so recorded for at least five years. It is our intention to examine the mortality experience of this cohort, 1960-1975, to provide initial data concerning possible asbestos hazard. Concurrently, we are clinically examining brake repair and brake maintenance workers and have undertaken a variety of industrial hygiene studies.

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2.2119,

OCCULT CARCINOMA OF THE THYROID GLAND

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A comparative study of occult carcinomas of thyroid glands was done to evaluate relative prevalence in the Japanese living in Hawaii (24%), and in Northern Japan (28%), Canada (5%), Columbia, South America (5.6%) and southern Poland (9%). The Japanese were found to have a much higher prevalence of these lesions although the prevalence of clinical cancer was not increased. The project is being continued in the Hawaii-Japanese, and various environmental factors such as diet will be analyzed. Other races in Hawaii are also being studied.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2120,

SELENIUM OCCURRENCE AND HUMAN CANCER MORTALITY - FAT AND BEEF CONSUMPTION AND HUMAN CANCER MORTALITY

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The aim of this study is to relate selenium occurrence to human cancer mortality. Crude and some age-adjusted mortality show an inverse relationship to selenium bioavailability. Age-adjusted mortality for various cities and states in the United States has been obtained, but less than state-wide data is difficult to obtain. We would like to relate selenium in blood or bioavailability in various countries throughout the world. A major report has appeared in the Arch. of Environ. Health 31:231-235, 1976.

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2.2121,

CASE-CONTROL STUDY OF USE OF OXIDATIVE HAIR DYES AMONG FEMALE CANCER PATIENTS

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This case-control interview study will attempt to determine whether women with cancers at the sites listed below have a history of more frequent exposure to oxidative hair dyes than women who are of the same age and social class, but who are either healthy or hospitalized for illnesses other than cancer. Cancer patients will be interviewed at both the Princess Margaret Hospital Toronto, and the Ontario Cancer Foundation Clinic, Victoria Hospital, London. It is proposed to interview about 35 patients with cancer at each site at each centre. In Toronto, two controls for each case will be selected at random from the same neighbourhood as the cases; in London, two controls for each case will be selected from female patients admitted to the hospital in which the clinic is located. Controls will be matched to the cases for age, within 5 years on either side of the case's age. Results are anticipted in the spring of 1979.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2122,

HISTORICAL-PROSPECTIVE STUDY OF THE LONG-TERM HEALTH EFFECTS OF EXPOSURE TO FIBROUS GLASS AND MINERAL WOOL

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Objective is to determine the cause-specific mortality experience of workers in the fibrous glass and mineral wool industries for periods up to 50 years after first exposure and relate this to duration and intensity of exposure and to the experience of the general population. Cohorts consisting of male workers with one year or more experience (exposure) in manufacturing between Jan. 4, 1945, and Dec. 31, 1963, will be developed. Vital status of this cohort will be determined as of Dec.31, 1973. Total cohort size is estimated to be about according to statistical analysis. The risk of death from selected causes will be established with a detailed examination of malignant neoplasms.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2123,

NATURAL HISTORY OF CARCINOMA IN SITU OF THE VULVA AND RESPONSE TO VARIOUS FORMS OF THERAPY

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Carcinoma in situ of the vulva is a 'new' disease with a rapidly rising incidence curve. It occurs in young women and does not seem to be associated with invasive carcinoma of the vulva. Some cases have disappeared spontaneously. None have progressed to invasion under observation. The present study continues to find, record and observe cases of carcinoma in situ of the vulva, to gather data regarding race, age, parity, concomitant venereal disease, concomitant cancer of other location, occupation and - in some cases - response to various modes of therapy.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2124,

BACKGROUND RADIATION AS A CARCINOGENIC HAZARD

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OBJECTIVES: To compare cancer incidence and mortality rates with background radiation levels in various regions of the world. Comparisons include components of background radiation, and all the various types of malignancies and anatomical sites.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2125,

ASSOCIATION OF LUNG CANCER WITH CIGARETTE SMOKING

G.B. Gori, U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst., Division of Cancer Cause & Prevention, *9000 Rockville Pike, Bethesda, Maryland* 20205 (D-IARC-79-849)

The objective of this retrospective study is to analyze differences in lung cancer incidence rates as a function of cigarette type and smoking habits among case-control groups in Austria, France, Germany, Italy, Scotland, Cuba and U.S.A. Interviews with hospital patients are conducted to obtain data regarding cigarette brands smoked, number of years using each brand, total number of years smoking, patterns of smoking, drinking habits and demographic data. Data for approximately 500 cases and 1,000 controls are collected annually in each participating country. Central data analyses are performed by Enviro Control, Inc., Rockville, Maryland 20852, U.S.A. (Dr. C.J. Lynch).

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2126,

ESTROGENS AND BREAST CANCER RISK; RESERPINE AND BREAST CANCER RISK; ESTROGENS AND ENDOMETRIAL CANCER RISK

B.E. Henderson, University of Southern California, School of Medicine, Dept. of Pathology, *2025 Zonal Ave., Los Angeles, California* 90033 (D-IARC-79-725)

OBJECTIVES: (1) To determine the role of estrogens given for menopausal symptoms in the development of breast and uterine cancer. (2) To evaluate female hormone levels in female relatives of bilateral breast cancer patients less than 50 years old. (3) To evaluate female hormone levels and dietary practices in high school students of the Seventh-Day Adventist Academies in Los Angeles.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2127,

CASE-CONTROL STUDY OF OCCUPATION AND CANCER

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This study aims to explore differences between cases and controls in relation to occupation, exposure to chemicals, tobacco and alcohol use, diet, past history and family history. Cases are identified through the Cancer Surveillance Program at Los Angeles County/University of Southern California. Controls are selected on a nearest-neighbor basis, and matched by age, race, and sex. It is expected that, depending upon site, 200-600 cases and matched controls will be studied.

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2.2128,

CHARACTERIZATION OF PROSTATIC CARCINOMA AMONG BLACKS

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The aims of the study are to: 1) Compare the clinical features, plasma hormone (testosterone, oestrone,

oestradiol, and prolactin) levels, epidemiological factors, and tumor morphology in high-risk U.S. Blacks, 2) search for factors that may be associated with the development of prostate cancer in the U.S.A., 3) determine in postmortem material the frequency of incidental (non-invasive) carcinoma of the prostate in the two population groups and 4) study the relation between incidental carcinoma and non-neoplastic prostatic diseases and morphological changes in the liver, adrenal glands, breast, testis, and pituitary gland. All new untreated patients with prostate carcinoma are being admitted to the study. Blood samples are drawn from all male patients after admission to the urological services of the collaborating hospitals. All patients with histologically confirmed carcinoma of the prostate and all controls are interviewed about social and demographic factors, family history, food consumption habits, sexual history, past history of illnesses and operations, history of urogenital diseases, and use of contraceptives by sexual partners. Hospital control patients, age-matched, and free of clinically demonstrable neoplastic, urological, and endocrine conditions are used. In addition, the whole prostate gland is collected from consecutive necropsy cases of black men in Washington, D.C. Whole glands with attached seminal vesicles are accessioned, entered into a blind study, weighed, step-sectioned. From patients with the clinical diagnosis of carcinoma undergoing prostatic surgery, the histological grade of the tumor and other morphological features are correlated with clinical staging, hormonal studies, and epidemiological data. As of January 1978, 170 American and 78 African matched pairs (cancer and control) had entered the study.
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2129,

GENETIC STUDIES OF BREAST CANCER

D.E. Anderson, University of Texas, University of Texas System Cancer Center, M.D. Anderson Hospital & Tumor Inst., Dept. of Biology, *c/o Texas Medical Ctr., Houston, Texas* 77030 (D-IARC-79-1041)

The purpose of this study is to identify patients with hereditary types of breast cancer. Patients with family histories of the disease are selected for study; controls are selected from the same patient population but have family histories of neoplasms other than the breast. Both groups are studied simultaneously with similar methodological approaches. Questionnaires are used for eliciting family and medical histories; all reported tumor occurrences are verified by a medical, hospital, pathological and/or vital statistics report. Patients have been classified according to various criteria: age at clinical onset, single or multiple primaries, type of family history, and associated familial neoplasms. Such classifications have identified groups of patients' relatives with varying risks of developing the disease, ranging from the usual 2-fold level to much higher levels. High lifetime probabilities of 30 percent have been observed for the sisters and daughters of patients whose mothers also had breast cancer. The occurrence of breast cancer in two successive generations of daughters with high lifetime probabilities of developing the disease is strongly indicative of a hereditary type of breast cancer. The mechanism of gene action is unknown. One possibility being investigated is oestrogen metabolism. An assay has been developed for measuring oestrogen hydroxylase activity. Although activity has been detected in murine livers, no activity has been observed in human lymphocyte cultures or long-term human lymphoblast cultures or in human breast cancer cell lines. Blood cell antigen and enzyme markers are also being tested in breast cancer families and controls in an attempt to identify high-risk women. Of the markers tested, only the ABO blood type was found to be significantly associated with breast cancer. Type A was in excess and type O was deficient in unselected patients and patients from low-risk pedigrees compared with controls, and more so at older than younger ages.
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2130,

EFFECT OF ETHNICITY ON THE CLINICAL BEHAVIOR OF BILATERAL BREAST CARCINOMA

G.M. Bordin, Mexico Tumor Registry & Hospital of Scripps Clinic, Dept. of Pathology, *La Jolla, California* 92037 (D-IARC-78-841)

The age at diagnosis, interval between first and second breast carcinoma, and clinical stage at diagnosis for first and second breast carcinomas in Non-Spanish-American Caucasian and Spanish-American women will be compared. Age comparisons will be made with a control group without bilateral breast carcinoma. Data came from a population-based tumour registry covering an area where there are high risk (Non-Spanish-American) and low risk (Spanish-American) groups for breast cancer. A first analysis has been completed. The survey continues.
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2131,

MULTIPLE PRIMARY MALIGNANT NEOPLASMS - COMPARISON OF RATE OF OCCURRENCE IN CAUCASIANS, SPANISH-AMERICANS AND AMERICAN INDIANS

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Utilizing data from a population-based tumour registry, the rate of occurrence of multiple primary malignant neoplasms (excluding skin) in large geographical area will be determined and the relative risk for the three ethnic groups mentioned, determined. Differences in the most frequent combinations and the most frequent sites associated with multiple primary carcinomas will be examined for the three ethnic groups. The influence of age and sex of patient will also be evaluated.
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2132,

EPIDEMIOLOGY OF HEPATOMA AND CHRONIC LIVER DISEASE IN RELATION TO HEPATITIS B INFECTIONS IN TAIWAN

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In Taiwan, where alcohol abuse is rare, chronic liver disease accounts for approximately 25% of all adult male deaths. Approximately half of these deaths are attributed to hepatoma, most with underlying cirrhosis, the other half to cirrhosis without hepatoma. Acute and chronic hepatitis are also very common. There is a high degree of association between these conditions and the hepatitis B surface antigen (HBsAg): hepatoma 90%, cirrhosis 80%, chronic hepatitis 70%, acute hepatitis 60%. Approximately 10-20% of the general, apparently healthy population are HBsAg carriers. Although most carriers are asymptomatic, liver function studies are frequently abnormal. This study will identify approximately 1,000-2,000 apparently healthy HBsAg carrier males 40-59 years of age. These will be followed for at least five years to determine the frequency of morbidity and mortality from liver disease. The liver disease rates in these carriers will be compared with those of 9,000 to 18,000 non-HBsAg carriers selected from the same population. Familial aggregation of HBsAg and chronic liver disease is also under study.
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2133,

MEDICAL SURVEILLANCE AND INTERVENTION - BLADDER CANCER

D.L. Bayliss, U.S. Dept. of Health & Human Services, Public Health Service, Center for Disease Control, National Inst. for Occupational Safety & Health, Biometry Section, *4676 Columbia Pkwy., Cincinnati, Ohio* 45226 (D-IARC-79-983)

As aromatic amines, specifically beta-napthylamine, benzidine, and di-chloro-benzidine, have been responsible for cancer of the bladder in up to 100 percent of workers, the continued and increasing use of such carcinogens, not only in dye and pigment production but also in pharmaceuticals, detergents, food colors and specialized chemicals, makes it imperative that surveillance should continue so that situations similar to the current bladder cancer epidemic in New Jersey be prevented. A cooperative agreement is being developed with the National Cancer Institute to place all such exposed workers under medical surveillance. This will include periodic examinations and constant follow-up to detect early changes consistent with the development of bladder cancer.
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2134,

RISKS AND BENEFITS OF BREAST CANCER SCREENING PROGRAMS

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OBJECTIVE: Reassessment of epidemiological evidence bearing on the benefits of periodic screening of asymptomatic women, and on various risks and costs. Primary attention is given to hazards of radiation carcinogenesis in breasts exposed to x-radiation during mammography.
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2135,

EPIDEMIOLOGY OF STOMACH CANCER AND NITRATES IN CHILE

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An initial study, already published, demonstrated a correlation between nitrate exposure and stomach cancer mortality in Chile. The proposed study is designed to meet three major objectives: (1) to determine whether a significant difference in exposure to variables indicating a high nitrate intake exists in Chile between two groups of stomach cancer patients and their ill and well controls; (2) to search for additional factors which might be of significance, other than the cumulative nitrate exposure demonstrated in our previous correlation study; (3) to determine whether a correlation exists between nitrate/nitrite exposure indicators and stomach cancer in low and high risk areas of Chile. In order to meet the objectives, a case-control and a nitrate ecology study are proposed, to be carried out concurrently during a 20-month period. In the case-control study, cases and hospital and neighbourhood controls will be interviewed. A questionnaire specially designed to record long-term data has been already pilot-tested. The analysis of combinations of ten varieties throughout life periods defined by residence landmarks will explore differences in patterns between cases and controls. The nitrate ecology study includes the collection of specimens to determine nitrate/nitrite content of urine and saliva of school children and in food specimens, both in high and low risk areas. Confirmation of the correlation study by these proposed studies will help to substantiate the role of N-nitroso compounds in man.
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2136,

MORTALITY EXPERIENCE OF HOUSEHOLD CONTACTS OF ASBESTOS WORKERS

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From 1941 to 1945 men were employed in an asbestos products factory in an eastern U.S. city. Approximately 2,225 individuals lived in their households, at the time of employment. This group is being identified and will form a cohort for the prospective evaluation of their mortality experience 1946-1980. It is already known that household contact disease may occur ('conjugal' asbestos disease); this information will provide quantitative information concerning the extent of that risk. Moreover, while mesothelioma is known to occur among household contacts, the risk of other disease has not been investigated. It is expected to obtain information in this regard as well. In parallel clinical studies, over 700 family contacts have so far been examined; one-third have chest x-ray abnormalities consistent with asbestos exposure.
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2137,

PREDICTION OF LUNG CANCER RATES BY SPUTUM CYTOLOGY

V.E. Archer, U.S. Dept. of Health & Human Services, Public Health Service, Center for Disease Control, National Inst. for Occupational Safety & Health, Division of Surveillance Hazard Evaluation & Field Studies, *4676 Columbia Pkwy., Cincinnati, Ohio* 45226

In assessing the lung cancer risk of a worker population, it is highly desirable to have an early prediction method so that excess risk can be detected early.

For new chemicals suspected of being pulmonary carcinogens, sputum cytology may reduce by half or more the time needed to determine the existence of risk, thus possibly saving many lives. Several sputum samples from about 15,000 uranium workers have been collected over a period of 18 years. Using Dr. Saccomanno's classification, the samples will be analyzed to show correlation with age, tobacco smoking and radiation exposure. Persons with various grades of atypia will be followed to see how their sputum changes over the years, and to determine subsequent lung cancer mortality associated with each class of atypia (up to 18 years). Multiple correlation analyses will be done (utilizing support from NCI). These analyses will permit assessment of the use of sputum cytology as a survey tool assessing the lung cancer risk of a population before lung cancer has appeared.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2138,

THE PHILADELPHIA PULMONARY NEOPLASM RESEARCH PROJECT

W. Weiss, Hahnemann Medical College & Hospital, School of Medicine, Dept. of Medicine, *235 N. 15th St., Philadelphia, Pennsylvania* 19102 (D-IARC-79-1029)

The objective of this study is to investigate the natural history of lung cancer in a population of male volunteers aged 45 and over. A total of 6,027 men were enrolled in a prospective study from December 1951 to December 1955 and followed with semiannual chest photofluorograms and symptom questionnaires for 10 years. Medical information on all illnesses and deaths was collected. Data were placed on computer tape by 1968 and the results have been under continual analysis. A total of 121 men developed lung cancer at a rate of 2.3/1,000 man-years. The risk increased with increasing age, was higher in non-whites than in whites, and bore a dose-response relationship to cigarette smoking. None of 830 non-smokers developed lung cancer. The dose-response relationship between smoking and lung cancer held true for adenocarcinoma as well as for squamous cell and small cell carcinoma, but the gradient was not as steep. The characteristics of 'early' lung cancer have been described. Screening contributed little to the survival rate. Survival factors have been described. Chronic cough was found to be an additional risk factor. During the occult phase of the lung cancer chronic cough and expectoration were found to increase prior to x-ray detection of the cancer compared with matched controls. Further analysis is continuing.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2139,

EPIDEMIOLOGIC CHARACTERISTICS OF PRE- AND POST-MENOPAUSAL BREAST CANCER PATIENTS

D.C. Daubner, Duke University, School of Medicine, Dept. of Community Health & Family Medicine, *Box 3711, Durham, North Carolina* 27710 (D-IARC-79-975)

The goal is to define the epidemiological characteristics of breast cancer in pre- and post-menopausal women and to relate these characteristics to the pathobiology of the tumour as manifested by oestradiol and progesterone receptors, histology and cellular ultrastructure. This case-control study concerns breast cancer patients undergoing surgery at university and community hospitals, surgical or medical patients not having breast or gynaecological surgery at the same hospitals, and subjects from the community. Data collection is by interview of all subjects and review of charts of hospital patients. Laboratory studies on tissue and serum from breast cancer patients will include quantitative oestrogen and progesterone receptor determinations, evaluation of histology and ultrastructure by a standardized protocol, and oestrogen and progesterone serum determinations. Statistical analyses will estimate the relative strength of association between breast cancer and pre- and post-menopausal women and such factors as age at menarche, age at first delivery, obesity, and family history of breast cancer. Associations between risk factors and tumour cell biology and morphology will be sought by comparing the laboratory results in women with and without single or multiple risk factors.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2140,

EPIDEMIOLOGY OF BENIGN AND MALIGNANT BREAST DISEASE IN CINCINNATI, OHIO IN WOMEN AGED 35 YEARS AND OVER

I. DeGroot, University of Cincinnati, School of Medicine, Dept. of Epidemiology & Experimental Medicine, *Eden & Bethesda Aves., Cincinnati, Ohio* 45221 (D-IARC-79-990)

Epidemiological characteristics are being studied in 10,500 women screened for breast cancer. The initial objectives are to establish and describe the circumstances surrounding entry into the detection program and the development of breast cancer and benign breast disease.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2141,

TRENDS IN MORBIDITY AND MORTALITY OF UTERINE CANCER IN RELATION TO MASS CYTOLOGICAL SCREENING

W.M. Christopherson, University of Louisville, School of Medicine, Dept. of Pathology, *101 W. Chestnut, Louisville, Kentucky* 40202 (D-IARC-79-817)

A population-based registry of all uterine tumors in Jefferson County, Kentucky, has been maintained since 1953. Jefferson County has had mass cytological screening since 1956 and by as early as 1967 over 90% of the population had been screened. Morbidity and mortality trends as well as patient survival and a record of histological type have been monitored. Over the period of the study mortality from cervix cancer has decreased significantly when compared to mortality trends in United Kingdom and Ireland and in Denmark. The study continues.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2142,

INVESTIGATION OF EXCESS GALLBLADDER CANCER AMONG SPANISH WOMEN IN NEW MEXICO, WITH SPECIAL EMPHASIS ON RIO ARRIBA COUNTY

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Mason and McKay's Atlas of Cancer in the USA reports a significant excess of liver and bile duct cancer in Rio Arriba County females from 1950 to 1969. Cursory examination of 1950-1966 Rio Arriba death certificates reveals a primitive pattern of causes of death, mostly communicable diseases and accidents. New Mexico Tumor Registry records from 1969-1975 show elevated morbidity rates for gallbladder cancer in Rio Arriba County, with rates for Spanish American females estimated to be 15 times those for US females. (In New Mexico the term 'Spanish American' distinguishes persons of Spanish ancestry settling before 1845 from recent Mexican migrants.) Extraction of 1957-1969 death records and of 1969-1975 morbidity records indicates that these women are of non-migrant families, possibly highly inbred. Historical considerations lead to the hypothesis that they descended from Plains Indians settled in the county between 1780 and 1830, after De Anza defeated the raiding Comanches. Cregan and Fraumeni have found American Indian populations to be at high risk for gallbladder cancer. New Mexico age-adjusted incidence rates for 1969-1975 are 5.1 for male Indians and 21.1 for female Indians. Two sisters and a mother and daughter have been among the Rio Arriba gallbladder cancer decedents. For no other site of cancer have any relatives been found. This strengthens the plausibility of a familial or genetic explanation. It is proposed to test hypotheses of Indian ancestry and of familial aggregation by blood typing, genealogy, and other appropriate methods.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2143,

HAWAII TUMOR REGISTRY

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OBJECTIVE: Collect data on all cases of cancer diagn sed or treated in Hawaii.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2144,

EPIDEMIOLOGICAL AND INDUSTRIAL HYGIENE STUDY OF ALUMINUM REDUCTION WORKERS

D.P. Brown, U.S. Dept. of Health & Human Services, Public Health Service, Center for Disease Control, National Inst. for Occupational Safety & Health, Biometry Section, *4676 Columbia Pkwy., Cincinnati, Ohio* 45226 (D-IARC-79-984)

Workers in aluminum reduction industry are exposed to a variety of substances, e.g., hydrogen fluoride fumes, dust, carbon monoxide and coal tar pitch volatiles (CTPV) such as benz(a)pyrene. Coal tar pitch volatiles are released in the anode preparation area in plants using pre-baked anodes and in the pot lines where Soderberg self-baking cells are used. The release of CTPV is thought to be temperature dependent. Sufficiently high temperatures are reached in both anode preparation and electrolysis of aluminum to achieve the release of such materials. Industrial hygiene surveys of the aluminum reduction industry have revealed levels of CTPV well above the current occupational health standard of 0.2 milligram per cubic meter (mg/m3) by the benzene soluble fraction method. A variety of studies have been carried out to describe the cancer mortality experience of workers in aluminum reduction facilities. Milham (1976) has reported an increase in proportionate mortality from total cancer, cancer of the pancreas, cancer of the respiratory system, and malignant lymphomas among aluminum workers in Washington State. In a study by Tabershaw/Cooper, cause-specific standard mortality ratios, calculated for subgroups in the study population defined by major process, showed a positive association between employment as a potroom worker and lung cancer, leukemia, and lymphoma. In order to more fully define the specific cancer risk within the potrooms, a retrospective case control study is planned on aluminum workers exposed to CTPV. Industrial hygienists will assist in classifying job categories and in verifying related industrial hygiene data.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2145,

COLORADO CENTRAL CANCER REGISTRY

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Ongoing descriptive epidemiological study of malignant disease in Colorado.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2146,

EVIDENCE FOR HORIZONTAL TRANSMISSION OF MALIGNANT LYMPHOMA

S.W. Ferguson, State Dept. of Health, Chronic Disease Control Sect, *4210 E. 11th Ave., Denver, Colorado* 80220 (D-IARC-78-788)

A case-control study to determine secondary attack rates in population groups in contact with lymphoma cases and in those without such contact. This ongoing study of lymphoma is based on cases seen at the University of Colorado Medical Center.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2147,

CANCER A[illegible]NG CHILDREN OF NURSE ANESTHETISTS

A.F. Kantor, Yale University, School of Medicine, Dept. of Epidemiology & Public Health, *333 Cedar St., New Haven, Connecticut* 06510 (D-IARC-79-756)

This study will investigate the cancer experience of nurse anesthetists and their children. A retrospective case-control approach will be employed using an employment history for both nurses and controls. Results will be compared with Connecticut Tumor Registry data on childhood cancer experience in order to test the hypothesis that inhalation of anesthetic gases by pregnant operating room personnel increases the risk of cancer in their offspring.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2148,

CANCER RISK AND CYCLOPHOSPHAMIDE USE

A.F. Kantor, Yale University, School of Medicine, Dept. of Epidemiology & Public Health, *333 Cedar St., New Haven, Connecticut* 06510 (D-IARC-79-755)

This study tests the hypothesis that cyclophosphamide use is related to urinary bladder cancer and/or other neoplasms, particularly among lymphoma patients receiving the drug for extended time periods. Two sites of primary cancer (Hodgkin's disease and multiple myeloma) will be examined. Cases diagnosed between 1960 and 1970 and followed through 1973 will be examined. Analysis will review observed and expected numbers of second cancer, taking treatment, age, sex, and stage of disease into account.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2149,

SURVEY OF EBV AND BURKITT'S LYMPHOMA IN AN ISOLATED AREA OF PERU ENDEMIC FOR NON-P. FALCIPARUM MALARIA

P.M. Feorino, U.S. Dept. of Health & Human Services, Public Health Service, Center for Disease Control, Viral Oncology Branch, *1600 Clifton Rd. N.E., Atlanta, Georgia* 30333 (D-IARC-78-654)

A primitive isolated population in the Peruvian Amazon Jungle has been studied for the presence of antibodies to P. falciparum, P. malariae and EBV. No antibodies to P. falciparum were found even though the tribe lived in an area highly endemic for malaria. Almost all individuals studied had antibodies to EBV and P. malariae; these antibodies were acquired at an early age and maintained at a high level. A preliminary investigation shows little or no Burkitt's lymphoma in this area. This tribe affords an unusual opportunity to study Burkitt's lymphoma, EBV, P. malariae and P. falciparum.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2150,

EPIDEMIOLOGY OF CANCER IN FAMILIES WITH IMMUNODEFICIENCY

J.H. Kersey, University of Minnesota, Minneapolis Campus, School of Medicine, Dept. of Laboratory Medicine & Pathology, *1305 Mayo, Minneapolis, Minnesota* 55455 (D-IARC-79-886)

In connection with work begun under the auspices of the Immunodeficiency Cancer Registry, the association between immunodeficiency diseases and cancer is being investigated. This study focuses on the Wiskott-Aldrich Syndrome and will utilize both epidemiological and laboratory methods to achieve the following goals: (1) to validate preliminary evidence collected by the Immunodeficiency Cancer Registry which suggests that there is an increased risk of cancer in males affected with Wiskott-Aldrich Syndrome; (2) to determine if this apparent increased risk extends to female carriers of Wiskott-Aldrich Syndrome; (3) to evaluate differences found in cancer frequencies for the Wiskott-Aldrich Syndrome families studied. Families of over 150 Wiskott-Aldrich Syndrome cases in the United States and Canada are being contacted and, with the cooperation of various family members, pedigrees are being constructed. Because Wiskott-Aldrich Syndrome is an x-linked recessive disorder, female carriers of the gene(s) for this disorder can be defined, within a probability range, when the probands are tagged through pedigree analysis and medical records verification. A study population of carriers will be developed from pedigree information; Various relatives will be systematically selected for a comparison of the lifetime prevalence of cancer among carriers (cases) and non-carriers (controls). Medical records and death certificates will be used to verify the occurrence of malignancy.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2151,

PROSPECTIVE STUDY OF PATIENTS WITH GENITAL TYPE II HERPESVIRUS INFECTIONS

R.H. Kaufman, Baylor College of Medicine, School of Medicine, Dept. of Obstetrics & Gynecology, *1200 Moursund Ave., Houston, Texas* 77025 (D-IARC-79-1048)

Women with virologically proven genital herpes are being followed prospectively with regard to the possible development of cervical atypia. Comprehensive epidemiological data are also being collected on these individuals.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2152,

AGE-DISTRIBUTION OF LUNG CANCER IN PATIENTS AT VETERANS ADMINISTRATION HOSPITAL - HINES, ILLINOIS

H.T. Langston, Northwestern University, Chicago Campus, School of Medicine, *303 E. Chicago Ave., Chicago, Illinois* 60611 (D-IARC-79-813)

The age-distribution study previously reported now spans the 35 years between 1939 and 1973. As anticipated, the number of cancers contributed by the generation born between 1890 and 1900 fell off in the last quinquennial period of 1969 to 1973. This is now, after all, an aging cohort. There were 350 patients in the younger age groups (35-59 years) in the 1939 to 1943 period (90 percent of the total) and only 464 patients in the same age range in the 1969-1973 period (56 percent of the total). This supports the view that the younger cohorts are not fully replacing the older and aging generations. The total number of cases in this hospital during the 1969 to 1973 period did not increase.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2153,

NASOPHARYNGEAL CARCINOMA IN ALASKAN NATIVES - ESKIMOS, INDIANS AND ALEUT

A.K. Lanier, U.S. Dept. of Health & Human Services, Public Health Service, Center for Disease Control, Bureau of Epidemiology, Alaskan Activities, *225 Eagle St., Anchorage, Alaska* 99501 (D-IARC-79-703)

A moderately high incidence of nasopharyngeal cancer has been noted in Alaskan natives. The cases diagnosed in 1966-1976 are being reviewed. A case-control study of risk factors such as occupation, work and home conditions, fuels used, history of tuberculosis, use of steam baths, etc., is under way. Material is being collected for study of histocompatibility antigens and Epstein-Barr virus (EBV) antibody titers, as well as evidence of EBV in tumor tissue.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2154,

EPIDEMIOLOGICAL STUDY OF DIETARY COMPONENTS AND CANCER DEVELOPMENT

L.N. Kolonel, University of Hawaii System, Manoa Campus, School of Public Health, Dept. of Biomedical Sciences, *Spalding Hall, Room 255, Honolulu, Hawaii* 96822 (D-IARC-79-788)

This study correlates group-average dietary intake data, acquired over a three-year period on a representative sample of 6,000 Oahu residents of Caucasian, Japanese, Chinese, Filipino and Hawaiian ancestry, with the race-, age- and sex-specific incidence rates for various sites of cancer. Dietary information is obtained by personal interview, using a pre-tested questionnaire and color photographs to help establish quantitative intake. To obtain a representative sample of the population, the study takes advantage of the health surveillance program of the Hawaii Dept. of Health, which each year identifies a cluster sample of 5,000 households throughout the state. Race-, sex-and age-specific incidence rates for cancer are provided by the Hawaii Tumor Registry.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2155,

EPIDEMIOLOGICAL STUDIES IN AETIOLOGY OF CANCER IN TWIN VETERANS, II

Z. Hrubec, National Academy of Sciences, Medical Follow Up Agency, *2101 Constitution Ave. N.W., Washington, District of Columbia* 20037 (D-IARC-79-764)

This study comprises an evaluation of familial factors in cancer by means of a Twin Registry of 16,000 pairs of veteran twins, using questionnaires and mortality follow-up. Preliminary analyses of accumulated data indicated that additional follow-up is needed for meaningful estimates of cancer concordance, and ascertainment of mortality and morbidity is being continued.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2156,

ECOLOGICAL, STATISTICAL, ETHOLOGICAL AND RELATED BIOLOGICAL STUDIES ON AIR POLLUTION, SMOKING AND OTHER ENVIRONMENTAL VARIABLES (ABBREV)

R.J. Hickey, University of Pennsylvania, Wharton School of Finance & Commerce, Dept. of Statistics, *34th & Spruce Sts., Philadelphia, Pennsylvania* 19104 (D-IARC-79-1024)

Statistical and other studies are being conducted to test a four-part hypothesis that: (1) Among common air pollutant chemicals there are some that are mutagenically or otherwise hazardous to health; (2) such chemicals accelerate development of and increase risk of occurrence and mortality from chronic diseases of aging (e.g., cancer, heart disease), and also alter intergenerational DNA leading to birth defects and their consequences, in proportion to exposure; (3) chronic disease risk and resultant mortality are influenced significantly by individual genetic/constitutional characteristics; and (4) these individual characteristics also significantly influence certain behavioral physiological characteristics, such as tobacco smoking and coffee drinking. Three subsidiary hypotheses are that (5) smoking is, for many, symptomatic of physiological deficiencies that nicotine tends to alleviate, with smoking functioning partly as an example of behavioral regulation of physiological homeostasis, (6) viruses can also function mutagenically, along with certain environmental pollutant chemicals, leading to accumulation of somatic mutations, and (7) recent urban mortality rate data are more strongly correlated with air pollution levels of, say, 10 years ago than with recent levels. The basis for (7) may be a result of cumulative, and possibly multiplicative (cf. Orgel's theory), long-term effects of cell alterations inflicted by pollutant chemicals and other factors, including viruses. Methods of multivariate statistical analysis are used in these multi-regional, multi-environmental variable studies, especially an optimal subset selection (algorithm) modification of multiple regression analysis. Data used are human mortality rates for all cancers, cancers of various sites, and leukaemia, along with other chronic diseases (e.g., heart disease) for individual metropolitan populations, and environmental chemical concentration data and other environmental variable data.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2157,

HUMAN RADIATION CARCINOGENESIS STUDY

L.H. Hempelmann, University of Rochester, School of Medicine & Dentistry, Dept. of Radiology, *601 Elmwood Ave., Rochester, New York* 14627 (D-IARC-79-964)

For the past 20 years, we have been following the health status of the following three populations of persons given radiation treatment for benign conditions many years before: (1) 2,872 persons given x-ray treatments in infancy for thymic enlargement and their 5,055 untreated siblings; (2) 606 women given x-ray treatment for acute postpartum mastitis controlled by 554 untreated sisters and by 539 women with a history of acute postpartum mastitis not treated with x-ray treatments and 206 of their untreated siblings; and (3) 971 persons given x-ray treatments to the head during childhood for lymphoid hyperplasia of the nasopharynx, 417 persons treated with intranasal radium capsules for the same condition and the 2,751 non-irradiated siblings of the irradiated subjects. In the thymus-irradiated series (1), an increased incidence of neoplasms and of illnesses with autoimmune features was observed as compared to that seen in the non-irradiated siblings and in the general population. Only thyroid neoplasms occurred in sufficient numbers to permit analysis of incidence as a function of dose and other factors. Radiation-induced thyroid cancer shows a linear dose response. Jews and females have an increased risk of developing thyroid cancer. In the breast-irradiated women (2), the incidence of breast cancer is increased over that in the controls beginning 15 years post-exposure and shows a dose response with an apparent peak in the 400-599 r (air) category. In 1961, the head-irradiated population (3) was shown to have an increased incidence of radiation-induced neoplasms. They are being resurveyed at the present time.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2158,

REGISTRY FOR RESEARCH INTO HORMONAL TRANSPLACENTAL CARCINOGENESIS

A.L. Herbst, University of Chicago, School of Medicine, Dept. of Obstetrics & Gynecology, *5601 S. Ellis Ave., Chicago, Illinois* 60637 (D-IARC-79-807)

The Registry has been established to collect clinical, pathological and epidemiological data on cases of clear cell adenocarcinoma of the genital tract in women born after 1940 regardless of whether or not the patient has a history of prenatal exposure to hormones, and all cases of genital cancer (vulva, vagina, cervix, endometrium, tube, ovary) in any female with a reasonable possibility of exposure in utero to any exogenous sex hormones, including steroidal oestrogens and progestins. Material for review is sought from all such cases occurring in the United States or other countries. Cases may be reported to: Registry for Research on Hormonal Transplacental Carcinogenesis, MARP 303, 5841 South Maryland Ave., Chicago, IL 60637. Pathological studies are conducted at Massachusetts General Hospital in Boston with Drs. Scully, Robboy and Welch as collaborators.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2159,

EPIDEMIOLOGICAL STUDIES OF CANCER

G.G. Caldwell, U.S. Dept. of Health & Human Services, Public Health Service, Center for Disease Control, Cancer Branch, *1600 Clifton Rd. N.E., Atlanta, Georgia* 30333 (D-IARC-79-776)

Various projects are being conducted: 1) A case - control study of interpersonal contact as a risk factor for leukemia/lymphoma in the Metropolitan Atlanta area: 2) laboratory epidemiological studies of families owning cats shedding feline leukemia virus (in collaboration with several tumor virus laboratories in the USA; 3) ad hoc field investigations of community clusters particularly leukemia/lymphoma; 4) retrospective assessment of leukemia risks among persons exposed to atmospheric atom bomb tests in the US in 1957 (in collaboration with other Federal groups); 5) prospective assessment of possible cancer risk in Michigan residents ingesting polybrominated biphenyl in 1973-74 (in collaboration with the State of Michigan and various Federal groups); 6) a follow-up study of women who have died of carcinoma of the cervix to determine whether or not the disease was potentially preventable.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2160,

DEVELOPMENT OF STATISTICAL AND COMPUTER METHODS FOR THE ANALYSIS OF INCIDENCE AND MORTALITY DATA

J.A. Lee, University of Washington, School of Public Health & Community Medicine, Dept. of Epidemiology, *4000 15th Ave. N.E., Seattle, Washington* 98105 (D-IARC-79-1067)

The aim of this study is to develop and make available methods for the dissection of generation, age, and time period effects from the matrices of data provided by cancer registries and vital statistical systems on the occurrence of human cancer. A standard Fortran program (which we would be happy to share) has been prepared which provides at small cost a printout of a very large number of rates and other indices from a set of deaths or cases in five-year age groups and five-year time periods and the appropriate population estimates. It is hoped to develop this to provide estimates of the deeper regularities, e.g., the influence of age or generation differences if historical changes did not occur. Analysis of data sets has shown that inter-cohort differences may be due to historical variations in the changes of rates with age as well as due to generation differences. Studies are in progress on malignant melanoma, cancer of the breast, lung and large bowel, and on Hodgkin's disease. An initial paper on breast cancer has been published (JNCI, March 1979).

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2.2161,

SURVEILLANCE FOR DRUGS THAT MAY BE CARCINOGENIC

G.D. Friedman, Kaiser Permanente Medical Care Program, Dept. of Medical Methods Research, *3700 Broadway, Oakland, California* 94611 (D-IARC-79-741)

The objective is to evaluate medicaments for possible carcinogenic effects. To seek hypotheses, 150,000 persons will be classified according to use and non-use of various medicaments by means of computer-stored records collected from 1969-1973 by the San Francisco Kaiser-Permanente Clinic (1.3 million prescriptions for 3,400 drugs). The development of various kinds of cancer will be followed up by surveillance of hospital records. Drug-cancer associations found would be subjected to further study. More detailed evaluation of hypotheses would be by case-control studies using the Kaiser-Permanente records, with attention to potential confounding variables.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2162,

STUDY OF THE ROLE OF DIET IN THE ETIOLOGY OF COLON CANCER

W.H. Gullen, Medical College of Georgia, School of Medicine, Dept. of Family Practice, *1459 Gwinnett St., Augusta, Georgia* 30902 (D-IARC-79-783)

Several studies have implicated dietary factors (especially animal proteins, cholesterol and refined carbohydrates) in the aetiology of colon cancer. This case-control study is being conducted in 9 cooperating hospitals in the Atlanta, Georgia area. Suspect cases of colon cancer are matched with controls (age, race, sex) and each subject is interviewed regarding past diet. Subjects are followed until definitive diagnosis. Controls are subsequently admitted inpatients with other conditions (with certain exclusions). Matching is by age (within an arbitrary number of years), sex, race and hospital. A number of other factors are investigated (e.g., use of medications). Special emphasis is placed on southern U.S. Blacks since their colon cancer incidence is less than in Whites and northern Blacks.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2163,

THE EPIDEMIOLOGY OF CHILDHOOD RHABDOMYOSARCOMA

S. Grufferman, Duke University, School of Medicine, Dept. of Pediatrics, *Box 3711, Durham, North Carolina* 27710 (D-IARC-79-978)

A survey of the entire state of North Carolina has been conducted to determine the incidence of rhabdomyosarcoma in persons under 15 years of age during 1967-1976. Cyclic fluctuations in incidence will be assessed. A case-control approach will be used to study the descriptive epidemiology of childhood rhabdomyosarcoma as well as associations with potential antenatal, childhood, familial and environmental aetiological exposures.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2164,

EPIDEMIOLOGICAL STUDIES OF CANCER IN LOUISIANA

M.S. Gottlieb, Tulane University of Louisiana, School of Medicine, Dept. of Medicine, *1430 Tulane Ave., New Orleans, Louisiana* 70112 (D-IARC-79-823)

Death certificates for cancer of the lung, nasopharynx, pancreas and bladder will be identified for selected Louisiana parishes for the years 1960-1975. Controls will be matched by parish of residence, year of death, age (within 2 years), sex and race. The frequency of occurrence of names attributable to groups with a common heritage will also be compared, as will relationship of residence at death and distance from selected industries, and water source. The objective is to determine single or multiple factors which can be identified as associated with a greater risk in cases compared with controls. This will form the basis of subsequent additional observational studies. Sub-studies on populations exposed to unique substances are included.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2165,

EPIDEMIOLOGY OF UTERINE CERVIX CANCER IN AN AREA OF LOW INCIDENCE

J.L. Lyon, Utah Higher Education System, University of Utah, School of Medicine, Dept. of Family & Community Medicine, *1400 E. 2nd S., Salt Lake City, Utah* 84112 (D-IARC-79-1058)

Over the last 20 years the State of Utah has had 25% lower mortality than the U.S.A. as a whole from cancer of the uterine cervix. Members of the church of Jesus Christ of Latter-Day Saints (Mormons) have rates of cervical cancer 50% below those of the non-Mormons in Utah. The Mormon population also has a higher fertility rate and age of marriage than non-Mormons. A case-control study to investigate the aetiology of cervical cancer in both Mormons and Non-Mormons residing in the State of Utah is proposed. Cases will be identified through a population-based cancer registry, and controls matched for age and county of residence will be identified from the general population. Cases and controls will be interviewed concerning age when first married, first pregnancy, commencement of sexual intercourse, divorce, number of sexual partners, and venereal disease exposure.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2166,

DIET AND COLON CANCER IN A LOW RISK POPULATION

J.L. Lyon, Utah Higher Education System, University of Utah, School of Medicine, Dept. of Family & Community Medicine, *1400 E. 2nd S., Salt Lake City, Utah* 84112 (D-IARC-79-1059)

The incidence of colon cancer in Utah is 30 to 35% below USA rates. Important risk differences by place of residence and religion are also present in the Utah population. A case-control study to explore the effect of diet on these unusual risk factors is under way. Cases of colon cancer are identified and a population control chosen. Interviews obtain extensive dietary information. Dietary items are also analyzed by their components for elements associated with colon cancer such as high fat intake.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2167,

LATE EFFECTS OF CANCER TREATMENT IN CHILDREN INCLUDING SECOND MALIGNANT NEOPLASMS - CHILDREN'S INTERNATIONAL CANCER INVENTORY

A.T. Meadows, University of Pennsylvania, School of Medicine, Dept. of Pediatrics/Oncology, *36th & Hamilton Walk, Philadelphia, Pennsylvania* 19174 (D-IARC-79-1026)

As treatment for childhood cancer was becoming more successful and rate of survival was improving, an interest developed in studying these children for late effects of radiation and chemotherapy to organic systems. Also of interest was the rate of second tumors in these survivors, whether treatment-related or not. Begun in 1972 at three pilot institutions, the study has been expanded to include children with cancer at 11 institutions, particularly with reference to: (1) Second malignant neoplasms, (2) the offspring of survivors, (3) unusual childhood tumors, (4) congenital anomalies in patients, (5) data regarding siblings and other family members for cancer and congenital defects. The Children's International Cancer Inventory will collect registration data on all new patients seen at each of the cooperating institutions and these will be followed prospectively. In addition, retrospective studies will be begun to study 1-5 above. The second neoplasm study is well under way, and we have collected 137 cases up to 1977.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2168,

OHIO CENTRAL DATA BASE FOR CHILDHOOD CANCER

W.A. Newton, Ohio State University, Columbus Campus, Childrens Hospital, *561 S. 17th St., Livingston Pike, Columbus, Ohio* 43205 (D-IARC-79-1016)

The objective is to provide baseline information on demographic patterns for cancer morbidity and mortality in Ohio children. This includes case-finding information regarding type of cancer by age, race, sex, place of residence, staging at initial diagnosis and institution of initial diagnosis. Abstracts are being prepared on hospital discharge of all newly diag-

nosed children with cancer beginning January 1975 from all the major treatment centers for children in Ohio. These abstracts utilize forms currently in use in a broader data collection program, the Children's Hospital Automated Medical Program (CHAMP), a medical research computer center located in Children's Hospital, Columbus, Ohio. In addition, an epidemiological questionnaire to be completed by parents is also being collected. This includes general questions on family history, including cancer in relatives and malformations, with additional specific information on patients with leukemia, brain tumors, Wilms' tumor and malignant lymphoma.
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2169,
INTERNATIONAL CASE-CONTROL STUDY OF BLADDER CANCER
A.S. Morrison, Harvard University, Boston Campus, School of Public Health, Dept. of Epidemiology, *55 Shattuck St., Boston, Massachusetts* 02115 (D-IARC-79-870)
The objectives of this study are: (1) To estimate the risk ratio and attributable risk of developing lower urinary tract cancer (bladder cancer) associated with coffee drinking in geographic areas which vary with respect to exposure rates and ethnic composition; (2) to estimate the risk ratio and attributable risk of bladder cancer associated with drinking other beverages, smoking, participating in certain occupations, use of analgesics, and ingestion of artificial sweeteners and bracken fern. In Boston (Massachusetts), Manchester (United Kingdom) and Nagoya (Japan), all new cases of bladder cancer in geographically defined populations will be ascertained over two to three year periods. Controls will be selected from the general population. Exposure information is to be collected by home interview.
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2170,
EPIDEMIOLOGY OF CANCER OF LIVER AND BILIARY SYSTEM
J.W. Mosley, University of Southern California, School of Medicine, Dept. of Medicine, *2025 Zonal Ave., Los Angeles, California* 90033 (D-IARC-78-862)
To define differences in incidence of age and sex patterns for the United States and other countries of the world.
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2171,
PANCREATIC CANCER - AETIOLOGY AND DIAGNOSIS
A.R. Moossa, University of Chicago, School of Medicine, Dept. of Surgery, *5801 S. Ellis Ave., Chicago, Illinois* 60637 (D-IARC-79-808)
The aims of this study are to focus attention on the problem of pancreatic cancer at a multi-disciplinary level and collect data prospectively on all patients with suspected pancreatic cancer with a view to elucidating the aetiological factors. Controls are patients who at laparotomy are found not to have a pancreatic cancer. Additional aims are to fully investigate all such patients prior to laparotomy, using all recognized methods of investigation, and to develop new methods, as well as to improve the current techniques, of investigating the pancreas.
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2172,
DESCRIPTIVE EPIDEMIOLOGY OF CANCER IN LOS ANGELES COUNTY
H.R. Menck, University of Southern California, School of Medicine, Dept. of Pathology, *2025 Zonal Ave., Los Angeles, California* 90033 (D-IARC-79-731)
This series of investigations includes study of: (1) The socioeconomic epidemiology of cancer in Los Angeles County - study of the association of various areal socioeconomic indicators, including education, income, occupational class, and house value, with the different types of cancer. (2) The association between occupation and cancer - comparison of the risk for selected cancers, by reported occupation, and by industry of employment, within Los Angeles County. (3) Use of surnames for epidemiological analysis.
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2173,
MORTALITY IN THE CONNECTICUT TUMOR REGISTRY INCIDENCE FILE
L.D. Marrett, Yale University, School of Medicine, Dept. of Epidemiology & Public Health, *333 Cedar St., New Haven, Connecticut* 06510 (D-IARC-78-890)
This study examines the relationship between cancer incidence and cancer mortality to determine whether trends in mortality reflect equivalent trends in incidence, or indicate changing patterns in certification of cause of death or case-fatality rates. Using Connecticut Tumor Registry data, the site-, age-, sex-specific mortality experience of incident cancer cases can be described in terms of coded cause of death; it is possible, therefore, to characterize those cases who die of some cause other than cancer in terms of demographic and disease-related variables. To date deaths occurring between 1950 and 1988 amongst incident cases of cancer of the lung and bladder have been analyzed in this manner.
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2174,
PROPORTIONAL OCCUPATIONAL ANALYSIS USING DEATH CERTIFICATE DATA
L.D. Marrett, Yale University, School of Medicine, Dept. of Epidemiology & Public Health, *333 Cedar St., New Haven, Connecticut* 06510 (D-IARC-79-758)
Occupational data for a random sample of 8,000 Connecticut adults who died between 1959 and 1961 have been collected and coded. Occupation, industry, birthplace and cause of death for this general population sample will be compared with those of deceased Connecticut Tumor Registry incidence cancer cases. Such analyses will control for sex, age at death, and socioeconomic status. These data are currently being used in the studies of occupational factors in urinary bladder cancer and chronic leukaemia in Connecticut. It is hoped that the results of these and similar studies on other cancer sites will suggest new hypotheses regarding associations between occupational exposures and subsequent cancer experience.
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2175,
A DEMOGRAPHIC ANALYSIS OF MULTIPLE CAUSES OF DEATH
K.G. Manton, Duke University, Center for Demographic Studies, *Durham, North Carolina* 27706 (D-IARC-78-798)
The study has the general purpose of examining linkages among disease entities within various demographic (age, sex, race) groups and the changes of these linkages over time. In particular, an analysis will be made of the demographic characteristics of persons who died from various types of cancer. Once the descriptive phase of the study is complete our attention turns to deriving mathematical models of cancer incidence, growth and mortality, which will be then used in studies of cancer latency. The goal of the project is to develop biologically plausible models of cancer growth which are consistent with the frequency of cancer at death. Attention will also be given to the possibility of developing similiar models for other disease entities.
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2176,
EPIDEMIOLOGICAL STUDY OF ENDOMETRIAL CANCER
R.S. Paffenbarger, University of California, Berkeley Campus, School of Public Health, Dept. of Biomedical & Environmental Health Sciences, *Berkeley, California* 94720 (D-IARC-79-713)
Endometrial cancer incidence in northern California Caucasian women had been rising steadily over the last decade, at a rate considerably greater than chance expectation: hormonal influence from prior reproductive events and female hormones taken therapeutically (or prophylactically) are suspected causes. Using case-control methods, it is intended to study childbearing practices (e.g., age at first birth, child spacing, number of children, infertility, etc.), together with the use of post-menopausal and other hormones, of 900 women who develop endometrial cancer and of appropriate control women who do not. Information will be collected by hospital or home interview from study subjects living in five San Francisco Bay Area counties. We anticipate being able to identify the kinds of pregnancy and childbearing experience that distinguish those women who are at greatest risk of subsequent endometrial cancer. Relative risks will be computed for women who chose to remain childless, for those who deliberately decided on late childbearing, and for those who were unable to conceive.
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2177,
DEFINITION OF EPIDEMIOLOGICAL CHARACTERISTICS OF PRE- AND POST-MENOPAUSAL BREAST CANCER
R.S. Paffenbarger, University of California, Berkeley Campus, School of Public Health, Dept. of Biomedical & Environmental Health Sciences, *Berkeley, California* 94720 (D-IARC-79-711)
Using case-control methods, interviews of Caucasian, Negro, and Oriental women in the San Francisco Bay Area, totalling over 2,500 breast cancer patients and 5,000 controls, will be conducted in the three-year period beginning July 1, 1976. Characteristics receiving special attention include age, catamenial and childbearing events, indicators of early fertility, exogenous hormone and drug use, sociocultural factors, family history of cancer, radiation exposure, truncated dietary histories, and various physical measurements. Extent of disease (staging), histological diagnoses, and survival are established. Associations between epidemiological characteristics and breast cancer (pre-menopausal vs. post-menopausal) will be sought.
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2178,
REPRODUCTIVE CAPACITY AND BREAST OR OVARY CANCER RISK
R.S. Paffenbarger, University of California, Berkeley Campus, School of Public Health, Dept. of Biomedical & Environmental Health Sciences, *Berkeley, California* 94720 (D-IARC-79-712)
Recent work by MacMahon et al. showed that increased risk of breast cancer in women with fewer children may be due to late age at first childbirth. Similarly, Joly et al. have shown that increased risk of ovary cancer may be due to delay in first pregnancy. A differing view could be that late childbirth or late pregnancy and carcinogenesis relate to a common hormonal aetiology. A special contribution of the study (2,250 cases of breast cancer and 900 cases of ovary cancer) is to determine whether increased cancer risk differs according to whether the late childbirth or pregnancy is due to lower fertility or to a voluntary delay of pregnancy. Since the hormonal pattern resulting from early pregnancy may not be the same as that associated with basic reproductive capacity, this case-control study, with emphasis on reasons for early or late pregnancy, will assess need for specific hormonal studies of breast and ovary cancer risk.
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2179,
MORTALITY EXPERIENCE OF NITROSAMINE-EXPOSED WORKERS
W.J. Nicholson, City University of New York, Mount Sinai School of Medicine, School of Medicine, Dept. of Community Medicine, *5th Ave. at E. 100th St., New York, New York* 10029 (D-IARC-79-941)
A cohort of workers exposed to nitrosamines in the manufacture of rocket fuel has been identified. The long-term mortality experience of these workers who were exposed for 15 years (or less) is being investigated in a non-concurrent prospective epidemiological study.
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2180,
FIBROCYSTIC DISEASE OF THE FEMALE BREAST AND ITS RELATIONSHIP TO MAMMARY CARCINOMA
D.L. Page, Vanderbilt University, School of Medicine, Dept. of Pathology, *21st Ave. S. & Garland, Nashville, Tennessee* 37232 (D-IARC-78-883)
The investigators are assembling, reviewing and classifying slides from breast biopsies of 4,000 women performed 10 or more years ago and diagnosed as benign breast disease at that time. All

material is being classified as to the component parts of cystic disease present, using modification of the generally accepted categories of histological alteration included under the term 'cystic disease'. Correlation studies between the subsequent development of carconoma, the component types of cystic disease (including papillary and lobular peripheral lesions) and various historical features of each patient will be undertaken. The final goal of this study will be to assign a predictive index to types of fibrocystic disease, permitting assignment of relative risk to individual patients for the likelihood of the development of carcinoma. Results to date after analysis of 1,000 women with biopsies perrmformed eighteen or more years ago show that women lacking epithelial proliferative changes have the same cancer risk as the non-biopsied population-at-large.
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2181,

MORTALITY STUDIES IN RELATION TO OCCUPATIONAL EXPOSURE TO CHEMICALS

M.G. Ott, Dow Chemical Co., *220 Dow Ctr., Midland, Michigan* 48640 (D-IARC-79-883)

These studies are part of a continuing program to evaluate the relationships between occupational exposure to chemicals and cause-specific mortality. A retrospective cohort approach is followed, with potential exposure classified on the basis of industrial hygiene surveys and employee work histories. The following units are included in current studies: styrene-based products (manufacturing and research), production of nitrogenous organic dyes, a fiber production process using methylene chloride as a solvent, and a manufacturing unit with diverse chemical operations.
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2182,

FOLLOW-UP OF U.S. ARMY WORLD WAR II VETERANS WITH CERTAIN CONDITIONS POSSIBLY PREDISPOSING TO CANCER

C.D. Robinette, National Academy of Sciences, Medical Follow Up Agency, *2101 Constitution Ave. N.W., Washington, District of Columbia* 20037 (D-IARC-79-772)

About 16,000 men who served in the U.S. Army in World War II and who were admitted to hospital with certain illnesses or medical conditions while in service are being traced to determine whether they have elevated mortality from cancer, or from other causes. Conditions being studied are nephrectomy, splenectomy, orchidopexy, bronchial asthma and hay fever, and chronic alcoholism. Controls are about 16,000 men admitted to hospital for contused wounds or nasopharyngitis. The period of follow-up extends from January 1946 to December 1974.
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2183,

EPIDEMIOLOGICAL AND GENETIC STUDIES IN PROSTATIC CANCER

I.D. Rotkin, University of Illinois, Medical Center at Chicago, Abraham Lincoln School of Medicine, Dept. of Preventive Medicine & Community Health, *1853 W. Polk St., Box 6998, Chicago, Illinois* 60680 (D-IARC-79-809)

This program has assembled and is studying known and suspected epidemiological and genetic events, factors and attributes possibly related to risk of prostatic carcinoma, sorting out those which may directly or indirectly influence onset of the lesion. Additional objectives are to explore strategies for prevention and early detection of this prevalent cancer, to identify individuals at increased risk, to provide hypotheses useful in repeat studies and prospective designs, to establish a rationale for the natural history of prostatic cancer, to structure models for oncogenesis in the human prostate, and to develop an information base for clinical and population screening programs which may contribute to reduction of morbidity and mortality rates from this disease in the population. The research design is a collaborative retrospective matched-pair case-control study designed and directed by Dr. I.D. Rotkin at the University of Illinois College of Medicine with sampling at 3 cooperating institutions in 2 widely separated metropolitan areas, the West Side Veterans Administration Hospital in Chicago, Northwestern University Medical School in Chicago and the Kaiser-Permanente Medical Center in Los Angeles, providing multiple-hospital access to large populations of prostatic cancer patients and opportunity for reproducibility comparisons by institutions, by geography, by race and by socioeconomic levels; and also full studies of 500 securely diagnosed patients against 500 cancer- and BPH-free controls. Epidemiological information is obtained with interviewer-administered questionnaires and related instruments inquiring into behavioral, environmental, sociocultural, sexual, physical, psychological and clinical factors associated with risk of this carcinoma. Familial studies are conducted into 3 generations of each kinship, with patients and controls as probands, in searching for genetic influence upon initiation of oncogenesis.
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2184,

PROSPECTIVE FIELD STUDY - HORMONE ASSAYS AS A PREDICTOR OF HIGH BREAST CANCER RISKS

D. Rose, University of Wisconsin, Madison Campus, Wisconsin Clinical Cancer Center, Dept. of Human Oncology, *1300 University Ave., Madison, Wisconsin* 53706 (D-IARC-79-1073)

A breast cancer detection clinic, located at the Milwaukee County Hospital, under the direction of Dr. John Milbrath of the Medical College of Wisconsin, is one of 29 demonstration projects of the American Cancer Society and the National Cancer Institute. Each center is charged with screening 10,000 asymptomatic patients, aged 35 to 75, by physical examination, mammography and thermography at yearly intervals for a total of five years. Each of the 10,000 individuals will be followed for five years. In July 1974, the Medical College of Wisconsin and the Wisconsin Clinical Cancer Center jointly undertook an endocrinological study of women taking part in the breast cancer screening programme. The principal objective is to examine the claim by Bulbrook, Hayward, and Spicer that women with a high risk of developing breast cancer can be identified by their subnormal excretion of androgen metabolites in the urine. To this end, the plasma and urinary androgen levels of those patients found to have breast cancer by the screening procedure are being compared with those of closely matched controls. In addition, follow-up of the total population of screened women will determine whether or not those with low androgen metabolite excretions are at an increased risk of breast cancer. The occurrence of factors recognized as risk factors for breast cancer will also be determined by the use of a questionnaire, and the responses correlated with the steroid data. In this way, it may be possible to develop a combined epidemiological-endocrine discriminant to ensure greater selectivity of women at high breast cancer risk.
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2185,

FACTORS ASSOCIATED WITH GEOGRAPHICAL DIFFERENCES IN AGE-SPECIFIC CHRONIC DISEASE DEATH RATES, INCLUDING VARIOUS SITES OF CANCER

H.I. Sauer, University of Missouri, Columbia Campus, School of Medicine, Dept. of Community & Family Medicine, *M228 Medical Sciences, Columbia, Missouri* 65201 (D-IARC-79-893)

Marked race-sex-specific differences have been demonstrated in the risk of dying at ages 45-54, 55-64, 65-74, for counties and the 510 state economic areas within the United States, as well as between portions of other countries. The geographical patterns are quite similar for various time periods, from 1949-1951 to 1968-1972. Mortality patterns for malignant neoplasms (all sites) and for lung cancer and cancer of the pancreas are correlated with death rates for the cardiovascular diseases (P less than 0.01). These patterns suggest that geographical differences in the patterns of cigarette smoking and other environmental variables may be responsible. Various techniques are being used to identify and adjust for possible shortcomings in the vital statistics data for epidemiological studies of this type. Many risk factors and suspected risk factors have been found to have statistically significant associations with the risk of dying. Several approaches are being used to test hypotheses as to the factors which are causally associated with these differences in the risk of dying and in the risk of cancer and other chronic diseases. Death rates for 1973-1976 are being compared with rates for earlier time periods, and are being used for testing the strength of various factors.
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2186,

RETROSPECTIVE STUDY OF PESTICIDE USAGE AS A FACTOR IN CANCER MORTALITY

E.P. Savage, Colorado State University, Inst. of Rural Environmental Health, Epidemiologic Pesticide Study Center, *Spruce Hall, Fort Collins, Colorado* 80523 (D-IARC-79-749)

Some pesticides are suspected of causing cancer in laboratory animals. The objective of this study is to epidemiologically investigate pesticide usage as a factor in cancer mortality. After collecting historical pesticide usage data for Colorado and neighboring states, it is planned to stratify geographical areas within the states by the degree of pesticide usage. In this retrospective study, mortality risks for different levels of usage will be calculated for individual sites of cancer.
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2187,

TRACE ELEMENTS AND CANCER

G.N. Schrauzer, University of California, San Diego Campus, Graduate School, Dept. of Chemistry, *P.O. Box 109, La Jolla, California* 92037 (D-IARC-79-718)

Determination of dietary intakes of trace elements in populations in different countries based on analyses of food consumption data is being undertaken. An international data bank is being developed. Correlations between apparent dietary trace element intake and cancer mortality are being computed to test aetiological hypotheses. The anticarcinogenic effect of selenium is being explored both experimentally and on the basis of epidemiological studies. The interrelationships between diet and cancer are being investigated on the basis of the protective effect of selenium and other trace elements against cancer. These computations are being undertaken for all major cancer sites and 28 different countries.
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2188,

CORRELATION OF EPIDEMIOLOGICAL AND METABOLIC PARAMETERS IN RELATION TO LARGE BOWEL CANCER

B.S. Reddy, American Health Foundation Inc., Naylor Dana Institute for Disease Prevention, *Hammond House Rd., Valhalla, New York* 10595 (D-IARC-79-968)

The overall objective of this research program is to identify specific dietary components that either directly or indirectly cause large bowel cancer in man, and to elucidate the mechanisms related to, and the role played by dietary components and intestinal bacteria and their metabolites in the etiology of colon cancer. In order to achieve this objective, the cholesterol conversion pattern by fecal microflora from patients with colon cancer, adenomatous polyps, ulcerative colitis and familial polyposis and from healthy controls will be studied as well as the effect of mode of preparation and consumption of beef (cooked 'rare, medium or well-done') on the composition of fecal bile acids and cholesterol metabolites and on fecal bacterial beta-glucuronidase, 7alpha-dehydroxylase and cholesterol dehydrogenase activities in man.
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2189,

INFLUENCE OF SMOKING ON CAUSES OF DEATH AMONG ASBESTOS INSULATION WORKERS

I.J. Selikoff, City University of New York, Mount Sinai School of Medicine, School of Medicine, Dept. of Community Medicine, *5th Ave. at E. 100th St., New York, New York* 10029 (D-IARC-79-949)

On 1 January 1967 the entire membership, 17,800 men, of the Asbestos Workers' Union in the U.S.A. and Canada was registered. Smoking habits were recorded at the time of registration. The entire group has been followed prospectively from 1967 and death rates are being calculated taking smoking into account. For smoking-specific rates, the current data derived from the American Cancer Society's Cancer Prevention Study are being utilized, since this gives smoking-specific death rates 1960-1972. By the end of 1975, more than 2,000 deaths had occurred. Analysis is being undertaken according to cigarette, pipe and cigar smoking, age at beginning to smoke, amount smoked, duration of employment and duration from onset of employment, as well as other

parameters. Specific causes of death which are of interest include various types of cancer and asbestosis.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2190,

SKIN CANCER IN ARIZONA

M. Schreiber, University of Arizona, School of Medicine, Dept. of Dermatology, *1501 N. Campbell Ave., Tucson, Arizona* 85721 (D-IARC-79-704)

The aim is to determine skin cancer (basal cell and squamous cell types) incidence in the population, with reference to skin types, hereditary factors, eye color, and mode and efficacy of treatment.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2191,

MORTALITY STUDY OF LEAD WORKERS

S.G. Selevan, U.S. Dept. of Health & Human Services, Public Health Service, Center for Disease Control, National Inst. for Occupational Safety & Health, Division of Surveillance Hazard Evaluation & Field Studies, *4676 Columbia Pkwy., Cincinnati, Ohio* 45226

Lead phosphate administered subcutaneously to rats has resulted in the induction of renal tumors and renal tumors have also been induced in rats by lead acetate-containing diets. Lead oxide appears to act synergistically with benzo(a)pyrene in pulmonary tumorigenesis in Syrian hamsters; lead is reportedly cumulative in the lung. Workers in lead smelters and battery plants breathe or ingest lead as a result of poor hygiene. Possible carcinogenic or co-carcinogenic effect deserves examination. Although the authors of a study on cancer among lead battery plant workers concluded that their results do not support a specific cancer risk, the data suggest that such a risk may be present. In order to further assess the possible excess cancer risk to lead exposure, a further retrospective cohort study is planned on workers exposed to lead and its compounds.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2192,

CASE-CONTROL STUDY OF THE RELATIONSHIP BETWEEN FEMALE HORMONE USE AND CANCER OF THE BREAST AND ENDOMETRIUM

D. Slone, Boston University, School of Medicine, Dept. of Medicine, *80 E. Concord St., Boston, Massachusetts* 02215 (D-IARC-79-873)

An epidemiological study of the case-control type will take place in the context of a large, ongoing study with the following objectives: (1) To design, test and implement an ongoing system of data collection as a resource for generating and testing hypotheses concerning effects of drugs used for long periods of time; (2) to monitor this data to identify previously unrecognized effects of such drugs; (3) to carry out ad hoc analyses of the data to evaluate hypotheses (both those arising from monitoring and from elsewhere); (4) to undertake ad hoc studies outside the monitoring system to provide for further evaluation of certain hypotheses; (5) to provide estimates of when drugs used for long periods appear to be safe. The hypotheses to be evaluated in this study are that female hormones are related to an increased risk of breast and endometrial cancer. The study will be based in hospitals throughout the U.S.A. Specially trained nurses will administer questionnaires to cases and controls to determine descriptive characteristics, prior female hormone and other drug exposure, and presence of known risk factors for cancer of the breast and endometrium. Between 400 and 500 women, each with breast cancer and endometrial cancer, and about ten times that number of controls will be interviewed.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2193,

ASBESTOS AND CANCER IN PATIENTS WITH LOW OR NO OCCUPATIONAL EXPOSURE

M. Warnock, University of California, San Francisco Campus, School of Medicine, Dept. of Pathology, *551 Parnassus Ave., San Francisco, California* 94122 (D-IARC-79-745)

Previous studies in this Department have failed to demonstrate a relation between numbers of asbestos bodies and the presence of carcinoma of the lung or gastrointestinal tract in workers with very low asbestos exposure. Asbestos bodies, however, represent only a part, and perhaps only a small part, of the total lung asbestos burden, which is composed of coated bodies as well as uncoated fibers. It is possible that a relation exists between numbers of uncoated asbestos fibers and the presence of bronchogenic carcinoma. This study will attempt to quantify and type the uncoated asbestos fibers as well as asbestos bodies at various sites in the lung. A new preparative method, already used for examining and identifying the nature of the cores of asbestos bodies by electron diffraction, will be used to identify further these same bodies by electron microprobe analysis. An additional preparative method has been devised for recovering uncoated asbestos fibers. Relations between numbers of coated and uncoated asbestos fibers, as well as their relative locations within the lung, will be tabulated, and an attempt will be made to correlate numbers or types of fibers with the presence or absence of carcinomas. It has previously been shown here that numbers of asbestos bodies are related to occupation; an attempt will be made to establish whether a similar situation exists for uncoated fibers or whether they are derived from the environment.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2194,

CANCER IN PERSONS EXPOSED TO EXOGENOUS ESTROGENS

F. Watman, Yale University, School of Medicine, Dept. of Epidemiology & Public Health, *333 Cedar St., New Haven, Connecticut* 06510 (D-IARC-79-760)

The purpose of this research is to estimate the range of cancer risk from prenatal exposure to exogenous estrogens among mothers and their exposed male and female offspring. Two matched control groups of unexposed mother-offspring pairs will be identified and the cancer incidence in these groups will be compared to that in the at-risk group. One group will be based on physician-matched controls, the second control group will be selected using Connecticut birth registration data. Cancer experience will be determined by linking the names of members of the cohorts to patients reported to the Connecticut Tumor Registry. All cancer sites will be considered, with particular attention given to reproductive system cancers. To date more than 800 exposed mother-offspring pairs and 800 physician-matched control pairs have been identified and detailed information has been abstracted from their prenatal medical records. Several thousand additional unexposed mother-offspring pairs have also been identified. These cases will be considered in a separate analysis in which the matched pairs are broken.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2195,

CANCER RISKS IN COSMETOLOGISTS

J.W. Meigs, Yale University, School of Medicine, Dept. of Epidemiology & Public Health, *333 Cedar St., New Haven, Connecticut* 06510 (D-IARC-79-759)

This study will investigate the incidence of cancer of all sites among cosmetologists who were licensed to practice in Connecticut before December 1965 and will provide a more definitive estimate of risk suggested by the preliminary results according to which cosmetologists may have increased risk of acute leukaemia. This extension will enlarge the study group from 12,000 to 17,000, including cosmetologists whose date of birth was previously unavailable. Follow-up status as of December 1978 will be determined for all cosmetologists. The expected number of cases of cancer by individual sites will be estimated by applying to the group at risk the cancer incidence rates of the general Connecticut population, specific for age, calendar year, sex and site. Cancer cases among the cosmetologists will be ascertained through December 1978 by computer linkage of the names in the study group with those reported to the Connecticut Tumor Registry.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2196,

SEROEPIDEMIOLOGICAL STUDY OF HERPES SIMPLEX VIRUS IN CARCINOGENESIS OF THE CERVIX

E. Stern, University of California, Los Angeles Campus, School of Public Health, Dept. of Public Health, *405 Hilgard Ave., Los Angeles, California* 90024 (D-IARC-79-735)

It is proposed to investigate by a longitudinal study a possible relationship between herpes simplex viruses (HSV), the development of cervical dysplasia, and its progression to cervical cancer. One of the critical issues is the timing of herpes infection in relation to onset of the neoplastic process and a feature of the proposed research is the serial observation and testing of patients to clarify the temporal relationship of herpes infection and carcinogenesis. In considering a longitudinal approach, the relatively low incidence of cervical cancer and the long latency present serious problems of sample size and duration of follow-up. The number of women in the study as well as duration of follow-up can be reduced by following a defined population of women who already have the cancer precursor, dysplasia of the cervix. We have been investigating the possible relationship of steroid contraceptives and carcinogenesis of the cervix by means of a long-term prospective study of women with dysplasia of the cervix. The proposed study on the role of HSV in carcinogenesis of the cervix uses this resource of clinical and laboratory data. Sera already collected from these patients will be used for serial viral antibody studies. Further follow-up of patients and collection of samples will continue.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2197,

CERVICAL CYTOLOGY PROGRAM

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Arkansas ranks 12th among the states of the U.S.A. with regard to mortality from uterine cervical cancer. The existence of rural communities, non-white populations and areas with low physician:population ratio constitutes high risk conditions. There is insufficient screening and follow-up. The program is designed to reach the high-risk woman by utilizing ancillary facilities in statewide local health departments, public health nurses and a system of newly developed colposcopy clinics. These clinics provide for definitive diagnosis for about 85-90% of women found to have abnormal Papanicolau smears. The program aims to follow up (1) all women with abnormalities to ascertain the course of dysplasias of the cervix and (2) all women with normal cytological smears prospectively in relation to epidemiological factors, socioeconomic status, oral contraceptives and other factors.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2198,

CARDIOVASCULAR DISEASE EPIDEMIOLOGY IN 40,000 EMPLOYED CHICAGOANS

J. Stamler, Northwestern University, Chicago Campus, School of Medicine, Dept. of Preventive Medicine & Community Health, *303 E. Chicago Ave., Chicago, Illinois* 60611 (D-IARC-79-811)

A second-generation prospective epidemiological study on hypertensive and atherosclerotic diseases, particularly coronary heart disease is in progress to solve key unanswered questions. Almost 40,000 men and women, both white and black, chiefly 25-64 and identified in a Chicago Heart Association screening project from 1967 to 1973, are being followed for 10 years to determine mortality rates. The contributions of several variables to the risks of death are being assessed. The causes of death to be examined include lung cancer and all neoplastic diseases.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2199,

FAMILIAL AGGREGATION OF CANCER IN A MEXICAN-AMERICAN COMMUNITY

K.M. Weiss, University of Texas, Health Science Center at Houston, Graduate School of Biomedical Sciences, Dept. of Demographic & Population Genetics, *P.O. Box 20334, Houston, Texas* 77025 (D-IARC-79-1056)

A closed population of Roman Catholics of Mexican/Spanish ancestry for which birth, marriage, parenthood, and death records exist from its founding in

the mid-1700s to the present is being studied. These church, hospital, and civil records provide the data base for reconstructing families back to 1900 and before. Such families will be examined statistically to see if cancer mortality aggregates non-randomly among them, so as to determine heterogeneity in genetically based risk for various cancer sites. In addition, the fertility of victims of cancer will be ascertained to make short-term predictions of the proportion of cancer mortality which may be related to genetic factors. Environmental influences will be taken into account in the statistical methods used to assay the pedigrees. The age pattern of incidence for cancer, the effect of mortality from competing causes, and the changing incidence and age patterns of degenerative diseases in general, and cancer in particular, will be studied. This study will constitute both a complete cancer-epidemiological study of a rather uniform population and a cancer-genetic study.

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2.2200,

THE EPIDEMIOLOGY OF GYNECOLOGICAL CANCER

N.S. Weiss, University of Washington, School of Public Health & Community Medicine, Dept. of Epidemiology, *4000 15th Ave. N.E., Seattle, Washington* 98105 (D-IARC-79-1071)

The objective of the study is to delineate the role of exogenous hormones in the aetiology of endometrial, ovarian, and vulvar cancer. All residents of selected counties in the states of Washington and Utah who develop one of these gynecological cancers during a two-year period are being identified through population-based cancer registries. Cases are interviewed and their responses compared to those of a random sample of women in the population. The interview is centered on use of exogenous hormones, recall being aided by displays of commonly used preparations.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2201,

DESCRIPTIVE EPIDEMIOLOGY OF PRIMARY MALIGNANT BONE TUMORS, CONNECTICUT, 1935-1974

A.L. Zimmerman, Yale University, School of Medicine, Dept. of Epidemiology & Public Health, *333 Cedar St., New Haven, Connecticut* 06510 (D-IARC-79-761)

Using some 1,000 cases of bone cancer from the Connecticut Tumor Registry (1935 to 1974), a descriptive epidemiological study will be carried out in the hope that this might suggest possible aetiological factors. Secular trends for bone cancer incidence and mortality will be analysed with respect to age, sex, site of neoplasm, socioeconomic status, place of residence (urban and rural), and the geographical distribution among Connecticut towns. In addition, the different histological types will be examined for possible relationships with the above variables. Diagnostic criteria and period of diagnosis will also be studied.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2202,

ENVIRONMENTAL INFLUENCES ON CANCER MORBIDITY IN THE PITTSBURGH REGION

J.B. Andelman, University of Pittsburgh, Graduate School of Public Health, Dept. of Industrial Env Health Sciences, *4200 5th Ave., Pittsburgh, Pennsylvania* 15260 (D-IARC-79-1031)

This project involves the use of regression modelling techniques to determine if there are differences in cancer morbidity rates for water supplies (including sources and source types) which cannot be explained by available information concerning socio-economic status, housing density, industrialization, etc. Specifically, the Third National Cancer Survey cancer morbidity data for 19 different anatomical sites are being regressed against census tract data aggregated by water utility service areas. Residuals from these regressions are cross-classified separately with water service areas, water sources, and water source types to determine if the residuals are independent of these major water classifications.

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2.2203,

CANCER MORTALITY AMONG AMERICAN INDIANS, 1968-73

J. McCullough, Utah Higher Education System, University of Utah, School of Social & Behavioral Sciences, Dept. of Anthropology, *1400 E. 2nd S., Salt Lake City, Utah* 84112 (D-IARC-79-1060)

Using mortality data tapes for 1968-1973, earlier studies will be up-dated and special attention paid to lung cancer among American Indian males (ICD 162-163). An attempt will be made to identify salient variables in cancer mortality for American Indians, American Whites and American Blacks using an eco-genetic approach and regional and zonal matched analysis.

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2.2204,

GENETIC EPIDEMIOLOGY OF CANCERS AND OTHER MAJOR CHRONIC DISEASES

R.R. Williams, Utah Higher Education System, University of Utah, School of Medicine, Dept. of Internal Medicine, *1400 E. 2nd S., Salt Lake City, Utah* 84112 (D-IARC-79-1061)

Genetic predisposition and environmental influences are frequently suspected of acting either alone or, probably more often, together to result in the occurrence of cancer and other major chronic diseases (such as coronary artery disease). From geneological records of the Latter-Day Saints (LDS) Church (Mormons) in Salt Lake City a computerized pedigree file with 4-8 generations for a large proportion of Utah residents (75% LDS) is being constructed. Computer files of medical data including a 10-year computer file of incident tumour cases in the state of Utah and a 20-year file of death certificates are being linked to the pedigree file. Analyses will be performed to (a) estimate heritability of specific cancers (and other chronic diseases), (b) identify specific families with strong genetic predispositions, (c) elucidate specific genetic transmission mechanisms with environmental factors taken into account as penetrance functions. Major cancer sites include breast, lung, colon, prostate, and all other major sites.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2205,

GENETIC EPIDEMIOLOGY AND NATURAL HISTORY OF BREAST CANCER

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Epidemiological and experimental studies are underway to investigate host, agent and environmental factors associated with breast cancer. A working model has been developed that relates epidemiological evidence linking reproductive experience and the risk of breast cancer to our findings regarding breast secretory activity in different groups and evidence of secretion of exogenous substances through the breast. Current research focuses on genetic markers associated with breast cancer, cytopathologic characteristics of normal and malignant breast tissue, metabolic activation of mutagenic agents by breast tissue, and secretion of potentially carcinogenic substances in breast fluid. In addition, a study of women's beliefs and health practices concerning breast cancer is underway.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2206,

STATISTICAL ANALYSIS AND QUALITY CONTROL (SAQC) CENTER FOR A CENTRALIZED CANCER PATIENT DATA SYSTEM (CCPDS)

N.E. Breslow, Fred Hutchinson Cancer Research Center, Prog Epidemiol & Biostatistics, *1124 Columbia St., Seattle, Washington* 98104 (D-IARC-78-985)

The basic task to be performed by the SAQC/CCPDS project is to plan, develop, implement and operate a computerized system to deal with uniform acquisition, quality control, storage retrieval, and analysis of basic cancer patient data submitted quarterly by 19 comprehensive cancer centers located throughout the United States. Initial activity has been focused on: the establishment of a minimum cancer patient dataset to be used in common by all participating institutions; the development of training programs to assure a uniform interpretation of each item in the dataset from each institution and the assembling of computer hardware and software for editing and storing abstracts of approximately 50,000 diagnosed tumors each year. Quarterly summaries on the accumulated data, as well as special detailed reports on topics of interest to oncologists and cancer epidemiologists are provided to each participating institution. In the second project year, the SAQC staff will formulate plans to gather more detailed information on epidemiologic factors, tumor staging, and tumor histology.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2207,

CANCER INCIDENCE IN RELATION TO A SMELTER

L. Polissar, Fred Hutchinson Cancer Research Center, Epidemiology & Biostatistics Program, *1124 Columbia St., Seattle, Washington* 98104 (D-IARC-79-1069)

The population in parts of King, Pierce, and Kitsap Counties of Washington State, U.S.A., are exposed to air-borne and soil-deposited arsenic trioxide from a smelter in Tacoma. Arsenic exposure has been linked to respiratory cancer among the Tacoma smelter employees and has been implicated as a carcinogen in other industrial studies. The effect of arsenic on cancer risk in the exposed populations outside the smelter will be evaluated using data from a complete, areawide cancer registry.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2208,

PROSTATIC CALCIFICATION, PROSTATIC CARCINOMA AND BENIGN PROSTATIC HYPERTROPHY IN AMERICAN AND AFRICAN BLACKS

M.Y. Heshmat, Howard University, School of Medicine, Cancer Research Center, *2400 6th St. N.W., Washington, District of Columbia* 20001 (D-IARC-78-998)

The aims of this study are to (1) compare the frequency of prostatic calcification in blacks in Washington, D.C., Ibadan, Nigeria and Accra, Ghana, (2) study the association between prostatic calcification and carcinoma (latent and invasive) and benign prostatic hyperplasia in the three populations and (3) study the relationship between place of calcification (central or peripheral) and degree of calcification and prostatic carcinoma and hyperplasia in the same populations. In this continuing study, whole prostate glands are collected from consecutive necropsy cases. Whole glands with attached seminal vesicles were accessioned, entered into a blind study, weighed, step-sectioned at 4 mm intervals, processed, mounted on large slides, and stained with hematoxylin and eosin. All sectioned cases have also been examined by X-ray for calcification, 327 from the American material and 538 from the African study material.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2209,

A RECORD LINKAGE FEASIBILITY STUDY TO OBTAIN PREVALENCE AND INCIDENCE RATES FOR MULTIPLE MYELOMA IN US VETERANS

A.Z. Keller, U.S. Veterans Admin., Dept. of Medicine & Surgery, Regional Office, Research Service, *941 N. Capitol St. N.E., Washington, District of Columbia* 20421

Since all veterans with multiple myeloma, as for most diseases, are not seen in veterans hospitals, incidence and prevalence rates derived from data on hospitalized patients are underestimated. The present study investigates the feasibility of obtaining medical information on veterans from non-veterans hospital sources to merge with data from veterans hospitals. Information will be obtained from cancer registries, hospital records and death certificates in six geographical regions to permit computation of absolute rates of multiple myeloma by race, age, and geographical area. The denominators for these rates will be veterans living in these areas as reported by the United States Census Bureau. Environmental exposures will be studied in an effort to explain observed rate disparities by race, age and geography.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2210,

TOBACCO AND ALCOHOL USAGE, MARITAL STATUS, RELIGION AND OCCUPATION AS RISK FACTORS AMONG CIRRHOTICS AND NON-CIRRHOTICS WITH CANCER

A.Z. Keller, U.S. Veterans Admin., Dept. of Medicine & Surgery, Medical Center, Research Service, *50 Irving St. N.W., Washington, District of Columbia* 20422 (D-IARC-79-769)

This study is based on a 100 percent sample of 286 males with liver cirrhosis and cancer and a 2 percent sample of 374 males with cancer only who were discharged from the nationwide complex of United States veterans hospitals in a one year period. Cirrhotics and non-cirrhotics with cancer are compared in order to determine: 1) Whether the site distributions and relative risks of cancer are remarkably different by the amounts and types of alcohol consumed or tobacco smoked; 2) whether there are gradient shifts in the relative risks of cancer from one tissue or organ to another, when the uses of tobacco and alcohol range from the least to the greatest amounts; 3) whether the relative risks of cancer by anatomical sites are significantly different by marital status, religion and occupation; and 4) whether, histologically and anatomically, multiple primary cancers are in excess.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2211,

EPIDEMIOLOGICAL STUDY OF BENZENE EXPOSED WORKERS

N.K. Weaver, American Petroleum Inst., Dept. of Medicine & Biological Science, *2101 L St. N.W., Washington, District of Columbia* 20037 (D-IARC-79-773)

The objective of the study is to determine the mortality rates of workers exposed to benzene in petroleum operations. Workers having known exposures to benzene will be identified, and their mortality rates determined and compared with those of other groups. Secondary studies will include proportionate mortality from pooled company records; a study of effects on health, particularly blood counts, as they relate to benzene exposure; development of a job title dictionary for exposure dosage; and establishment of a prospective medical mortality and environmental study. If primary studies reveal excess mortality from specific diseases, especially leukaemia, latency periods, dose relationships and host factors will be studied.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2212,

MORTALITY-MORBIDITY STUDY AND TUMOR REGISTRY FOR PETROLEUM, REFINING, PETROCHEMICAL AND RESEARCH AND DEVELOPMENT WORKERS

N.K. Weaver, American Petroleum Inst., Dept. of Medicine & Biological Science, *2101 L St. N.W., Washington, District of Columbia* 20037 (D-IARC-79-774)

The objective of this study is to conduct a comprehensive prospective epidemiological investigation among petroleum industry workers as a means of determining possible health consequences of occupational exposure. A data gathering, reporting, and interpreting system appropriate for the conduct of a continuing epidemiological study will be established. Patterns of morbidity (illness), mortality and tumor occurrence will be identified and compared with the rates for a suitable control population. Relationships between morbidity and mortality patterns will be related to occupational characteristics, and trends in affected worker populations will be defined. The data received from participants will be analyzed and interim reports to each individual company on its own material made. The project will encompass all disease categories in the International Classification of Diseases and the morbidity portion of the study will be based on all sickness absences of five or more days' duration.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2213,

CERVICAL CYTOLOGY DEMONSTRATION PROJECT FOR SOUTHWESTERN AMERICAN INDIAN POPULATION

S.W. Jordan, University of New Mexico, School of Medicine, Dept. of Pathology, *University Hill N.E., Albuquerque, New Mexico* 87131 (D-IARC-79-911)

The objective of this study, in addition to providing cytological diagnostic services to a large group of American Indians and selected non-Indians, is to investigate certain epidemiological aspects of uterine cervical and endometrial cancer. Previous work has shown significant differences in histologically established age-specific rates of cervical carcinoma between Southwestern American Indians and Caucasians, and this work will be extended and amplified. Also to be examined will be the effect of cytological screening on mortality rates for cervical carcinoma. Non-Indian patients attending the University of New Mexico teaching hospital and clinics serve as the control group. Records of about 140,000 patients are currently available in cytology laboratory files in machine-retrievable format.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2214,

FAMILIAL AND GENETIC FACTORS IN MALIGNANCIES

J.J. Mulvihill, U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst., Clinical Epidemiology Branch, *9000 Rockville Pike, Bethesda, Maryland* 20205 (D-IARC-79-853)

OBJECTIVES: To document the occurrence of patterns of family aggregation of neoplasms. To study such families by genetic and laboratory investigations, in an effort to elucidate the degree to which heredity and/or the common familial environment contribute to the aetiology of neoplasms. To distribute tissue and blood specimens from such families to interested laboratory investigators, for aetiologic study by cytogenetic, immunological, viral and tissue culture methods. To identify genetic factors and disorders associated with cancer.

METHODS EMPLOYED: Interview of cancer patients with respect to family occurrence of cancer and other disorders, as well as information on prior medical and environmental history; documentation of history by obtaining appropriate vital records and hospital charts; collection and distribution of biological specimens from such families; review of hospital records of series of patients with selected genetic diseases or neoplasms; survey of childhood cancer death certificates in the U.S. since 1960 to identify sib aggregation.

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2.2215,

COOPERATIVE EPIDEMIOLOGICAL AND PATHOLOGICAL STUDY OF COLON-RECTUM CANCER

O. Auerbach, U.S. Veterans Admin., Dept. of Medicine & Surgery, Medical Center, Senior Medical Investigators Laboratory, *Tremont Ave. & S. Centre St., East Orange, New Jersey* 07019 (D-IARC-79-903)

Preliminary epidemiological studies are underway to investigate the cause and origin of colon-rectum cancer. To date 2,886 colon-rectum specimens have been collected from the continental USA and Hawaii, Puerto Rico, and England. Efforts have been concentrated on 500 of these cases in which the colon-rectum was completely removed including the anal skin. The lesions were examined microscopically and the size, location and type of mucosal lesions recorded. A report of this investigation has been accepted for publication in Cancer. It is now planned to make a microscopic study of the remaining bowel in cancer cases from the London series in which every malignancy found arose in polyp, to see if there is any evidence of different patterns of neoplastic change.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2216,

SURVEILLANCE OF CHILDHOOD NEOPLASMS IN HARRIS COUNTY, TEXAS

D.J. Fernbach, Baylor College of Medicine, School of Medicine, Dept. of Pediatrics, *1200 Moursund Ave., Houston, Texas* 77025 (D-IARC-79-1045)

This population-based registry of cancer in children aims to evaluate occurrence, determine geographical variations, and evaluate annual variations in incidence for specific tumours by census tract, ethnic groups, etc.

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2.2217,

STATISTICAL DATA MANAGEMENT AND COORDINATING CENTER FOR THE TYLER TEXAS ASBESTOS WORKERS PROGRAM

V.F. Guinee, University of Texas, University of Texas System Cancer Center, M.D. Anderson Hospital & Tumor Inst., Dept. of Epidemiology, *c/o Texas Medical Ctr., Houston, Texas* 77030 (D-IARC-79-1046)

The National Cancer Institute has established a complete medical surveillance program for a group of individuals who were exposed to amosite asbestos fibers in the course of their employment at a pipe insulation manufacturing plant in Tyler, Texas. The surveillance program is a collaborative effort, with the two primary components being the Tyler Asbestos Workers Program (TAWP) affiliated with the University of Texas Health Center at Tyler and the Statistical Data Management and Coordinating Center (SDMCC) directed through the Dept. of Epidemiology, the University of Texas System Cancer Center. The primary goal of TAWP is to make medical and scientific expertise and technology available to the affected workers and to study the pathogenesis and early detection of lung cancer induced by asbestos. The SDMCC is responsible for data collection and analysis of the total program, with particular interest in the epidemiological, laboratory and clinical data produced by TAWP/SDMCC activities.

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2.2218,

VIRAL ETIOLOGY OF HUMAN MALIGNANCIES - IDENTIFICATION OF ANTIBODY TO HERPES SIMPLEX VIRUS (ABBREV)

J.L. Melnick, Baylor College of Medicine, School of Medicine, Dept. of Virology & Epidemiology, *1200 Moursund Ave., Houston, Texas* 77025 (D-IARC-79-1051)

Serum samples of patients with cervical cancer, breast cancer, and matched non-cancer control women are examined for antibody to individual HSV-2 induced polypeptides. The study attempts to answer the following questions: (1) Is there a generalized increase in the capacity to precipitate HSV early proteins other than VP 134 (a major early nonstructural polypeptide used in earlier reactivity tests) with the sera of cervical cancer patients? (2) What is the reactivity of sera from cervical cancer patients with HSV-2 'early' proteins? (3) What are the relative differences in the reactivity when 'late' proteins, instead of 'early' proteins, are used in the radioimmune precipitation test followed by polyacrylamide gel electrophoresis analysis of washed immune precipitates? Case-control differences will be studied in different geographic areas.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2219,

ANOVULATION AND THE EPIDEMIOLOGY OF BREAST CANCER

R.B. Wallace, University of Iowa, School of Medicine, Dept. of Preventive Medicine & Environmental Health, *Jessup Hall, Iowa City, Iowa* 52240 (D-IARC-79-815)

The objective of this study is to empirically investigate the relationship between menstrual cycle patterns and the subsequent onset of breast cancer. Also, using companion hysterologic studies, we have been measuring the hormonal characteristics of various menstrual cycle patterns in order to develop a pathophysiological hypothesis to explain some of the known breast cancer risk factors. The basic study is being performed in two phases. The first is a review of a cohort study of concurrently collected menstrual cycle patterns, in a group of women over a 45-year period. The women who exhibit breast cancers among this cohort have been identified and we are currently examining menstrual cycle patterns from the data base to see if those women who develop breast cancer can be discriminated from those who did not. Particular emphasis is placed on those menstrual cycle patterns that occur around the time of menarche, menopause, and birth events. Preliminary analysis has revealed that women with early menarche, late first parity, and late menopause, have characteristic menstrual cycle patterns that differ

from those women with the opposite characteristics. Study of this population has also allowed us to test the accuracy of recall of menstrual and reproductive events as the subject's complete records are available for analysis. We are also testing these hypotheses in case-control format, but results of this study are not yet available. This study is also testing various hypotheses relating to the consumption of thyroid hormone, oral contraceptives, oestrogens, and other medications and their relationship to subsequent onset of breast cancer. Among the initial findings is that there is no relationship between the prior consumption of thyroid hormone and the development of breast cancer, though such a relationship has been reported by others.
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2220,
RELATIONSHIPS OF HUMAN AND BOVINE LEUKEMIA
K.J. Donham, University of Iowa, Inst. of Agricultural Medicine & Environmental Health, Dept. of Preventive Medicine & Environmental Health, *Oakdale Campus, Oakdale, Iowa* 52319 (D-IARC-79-816)
The epidemiological relationships of human leukemia and bovine lymphosarcoma in Iowa over the past three years have been studied. An excess of acute lymphocytic leukemia (ALL) in males, primarily in the most rural counties of Iowa, was found. There is also a statistically significant correlation of numbers of dairy cows and ALL in males. There is an even greater risk ratio in those counties where cases of bovine lymphosarcoma have been documented. Future research will deal with the refinement of the risks associated with human ALL and the rate of infectivity of the dairy cow population with Bovine Leukaemia Virus (BLV). A serological test will be performed on designated dairy cow populations and data from the Iowa Cancer Registry will be compared. An area that appears to have an excess of cancers will also be studied. This area also happens to be high in dairy cattle density. Various occupational and environmental factors will be studied to see if a relationship can be identified.
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2221,
HEALTH STUDY OF PLUTONIUM WORKERS
J.H. Stebbings, University of California, Central Office, U.S. Dept. of Energy Los Alamos Scientific Lab., Health Division, *P.O. Box 1663, Los Alamos, New Mexico* 87545 (D-IARC-79-912)
Past and present plutonium workers from six major United States nuclear installations will be followed to determine age-specific mortality rates for all major causes of death, with special emphasis on cancer. Dose-response relationships will be estimated using systemic body burden data from urine tests. The study population, approximately 20,000 individuals, will include all workers with estimated body burdens above one nanocurie, random samples of exposed workers with lesser or no body burdens, and random samples of non-exposed workers from the same installations. The latter two groups of subjects will be group-matched by birth date, race, sex, and date of hiring. A cancer incidence study will be undertaken upon a subset of the study population; questionnaire studies of cardiovascular and chronic respiratory morbidity will also be carried out in that subgroup.
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2222,
EPIDEMIOLOGY OF CANCER IN ADVENTISTS - A LOW RISK GROUP
R.L. Phillips, Loma Linda University, School of Health, Dept. of Biostatistics & Epidemiology, *Loma Linda, California* 92354 (D-IARC-79-719)
Seventh-Day Adventists (SDAs) are a conservative religious group who do not smoke or drink by church proscription. The age-sex adjusted mortality for most cancers unrelated to smoking among SDAs is 50-70 percent of the general population. The SDA church strongly discourages use of coffee, other caffeine beverages, highly refined foods and hot spices, recommending a low-fat, high-fiber lacto-ovo-vegetarian diet, as well as vigorous exercise. However, apart from smoking and drinking, there is great variation in the degree of adherence to these habits among SDAs, making them an ideal population to investigate the role of diet and other lifestyle characteristics in cancer. Further, the great variation in duration of exposure and age at first exposure to the SDA lifestyle provides an opportunity to determine the effect of lifestyle patterns early vs. late in life, as well as the effect of short-term vs. long-term patters of living. This on-going prospective study seeks (1) to confirm with incidence data the previously observed low cancer mortality among SDAs and (2) to determine the specific components of the SDA lifestyle which account for their apparent low risk of non-smoking related cancers. Collection of baseline data on demographic characteristics from 61,258 California SDAs, as well as detailed lifestyle characteristics from 46,000 of these subjects, is virtually complete. Continuation of this study for 5 more years will provide an average 8.5 years of follow-up for the 61,258 subjects with completed questionnaire data (525,412 person-years). Taking the expected low incidence into account an anticipated 2,481 new cancer cases (464 colon-rectal, 389 breast) will probably occur. All hospitalizations are reported during annual contact with each subject. After accounting for confounding factors, comparison of site specific cancer incidence between SDAs vs. the general population (as well as among subgroups of the SDA population with differing dietary and/or lifestyle characteristics) will be made.
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2223,
FOLLOW-UP STUDY OF PATIENTS TREATED BY X-RAY EPILATION FOR TINEA CAPITIS
R.E. Albert, New York University, School of Medicine, Dept. of Environmental Medicine, *550 1st Ave., New York, New York* 10016 (D-IARC-79-930)
Children treated for tinea capitis between 1940 and 1959 at a major New York City dermatology clinic have been followed to examine the tumourigenic effects of X-radiation to the head (300 - 400 R). Some 2,215 irradiated patients and 1,395 patients given medications for tinea capitis have been traced. The groups are very well matched on sex, race, age and socioeconomic status. A third survey of these groups (average interval since tinea treatment - 20 years) is in progress and is showing a continued excess of basal cell carcinomas, and brain, thyroid and parotid tumors in the irradiated group.
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2224,
CANCER IN MARRIED COUPLES
M.G. Curnen, Columbia University, School of Public Health, Dept. of Epidemiology, *600 W. 168th St., New York, New York* 10032 (D-IARC-79-933)
In this study, an attempt is made to determine whether the occurrence of prostatic cancer in married individuals is related to the occurrence of cancer in their spouses. Based on a review of medical records at Columbia-Presbyterian Medical Center in New York City from 1952 through 1973, this epidemiological study will determine whether the incidence of any type of cancer in spouses of prostatic cancer patients is significantly different from that in corresponding control groups of patients with benign hypertrophy of the prostate diagnosed during the same time period at the same institution. Any evidence of a greater than expected incidence of cancer in spouses of prostatic cancer patients would require confirmation in other medical centers and stimulate further research on possible mechanisms of transmission of cancer in marital partners.
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2225,
CANCER IN PHYSICIANS - A COMPARISON WITH LAWYERS
M.G. Curnen, Columbia University, School of Public Health, Dept. of Epidemiology, *600 W. 168th St., New York, New York* 10032
This study is testing the hypothesis that physicians may be at an increased risk of dying with cancer because of their exposure to carcinogens in the milieu in which they work. Their mortality experience is being compared with that of lawyers who, in the USA, share the same lifestyle and socio-economic status. Professionals from both groups were either licensed to practice medicine or were admitted to the Bar in the State of Connecticut during the 1900-1975 period. A total of 11,527 male physicians and 6,318 male lawyers have been identified and followed until 1975. All sites of cancer are being investigated since the potential carcinogenicity of infectious agents, chemicals and radiation may affect different target organs. Age-specific mortality rates within five year age categories for physicians and lawyers grouped according to birth cohorts were computed by the modified life table method. The cancer mortality experience of physicians is further being analyzed according to specialities practiced during life.
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2226,
EPIDEMIOLOGY OF CERVICAL CANCER - CHLAMYDIAE AND HERPES
J. Schachter, University of California, San Francisco Campus, George W. Hooper Foundation, *551 Parnassus Ave., San Francisco, California* 94122 (D-IARC-79-744)
The goal of this project is to determine whether any of the infectious agents under study are specifically associated with cervical cancer or dysplasia. Prevalence rates will be determined for infection with chlamydiae (debsoniae) - particularly trachoma-inclusion conjunctivitis (TRIC) agents and herpesvirus hominis (HVH) in the cervixes of women examined at the University of California, San Francisco. Those included in these studies will be normal women (routine examination and birth control advice), women being seen for genital tract inflammatory disorders (such as cervicitis and vaginitis), women being examined at the dysplasia clinic, and women who have once had cervical cancer. Isolation attempts will be made, with cervical scrapings taken at the same time as Papanicolaou smears. Serological studies will also be carried out in an effort to obtain evidence of any prior infection with herpes and TRIC agents. Rates for serological positivity for HVH-2 and TRIC agents will be directly compared for women with cervical cancer or dysplasia. Serological results will also be compared for patients with cervical cancer or dysplasia and those obtained in normal controls. These controls will be matched with patients by age, race, and several measures of sexual experience. In addition the various indices of sexual experience in patients with dysplasia or cervical cancer and in the controls will be compared.
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2227,
METABOLIC EPIDEMIOLOGY OF COLON CANCER
B.S. Reddy, American Health Foundation Inc., Division of Nutrition, *Hammond House Rd., Valhalla, New York* 10595
The overall objective of this project is to develop key biochemical and/or microbial indicators which (1) distinguish high and low risk members of cancer families for development of colon cancer and (2) study the mechanism of cancer development in this high risk population. To achieve these objectives, feces from members of cancer families (50 colon cancer-prone symptomatic and 50 colon cancer-prone asymptomatic persons) and 50 age- and sex-matched healthy spouse controls will be analyzed for bile acids, cholesterol and its metabolites, B-glucuronidase, 7-dehydroxylase, cholesterol dehydrogenase and mutagens. The aim is to explore systematically the key metabolites by which a high-risk group for colon cancer is identified and characterized.
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2228,
SURVEY OF CHILDREN'S TUMOURS
S.P. Donnan, Office of Population Censuses & Surveys, Medical Statistics Div., Dept. of Pathology, *10 Kingsway, St. Catherines House, London WC2B 6JP, England, United Kingdom* (D-IARC-78-578)
Retrospective epidemiological survey of children's tumours in a regional hospital area, 1954-1973.
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2229,
GENITAL CANCER STUDIES
S.P. Donnan, Office of Population Censuses & Surveys, Medical Statistics Div., Dept. of Pathology, *10 Kingsway, St. Catherines House, London WC2B 6JP, England, United Kingdom* (D-IARC-78-581)
Causes of death of husbands whose wives have contracted cancer of cervix.
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2230,

SURVEY OF WOMEN WHO RECEIVED AN ARTIFICIAL MENOPAUSE INDUCED BY RADIATION

S.P. Donnan, Office of Population Censuses & Surveys, Medical Statistics Div., Dept. of Pathology, *10 Kingsway, St. Catherines House, London WC2B 6JP, England, United Kingdom* (D-IARC-78-571)

No summary has been provided to the Smithsonian Science Information Exchange.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2231,

SEVENTH-DAY ADVENTISTS AND NON-SEVENTH-DAY ADVENTISTS CANCER SURVIVAL RATE STUDY

R.L. Phillips, Loma Linda University, School of Health, Dept. of Biostatistics & Epidemiology, *Loma Linda, California* 92354

OBJECTIVE: To compare Seventh-Day Adventist (SDA) and non-SDA cancer survival rates for breast and colon cancers; and to identify certain lifestyle characteristics which may account for differing survival rates between the two groups.

APPROACH: Identification of patients' religion will be made through hospital admission charts for those patients with breast and colon cancer reported to the California Tumor Registry from Loma Linda University Medical Center and White Memorial Hospital for the time period 1950-1976. This data will then be linked to the data collected by Lemon and Walden which will add lifestyle and family history information. Using life table analysis as well as comparisons of survival rates on specific lifestyle variables, such as dietary traits, studies will be performed to determine the effect of such variables on patient's survival.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2232,

CANCER IN ILLINOIS

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The aim of this project is to investigate the contribution to cancer mortality of specific industrial manufacturing and processing activities in Illinois. Maps depicting mortality rates by county for Illinois on the basis of 1970-1976 data will be constructed. Major sources of carcinogens will be identified. Emissions data, ambient sampling, and dispersion models will be used to estimate levels of ambient exposures to carcinogens at different sites near the sources. Death certificates will be analyzed in order to compute mortality rates for cancer of several sites in tracts near the carcinogen sources. The tracts will be selected to control for confounding variables as much as possible. The relationship between cancer mortality rate, tract, and ambient exposure will be investigated. Possible carcinogen sources include: oil refineries, steel mills, metal refineries, chemical plants, and areas of high use of agricultural chemicals.

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2.2233,

POSSIBLE ASSOCIATION OF DIETARY FACTORS AND NON-CONTRACEPTIVE EXOGENOUS OESTROGENS WITH BREAST CANCER

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A case-control study of breast cancer is seeking possible associations of the disease with the use of exogenous oestrogens in post-menopausal women, and with histories of dietary intake high in animal protein and fat. The study design entails a comparison of breast cancer cases with neighborhood and hospital controls in three populations who differ greatly in their risks for breast cancer: Caucasians in Hawaii, Japanese Americans in Hawaii and indigenous Japanese in Fukuoka, Japan. Two hundred cases and their matched controls will have been analyzed for each of the three populations at the end of this projected five-year study.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2234,

MICROBIOLOGICAL FACTORS CONTRIBUTING TO COLON CANCER

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Chemical causes of colorectal cancer are being sought by the use of bacterial mutagen assay to detect potential carcinogenic substances in human fecal samples. Preliminary epidemiological work has been done on the frequency of mutagens in feces of Japanese in Japan and Japanese in Hawaii, populations of low and high risk for large bowel cancer respectively. Five classes of fecal mutagens have been discovered, four of them present in higher amounts in the high risk Hawaiian Japanese than in the low risk Japanese Population. Two of these four mutagens are closely associated with the fecal transnitrosase. This is an enzyme which the investigators have discovered in certain strains of E. coli, various fecal bacteria and in human colon and stomach tissue. This enzyme can transfer nitroso groups from a wide variety of nitrosamines to a diverse group of amide acceptor molecules, such as simple primary and secondary amides, ureas and urethanes. The structure of the product is unknown but different from the structure of the N-nitroso-N-alkyl amides, ureas or urethanes. All products are direct acting mutagens on the Ames Salmonella Strain TA98. The enzyme is increased when beef is added to the diet of man or experimental animals. The identification and structure of these products will be studied. A newly discovered enzyme, mutagen suppressor enzyme, is also present in fecal bacteria. The enzyme will specifically destroy the product of the transnitrosase, converting these substances into N2, esters, or NO2 and the original acceptor molecule. Mutagen formation is thereby prevented. Both enzymes will be purified, characterized and studied. Mechanisms whereby diet and environmental effects alter the fecal mutagens, fecal transnitrosase and fecal mutagen suppressor enzyme will be sought.

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2.2235,

MUTAGENS IN HIGH AND LOW RISK POPULATIONS FOR GASTRIC CANCER

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Direct acting mutagens as well as the transnitrosoase enzyme have been detected in biopsies of human gastric tissue. Gastric mutagens are usually similar to the fecal TA98 direct acting mutagens and increase on ingestion of beef in the same way. All tissue samples which contain mutagens also contain transnitrosoase but some tissue samples contain transnitrosoase without mutagens. Enzymes and mutagens are found most often in those regions of the stomach where gastric cancer is likely to be found. Human gastric tissues from low gastric cancer risk Causasians are being compared with tissues from high risk Japanese of Hawaii.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2236,

INVESTIGATION OF HISTOLOGICAL TYPES OF LUNG CANCER AMONG WOMEN IN THREE ETHNIC GROUPS IN HAWAII

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This study will determine the histological type-specific incidence rates for lung cancer among Japanese, Chinese and Hawaiian/part-Hawaiian female residents of Hawaii and examine the association of cigarette smoking with lung cancer for each histological type and within each ethnic group. All available hospital records and pathology slides for the approximately 310 Japanese, Chinese and Hawaiian/part-Hawaiian women diagnosed with primary lung cancer during 1968-1977 will be reviewed. Pathology slides will be reviewed by two pathologists in a blind fashion, using standard histological criteria. Smoking history will be obtained from the medical records and estimates of the relative risk caused by smoking for each histological type of lung cancer will be made by comparison to a control group matched for sex, age, ethnic group and census tract of residence.

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2.2237,

CASE-CONTROL STUDY OF CANCER OF THE BREAST, ENDOMETRIUM, AND OVARY, WITH EMPHASIS ON THE EFFECTS OF ORAL CONTRACEPTIVES

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This is a large cooperative case-control study, designed to: 1. Estimate the effect of oral contraceptive use on the risk of breast, endometrial, and ovarian cancer, especially among women with characteristics such as a) oral contraceptive use in the presence of benign breast disease and other breast cancer risk factors (family history of breast cancer, etc.); b) oral contraceptive use prior to first birth; c) use of sequential compared to combination oral contraceptives and d) prolonged total use of oral contraceptives. 2. Evaluate the pathological nature and prognosis of breast, endometrial, and ovarian cancer which occurs in association with oral contraceptive use when the association appears causal.

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2.2238,

TETRACHLOROETHANE EXPOSURE AND SUBSEQUENT MORTALITY FROM CANCER IN U.S. ARMY VETERANS OF WORLD WAR II

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Heavy exposures to chlorinated hydrocarbons in man result mostly from industrial chemicals and pesticides, but most exposures are recent and do not lend themselves to epidemiological investigation. One member of this class of compounds, tetrachloroethane, has had wide industrial use and was also used by the Army during World War II in the impregnation of clothing against mustard gas. Tetrachloroethane was used by men serving in Chemical Processing Companies, and it is this occupational exposure which is to be studied. The mortality experience of some 13,000 men (cases and controls) is to be studied to determine the effect of exposure to the chemical on cancer mortality.

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2.2239,

CANCER AND STEROID HORMONES

H.W. Ory, U.S. Dept. of Health & Human Services, Public Health Service, Center for Disease Control, Evaluation Division, *1600 Clifton Rd. N.E., Atlanta, Georgia* 30333 (D-IARC-79-781)

Hormones are suspected of being related to breast, ovary and endometrial cancer. However, the exact nature of this interrelationship has not been worked out completely. This prospective case-control study aims to assess the interaction of oral contraceptives and estrogenic hormones with risk factors of breast, ovary and endometrial cancer to determine if the factors operate independently, synergistically or not at all in producing the three cancers. The pilot phase of the project is currently under way. One hundred cases will be assessed to make sure that the methods intended for use work. Following this, a much larger study, to examine perhaps up to as many as 10,000 cases of the three diseases combined, is planned. The cases will be drawn from population-based tumor registries and the controls will be population-based also.

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2.2240,

STUDY OF OVARIAN CANCER IN GREATER WASHINGTON

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In order to gain understanding of the apparently complex etiology of cancer of the human ovary, the National Cancer Institute (NCI) will design and over-

see an interview study of incident cases of ovarian cancer diagnosed in hospitals in the Washington, DC metropolitan area and controls discharged from the same hospitals. Although this form of malignancy is relatively common (17,000 cases per year in the U.S.) and is often fatal (10,000 deaths per year), very little is known of its causes. In the past decade, studies have clearly shown that the disease is associated with infertility and low fertility, but the mechanism remains to be elucidated. The existing suggestions of viral factors, of exogenous estrogenic factors, and of specific industrial exposures need further pursuit. NCI will conduct the study in collaboration with a local investigator experienced in the operation of an interview study of ovarian cancer, who will obtain the cooperation of the area hospitals and supervise the study staff. The study staff will be responsible for the identification of cases and controls, the interview of respondents, and the coding of data. NCI will design the protocol and the questionnaire, monitor the progress of the study, analyze the data, in cooperation with collaborating investigator.
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2241,

FOLLOW-UP STUDY OF LIVER CIRRHOSIS

A.Z. Keller, U.S. Veterans Admin., Dept. of Medicine & Surgery, Regional Office, Research Service, *941 N. Capitol St. N.E., Washington, District of Columbia* 20421 (D-IARC-79-765)

More than 10,000 males with liver cirrhosis, divided into categories of age and race, will be followed up over a five to ten year period to determine their overall mortality experience, their site-specific rates of cancer incidence and their cancer risks by levels of tobacco smoked and alcohol consumed. Cirrhotic patients will also be comapred with a control group of the same age and race, but without liver cirrhosis, in order to evaluate differences in marital status, religious preference, residence and occupation. controls and cases will be selected from the 171 United States veterans hospitals located in 48 contiguous states, the District of Columbia and Puerto Rico. This study is a sequel to many previous studies on United States veterans which, generally, found increased risks of floor of mouth, uvula and soft palate, pharynx, esophagus and liver cancers among cirrhotics, heavy smokers, heavy drinkers or among patients with combinations of these attributes.
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2.2242,

ALCOHOL, TOBACCO AND AGE FACTORS IN THE RELATIVE FREQUENCY OF CANCERS AMONG MALE NEGROES WITH AND WITHOUT LIVER CIRRHOSIS

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Because ethnic factors contribute to distinct distributions of many diseases in the United States and can frequently explain still other factors in their etiology, and because, further, a recent study yielded substantial data on white cancer patients with and without liver cirrhosis, there is a decided need for comparable data on Negroes. These data will facilitate valid racial comparisons in regard to tobacco and alcohol consumption, cancer sites and age disparities among males, with and without liver cirrhosis, and may delineate factors in cancer etiology which are specific to one race. Negro cases (with liver cirrhosis and cancer) and Negro controls (with cancer but not liver cirrhosis) from the 171 veterans' hospitals in the United States will be examined over a six year period. This research will endeavor to demonstrate the extent to which cirrhotics manifest significant excesses of specific digestive organ, oral cavity and pharyngeal cancers with regard to types and amounts of tobacco smoked and alcohol consumed. The probable roles of some occupational exposures in the pathogenesis of cancers in cirrhotics will also be assessed. Subsequent analyses will entail the comparison of data on Negroes with data, already published, on 286 white males with liver cirrhosis and cancer and on 374 white males with cancer only.
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2.2243,

THE EPIDEMIOLOGY OF MULTIPLE MYELOMA IN UNITED STATES VETERANS

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The specific aims of this research are to determine overall rates of multiple myeloma incidence by race and age, and the specific incidence rates in each state and region of the United States by race among US males, diagnosed and treated in the 171 veterans hospitals located throughout the United States. This study will also determine if significant rate differences can be explained by either patterns of hospitalization or ratios of multiple myeloma patients to all other hospitalized patients by age, race and residence. The probable role of climatic factors in the incidence of multiple myeloma in each region will also be evaluated, in addition to occupational exposures, tobacco use and alcohol consumption. The multiple myeloma cases will comprise three year 100 percent sample of males discharged from United States veterans hospitals. Controls (matched to the cases on age, race and bed-sections in the hospitals) will be employed and the denominator for rates will derive from US Census Data on veterans. Finally, with multivariate techniques, the contributions of age, residence, birthplace, bed-sections in hospitals, tobacco use, alcohol consumption, occupations and, possibly, seasonality to any marked disparity in multiple myeloma incidence by race will also be made.
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2244,

EPIDEMIOLOGICAL STUDY OF LEUKEMIA IN MESA COUNTY, COLORADO, U.S.A.

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This is a descriptive and analytical study in Mesa County, Colorado, U.S.A., where the age-adjusted leukemia incidence rates are 2-2.5 times the expected, based on Colorado and U.S. data (41 observed: 20 expected in 1970-1976). In the 1950s and 1960s tailings from a uranium mill were used extensively in Mesa County for construction - as a backfill under basements and around foundation walls. For the analytical study the case-control approach is used. Leukemia patients, patients with other malignancies believed to be associated with ionizing radiation, and patients with cardiovascular disease are interviewed.
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2245,

ESTIMATING THE INCREASES IN SKIN CANCER THAT WILL RESULT FROM INCREASING ULTRAVIOLET RADIATION

E.L. Scott, University of California, Berkeley Campus, School of Letters & Science, Dept. of Statistics, *Berkeley, California* 94720 (D-IARC-79-714)

Increasing ultraviolet radiation (from depletion of the stratospheric ozone or from other causes) will result in increasing skin cancer. The purpose of this study is to estimate the amount of the increase as a function of age, sex, locality, site, skin color, and other characteristics. Efforts are being made to ascertain the influence of microclimate, socioeconomic level, and other factors which may influence the observed increase in skin cancer. Separate studies are made for melanoma, non-melanoma, and keratosis in as much detail as possible; also for mortality, incidence, and prevalence.
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2246,

EPIDEMIOLOGICAL STUDY OF THE INCIDENCE OF CANCER AS RELATED TO INDUSTRIAL EMISSIONS IN CONTRA COSTA COUNTY

D.F. Austin, State Dept. of Health Sciences, California Tumor Registry, *2151 Berkeley Way, Berkeley, California* 94704 (D-IARC-79-706)

The study aims (1) to test the hypothesis that the incidence of cancer of specific sites is higher in the population of the heavily industrialized section of Contra Costa County than in the population of the residential areas; (2) to determine whether any union or occupational groups in Contra Costa County have higher incidence rates for any cancer sites than other unions or occupational groups; (3) and to identify specific environmental factors associated with lung cancer incidence in Contra Costa County. Age, race, sex and site specific cancer incidence rates for an 8 year period will be calculated for the group of census tracts in the predominantly industrial section of Contra Costa County and for the remaining group of tracts in the residential section. Rosters of union members and other occupational groups will be matched with cancer incidence files of the Resource for Cancer Epidemiology. The number of cases observed will be compared in the San Francisco-Oakland SMSA. A case-control study of cancer patients in Contra Costa County will be performed. The site, sex and age of the cancer patients will be decided on the basis of the results of the cancer incidence data obtained in the first part of the study. A questionnaire designed to investigate variables, such as length of residence in Contra Costa County, socioeconomic status, smoking, occupation and other causative and contributing variables, will be administered to cases and controls.
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2247,

STUDIES ON ENVIRONMENTAL CANCER USING A PRE-PAID HEALTH PLAN

G.D. Friedman, Kaiser Permanente Medical Care Program, Dept. of Medical Case Research, *3700 Broadway, Oakland, California* 94611 (D-IARC-79-739)

Using longitudinal medical records, case-control studies will be carried out to evaluate hypotheses concerning possible environmental factors predisposing to cancer. The first study being undertaken, in collaboration with the Kaiser Permanente Group in Portland, Oregon (Dr. Andrew Glass, principal investigator), and with the National Cancer Institute (Dr. Robert Hoover, project officer), is about the relationship of use of estrogens and other hormones with the development of ovarian cancer.
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2248,

HEALTH EFFECTS IN CHILDREN EXPOSED TO VINYL CHLORIDE

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Although a considerable body of occupational and laboratory toxicological data have demonstrated the carcinogenic action of vinyl chloride monomer (VCM), there appears to be little epidemiological information regarding health effects in children exposed to ambient levels of VCM. A pilot study consisting of a cohort of elementary school children who attended a school situated in close proximity to a PVC manufacturing plant will be conducted for potential health effects 10 to 20 years after exposure. Students will be grouped into three graduated exposure categories based upon estimates of total VCM concentrations received. Plant production history will be linked with pupil records, air monitoring data and dispersion calculations to subgroup the cohort. A number of mortality and morbidity indicators and data bases will be examined in order to contrast all exposure groups with zero exposure population.
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2249,

RETROSPECTIVE COHORT MORTALITY STUDY OF DRY CLEANING WORKERS EXPOSED TO PERCHLOROETHYLENE

S.D. Kaplan, S R I International, Center for Occupational & Environmental Safety & Health, *333 Ravenswood Ave., Menlo Park, California* 94025 (D-IARC-79-738)

Perchloroethylene is a principal solvent in the dry cleaning industry. This chlorinated hydrocarbon has been shown to cause liver cancer in one strain of mice but not in one strain of rats. The objectives of the study are to identify a population of at least 2,000 individuals in dry cleaning facilities exposed to perchloroethylene as primary solvent and not previously exposed occupationally to either trichloroethylene or carbon tetrachloride who were employed for at least 12 months before 1960, obtain sufficient data to make possible calculation of expected mortality as a function of exposure, carry out follow-up, obtain death certificates and analyze and interpret the results. Eligibles for the cohort have been identi-

fied from four union locals, supplemented by solvent histories from sources including: equipment manufacturers and distributors, solvent distributors, and industry representatives. Follow-up will be through the Social Security Administration supplemented as needed by Motor Vehicle Registration and the Tel-Credit Bureaus. A modified life table analysis will be performed.

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2.2250,

RETROSPECTIVE COHORT MORTALITY STUDY OF PRIESTS

S.D. Kaplan, S R I International, Center for Occupational & Environmental Safety & Health, *333 Ravenswood Ave., Menlo Park, California* 94025

Several case-control studies have suggested that men who are more sexually active are at higher risk of cancer of the prostate. Roman Catholic priests should represent a low risk group and offer the best test of the hypothesis. The purpose of this study is to examine the mortality experience of Roman Catholic priests, particularly for prostatic cancer. The standardized mortality ratio (SMR) for prostatic cancer and other causes of death will be calculated. The anticipated finding of a low SMR for prostatic cancer will be the best indication that sexual intercourse is a risk factor for this disease. Data have been collected from 31 Dioceses on active and retired diccesan priests during the year 1949. Information collected included name, date of birth, date of ordination and, for those deceased, date and place of death. The anticipated cohort size is 8,000 to 10,000 dependent upon additional diocesan cooperation. Death certificates will be obtained for deceased cohort members and cause of death will be coded by a trained nosologist. The anlysis will be by a modified life table program.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2251,

EPIDEMIOLOGY OF PANCREATIC CARCINOMA AND IDENTIFICATION OF HIGH-RISK GROUPS

T.M. Mack, University of Southern California, School of Medicine, Dept. of Pathology, *2025 Zonal Ave., Los Angeles, California* 90033 (D-IARC-79-727)

The objectives of this research are to study the epidemiology of cancer of the pancreas, to formulate causal hypotheses and to identify groups at high risk of developing this tumor. A large case - control study, to be performed in Los Angeles County, has been designed to permit simultaneous examination of multiple antecedent risk factors. Cases with cancer of the pancreas will be identified by the Los Angeles County University of Southern California Cancer Surveillance Program. questionnaire has been designed to obtain data on occupational and on environmental exposures - tobacco and alcohol consumption, diet, and medical history and treatment. It will be administered to both cases and neighborhood controls as soon as possible after the cases have been diagnosed. Standard matched-pair analyses of multiple variables will be performed on the data from the questionnaire.

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2.2252,

CAUSATIVE FACTORS IN CARCINOMA OF THE OESOPHAGUS AMONG SOUTHERN CALIFORNIA RESIDENTS

T.M. Mack, University of Southern California, School of Medicine, Dept. of Pathology, *2025 Zonal Ave., Los Angeles, California* 90033 (D-IARC-79-728)

The objectives are to study the epidemiology of carcinoma of the oesophagus, to test previously suggested causal hypotheses and associations, to discover new associations and to delineate the characteristics of high risk groups by means of a large case - control study designed to permit simultaneous examination of multiple antecedent risk factors. Cases with cancer of the oesophagus will be identified by the Los Angeles county University of Southern California Cancer Surveillance Program. A questionnaire has been designed to obtain data on environmental exposures - tobacco and alcohol consumption, diet, occupation, and medical history and treatment. It will be administered to both cases and neighborhood controls as soon as possible after the cases have been diagnosed. Standard matched pair analyses of multiple variables will be performed.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2253,

MALIGNANT MELANOMA - A CASE-CONTROL STUDY IN LOS ANGELES

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The annual incidence of malignant melanoma in Los Angeles is about 10 per 100,000 and appears to be increasing. A case-control study has been designed to test and formulate causal hypotheses and to identify groups at high risk. The specific aims of this study are: 1) To quantify the risk of persons for melanoma in relation to job, medical history and particular patterns of behavior, inheritance and skin characteristics, 2) To distinguish between the determinants of risk to different body sites and the determinants of different pathological types. Cases with malignant melanoma will be identified by the Los Angeles County University of Southern California Cancer Surveillance Program. A questionnaire designed to obtain data on occupational and environmental exposures, behavioral patterns in the sun, medical history and treatment, and skin features will be administered to both cases and controls. In addition, skin color will be determined for cases and controls.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2254,

EPIDEMIOLOGY OF BENIGN BREAST DISEASE

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The aim of the study is to examine the epidemiology of major types of benign breast disease and to compare identifiable risk factors for benign diseases with known risk factors for breast cancer. At the same time a histological classification scheme based on grading of cellular atypia in comparison with the conventional histological classification will be examined. Approximately 1,000 women with first biopsies for benign breast disease in participating hospitals will be admitted to the study by a sampling mechanism designed to represent the spectrum of histological types. Histology slides will be reviewed by two independent pathologists and classified on two separate schemes. A group of about 200 women with breast cancer will also be included. Two types of controls will be used, a hospital control and a friend control. Information on epidemiological characteristics will be obtained by questionnaire. The questionnaire seeks responses on a wide range of topics including environmental influences, familial cancer patterns, medical, maturation, and reproductive history, and various other endocrine-related subjects. Epidemiological characteristics of different histological types of benign breast disease will be compared to each other and to those of breast cancer.

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2.2255,

EPIDEMIOLOGY OF INTRACRANIAL NEOPLASMS

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A large case-control study of two subgroups of patients with primary intracranial neoplasms is to be performed in Los Angeles County: intracranial tumors of all histological types first occurring in children and young people under age 25 from 1972-1977; and incident intracranial meningiomas in men from 1972-1975. The study has been designed to test the hypothesis that previous radiation exposure is causally related to the development of these tumors, to test previously suggested causal associations, to discover new associations and to delineate the characteristics of the high risk groups. Cases with specified intracranial tumours will be identified by the Los Angeles County-University of southern California Cancer Surveillance Program. Questionnaires have been designed to obtain data on radiation exposure, occupation, consumption of tobacco and drugs, medical history, and family history of tumors. Standard matched pair analyses of multiple variables will be performed.

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2.2256,

CASE-CONTROL STUDY OF IMMUNOBLASTIC LYMPHADENOPATHY AND HISTIOCYTIC LYMPHOMA

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In 1964, Lukes and Collins suggested a new classification of non-Hodgkin's lymphomas based on morphology and function of the cell type involved, thus providing a meaningful basis for epidemiological study of lymphomas. Recently a distinctive pathological lesion denoted lymphoid tissue immunoblastic lymphadenopathy (IBL) or angioblastic lymphadenopathy (ABL) has been identified. Although not a malignant process, the clinical course is often rapidly progressive with death resulting from infection. In some patients a true malignancy ensues, an immunoblastic sarcoma or histiocytic lymphoma by the Rappaport Classification. Follow-up of patients with IBL and/or histocytic lymphomas questioning them about initial onset of symptoms, antecedent environmental exposures relative to occupation, medication, and residence may elucidate aetiological agents involved, and a family history may provide answers to questions about a genetic predisposition. Laboratory studies include cell surface markers on a portion of the patients, HL-A and B cell typing, immunoglobulin measures, and various viral antibody titers. Controls are matched for age, race, sex and socioeconomic status.

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2.2257,

A MORBIDITY AND MORTALITY FOLLOW-UP STUDY OF WOMEN TREATED FOR HYPERTHYROIDISM

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Radioiodine (131I) is now the treatment of choice for persons over the age of 20 years. Although there have been several studies of the possible delayed effects of radioiodine, they have been either too small or have not followed these patients for a long enough time to evaluate adequately the possible carcinogenic effects. The objective of this study is to follow up female patients treated for hyperthyroidism at the Mayo Clinic between 1946 and 1964. This is part of the population that was originally followed in the National Cooperative Thyrotoxicosis Follow-Up Study. Risks of morbidity and mortality, particularly from malignant neoplasms, will be evaluated. The study will attempt to determine if patients treated with therapeutic doses of 131I are at an increased risk of developing malignant neoplasia compared to patients treated for the same condition with non-radiation modalities. The study design is that of a non-concurrent prospective approach. Eligibility criteria for inclusion in the study cohorts include: 1) treated at the Mayo Clinic for hyperthyroidism between January 1, 1946 and December 31, 1964; 2) a confirmed diagnosis of hyperthyroidism; and 3) United States residency. After review of the Mayo Clinic records, a total of 3,696 white females were ruled eligible for inclusion in the study cohorts. The distribution of patients in the various treatment groups is: 1,004 treated with 131I, 2,141 surgically treated, 426 received both 131I and surgical treatment, and 125 received antithyroid drugs. The medical records of these patients have been abstracted for medical and demographic information. Because the patients were not randomly assigned to the treatment groups, the bases for selection for a particular therapy will be evaluated in order to minimize potential selected biases. Dosimetric information for those patients treated with 131I is being collected in order to estimate various organ doses. Follow-up of these patients is being conducted via mail.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2258,

NATIONAL CANCER INSTITUTE PROGRAM OF CANCER SURVEILLANCE, EPIDEMIOLOGY AND END RESULTS (SEER PROGRAM)

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The SEER Program was developed in response to the Natonal Cancer Program requirements for assessing as currently as possible the magnitude of

the cancer problem in the United States and for identifying factors related to cancer risk and/or patient survival. The 'cancer problem' has been interpreted to include: 1) newly diagnosed cancer cases that might have been prevented by altering host or environmental conditions and 2) deaths due to cancer that might have been prevented by earlier cancer diagnosis coupled with optimal therapeutic approaches. Therefore, the SEER Program has among its objectives: 1) To assemble and report on a periodic basis, estimates of cancer incidence in the United States. 2) To monitor annual cancer incidence to identify unusual changes in specific forms of cancer occurring in groups defined by parameters of geographical, demographic and social characteristics of the population. 3) To provide continuing information on changes over time in extent of disease at diagnosis, trends in therapy and associated changes in cancer patient survival and 4) To promote the development of hypotheses and specific studies designed to identify cancer aetiological factors (environmental/occupational, sociocultural, etc.) and factors related to patient survival.

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2.2259,

EPIDEMIOLOGY OF CANCER AMONG MORMONS

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The standardized mortality ratio (SMR) for total cancer in 350,000 California Mormons during 1968-1975 and 750,000 Utah Mormons during 1970 -1975 compared with US whites is about 50 percent for 'active' males, about 65 percent for all males, and about 75 percent for all females. For active males the SMR is about 25 percent for smoking-related cancer sites and about 65 percent for all other sites. Mormons are a health-conscious religious group, who appear to be similar to US whites in many respects, such as diet, socio-economic status, and urbanization, but who use substantially less tobacco, alcohol, coffee, and tea than the general population. 'Active' Mormons, and leaders known as High Priests and Seventies, abstain almost entirely from tobacco, alcohol, and caffeine. However, the reasons for the low Mormon cancer rates are largely unknown, primarily because there are no detailed data available on their health characteristics. The objective of this study is to pursue the descriptive mortality data with a questionnaire survey and prospective mortality follow-up of 'active' California Mormon adults, specifically High Priests and their wives. The survey will obtain detailed demographic, life style, dietary, occupational, and medical history data on a representative sample of about 1,000 individuals and limited demographic and life style information on about 20,000 additional persons. Mortality follow-up will be conducted on this cohort for four years. Additional church-based mortality data will be collected for all California Mormons during the years 1960-1967 and 1976-1979 and for all Utah Mormons during 1976-1979, to increase the statistical reliability of the existing data summarized above. The data on life style and health-related characteristics of 'active' California Mormons will be compared with their detailed cancer mortality rates. Distinctive differences between these Mormons and other comparison groups will be highlighted.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2260,

EPIDEMIOLOGY OF GASTRIC CANCER IN CHILEAN COHORTS

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It is proposed to pursue collaborative epidemiologic studies in Chile: (1) To determine the incidence and mortality from stomach cancer in cohorts defined endoscopically to have lesions which might be precursors of malignancy: intestinal metaplasia, chronic atrophic gastritis and gastric ulcer; (2) to observe histological changes in the gastric mucosa of patients with these conditions which may be indicative of the natural history of stomach cancer; (3) to develop a model of the natural history of stomach cancer; and (4) to look for environmental factors, including exposure to nitrates, which occur more frequently among persons who develop stomach cancer. Two cohorts of individuals with an endoscopic diagnosis of chronic atrophic gastritis, gastric ulcer or normal panendoscopy will be followed up for the occurrence of stomach cancer: a historical cohort of approximately 22,500 persons diagnosed at nine collaborating hospitals in high, low and intermediate risk areas between 1975 and June 1979 and a concurrent cohort of approximately 20,400 persons diagnosed between July 1979 and June 1983. A third cohort of 800 persons undergoing a histological diagnosis of intestinal metapiasia, chronic atrophic gastritis or gastric ulcer between July 1979 and June 1983 will be followed annually for histological changes. Follow-up will continue through June 1983 providing 171,192 person years of follow-up of the historical and concurrent cohorts and 1,561 person years of follow-up on the special cohort. These studies should identify persons who are at high risk of developing stomach cancer and should suggest histological and environmental factors important in the natural history of stomach cancer, thus facilitating implementation of intervention techniques with a resulting decline in the incidence and case fatality of stomach cancer.

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2.2261,

REVIEW OF BILE DUCT CARCINOMAS

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As a follow-up on an earlier study of changing patterns of hepatocellular carcinoma, a similar study embracing autopsy material from the Los Angeles County Hospital 1945 to 1978 dealing with bile duct carcinomas has been undertaken in an attempt to establish the presence or absence of changing patterns of that tumor.

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2.2262,

REVIEW OF INCIDENCE AND CHANGING PATTERNS OF LIVER TUMORS IN LOS ANGELES

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As part of an epidemiological study of tumors in Los Angeles County, a broad survey of tumors of the liver is being undertaken. All liver tumors diagnosed at biopsy or autopsy in the County of Los Angeles are microscopically reviewed, terminology and diagnoses are standardized and patient information regarding age, sex, race and past have dealt with death certificate diagnoses only or have accepted submitted diagnoses; this is an attempt to diagnose more precisely the types of tumors to see whether a low incidence tumor, previously buried in the overall designation of 'liver cancer', is showing a change in incidence.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2263,

FOLLOW-UP OF FLUOROSCOPICALLY EXAMINED TUBERCULOSIS PATIENTS IN RELATION TO CANCER INCIDENCE

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There is current interest in instituting mass screening programs of mammography to detect breast cancer in early stages. However, there is concern that the radiation used may itself have harmful side effects. In this study, the association between radiation received as a result of fluoroscopic examination during air-collapse therapy for tuberculosis and cancer is being assessed. The occurrence of other diseases both in relation to radiation and to isoniazid therapy will also be examined. This is a retrospective cohort study of approximately 9,000 women and men who were treated for tuberculosis in Massachusetts from 1930 onwards. These persons will be followed up from records and other sources. Rates of mortality and cancer morbidity will be compared internally, between radiated and non-radiated patients or between patients treated with and without isoniazid, and externally, with population mortality and cancer morbidity rates.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2264,

MORTALITY AMONG WORKERS IN THE METAL POLISHING, BUFFING, AND PLATING INDUSTRY

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Workers in the metal polishing, buffing, and plating industry are exposed to a number of potentially hazardous substances (metal dusts, cyanide solutions, solvents and degreasers). To evaluate the mortality experience of this group and to provide clues concerning the carcinogenicity of certain occupational exposures, the distribution of causes of death among 3,000 past members of the Metal Polishers, Buffers, Platers, and Helpers International Union will be compared with the distribution in the general population.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2265,

BLADDER CANCER, LEUKEMIA AND LYMPHOMA AMONG NEW YORK AND WISCONSIN DAIRY FARMERS - A DEATH CERTIFICATE STUDY

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A few studies have suggested that dairy farmers have elevated mortality from bladder cancer, leukemia, and lymphoma. To evaluate this lead, 300 deaths from each neoplasm in heavy dairying counties in New York and Wisconsin were individually matched to one control (dying of some other disease) of the same age, race, sex, year of death and county of residence. Type of farming operation for case and control farmers will be determined using records from the State Cooperative Extension Service. The proportions of death certificates listing farmer as the usual occupation and the type of farming operation will be compared in the cases and controls.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2266,

CAUSES OF DEATH AMONG TOBACCO WORKERS

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The objective of the study is to determine whether workers employed in tobacco processing plants experience unusual cancer mortality patterns that may suggest exposure to carcinogenic agents. The study group consists of approximately 3,000 deaths among members of the Tobacco Workers Union reported in the union journal since 1957. The tobacco workers will be compared with the experience of the general population.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2267,

IMMUNOLOGICAL AND MOLECULAR HYBRIDIZATION STUDIES OF NASOPHARYNGEAL CARCINOMA

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Epstein-Barr Virus (EBV) is considered a major factor in nasopharyngeal carcinoma (NPC). The study aims to further assess the role of EBV in terms of etiology, diagnosis/prognosis and other environmental and genetic factors essential in defining the populations and individuals at risk. Studies include EBV-serology (humoral and cell-mediated), virology (attempts to isolate EBV and to compare it with known EBV isolates) and attempts to propagate epithelial cells from biopsies, examination of the HLA profile of cases, detection and examination of EBV genome expression in biopsy material by nucleic acid hybridization, review of the histopathology of all such cases and an attempt to prepare somatic cell hybrids to detect EBV receptors. Malaysia has a high incidence of NPC and has subpopulations consisting of Malayans, Indians and Chineses, whereas West Germany and the USA are low NPC incidence areas. However, in USA, NPC cases include Chinese, white

and black populations and Alaska Eskimos. In Algeria NPC ranks as the number four cancer in males. There are also two age peaks in this population. Since young age NPC has been observed in the black population in some southern states of the USA, Algerian NPC would provide an excellent comparison. Histopathological slides from West German American NPC cases have been circulated for review to resolve differences in interpretation. Examination of approximately 14 cases of German NPC with more than 30 cases from Algeria suggests that antibodies to EBV antigens are much higher in Algerian cases. Data also show that antibodies to EBV are higher in American than in West German NPC. Attempts to propagate epithelial cells from NPC biopsies in vitro were unsuccessful.

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2.2268,

EPIDEMIOLOGY OF ACUTE CHILDHOOD LEUKEMIA

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Malignant diseases are the second leading cause of death in U.S. children, with leukemia accounting for about 50% of all childhood cancer deaths. Although a number of factors have been implicated in the etiology of childhood leukemia, including ionizing radiation and chemical agents, the etiology of most childhood leukemias remains unexplained. This case-control study aims to assess environmental influences in childhood leukemia, including factors which may act in utero or in early life. The study population consists of children identified in three metropolitan areas in the U.S. (Baltimore, Philadelphia and Washington, D.C.). Three groups of about 50 children were individually matched by age, sex, race and hospital of diagnosis: children with acute leukemia, children with other malignancies, and children without malignancies. Interviews have been conducted among parents of these children, and data are now being analyzed.

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2.2269,

ENVIRONMENTAL EPIDEMIOLOGY OF PANCREATIC CANCER

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Cancer of the pancreas is the fourth leading cause of death due to cancer in the United States, exceeded by cancer of the lung, colon and rectum, and prostate. This case-control study is designed to investigate environmental factors that may be associated with pancreatic cancer. Cases with pancreatic cancer and two groups of controls -neighborhood controls and hospitalized patients without cancer - and their families will be interviewed. Patients with a diagnosis of pancreatic cancer will be ascertained concurrently from the onset of the study for a period of three years. Cases will be identified from: review of hospital records, pathology records, survey of surgeons and internists, and review of death certificates. Wherever possible, the original slides of biopsy or surgical excision as well as pathology and/or autopsy reports will be obtained and reviewed for verification of diagnosis by a consultant pathologist who will not have the clinical data available to him prior to review of the slides. Patients will be interviewed as soon as is practical after diagnosis, generally during their post-operative convalescence. The spouse or closest relative will also be interviewed. A similar approach will be used for ascertaining information about controls. Data to be obtained in the interviews include: (1) demographic characteristics; (2) past medical history; (3) use of alcohol or tobacco; (4) detailed life-time occupational history; (5) chemical and radiation exposures; and (6) family history of pancreatitis, other digestive diseases, diabetes, or cancer.

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2.2270,

LUNG CANCER IN LOUISIANA

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The aim of the proposed project is to investigate genetic and environmental factors that may account for the high mortality due to cancer of the lung in southern Louisiana. Approximately 800 deaths due to cancer of the lung were reported during the seven year (1971-1977) period in ten target parishes (counties). Histopathology has been collected and is being evaluated on almost all deceased persons. Surviving relatives of each person designated as having died of lung cancer are being interveved concerning the occupation and familial relationships of the deceased. The data on the subjects will be compared with data on controls matched for age, sex, race, and place of residence. Because previous studies have shown a possible relationship between ancestry and cancer, the coefficient of inbreeding will be quantitated, and that coefficient correlated with the incidence of lung cancer. Possible familial relationships will be computer-analyzed by the Russell Soundex System.

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2.2271,

MORTALITY AMONG RUBBER WORKERS

R.R. Monson, Harvard University, Boston Campus, School of Public Health, Dept. of Epidemiology, *55 Shattuck St., Boston, Massachusetts* 02115 (D-IARC-79-869)

As part of an on-going study of morbidity and mortality among rubber workers, a cohort of approximately 40,000 employees at one manufacturing plant in Akron, Ohio, is being followed. In this study, the mortality experience according to department of employment will examined. The years worked in specific departments, the ages when employed, and the periods of employment in relation to subsequent mortality will be studied. Mortality rates will be compared internally among departments and externally with population mortality rates.

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2.2272,

AMERICAN CANCER SOCIETY'S PROSPECTIVE EPIDEMIOLOGICAL STUDY

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Large scale prospective studies can provide data that are excellent sources for leads to cancer causation in humans. Analyses of mortality from cancer and other diseases from these studies can demonstrate the association of various aetiologic factors with mortality from different causes. Detailed questionnaires were collected from more than one million men and women by volunteers of the American Cancer Society who successfully traced nearly 99 percent of the subjects. Copies of death certificates for the deaths were obtained from state health departments. Follow-up was discontinued in 1972, but a small subgroup (about 1-5 percent of the survivors in 1972) are still being traced in 1978. These are 'long-lived' subjects (born before 1888 if a male, before 1886 if female). The purpose of this study is to determine what factor or factors are associated with not getting cancer.

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2.2273,

RISK OF BREAST CANCER IN WOMEN WITH BENIGN BREAST LESIONS USING THE ORAL CONTRACEPTIVE

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At least one investigator has found a higher risk of breast cancer in those women using the oral contraceptive who have a history of benign lesions than in women without such lesions. Arrangements have been made with Dr. Takuma Nemoto to administer a simple two-page questionnaire to women with breast cancer at the Roswell Park Memorial Institute. Age-matched controls from the dermatology service at the Roswell Park Memorial Institute will be used. It is anticipated that approximately 300 breast cancer patients can be surveyed per year at the Institute. The questionnaire administered contains questions dealing with the major hypotheses of breast cancer aetiology, including parity, age at first pregnancy, lactation, and the like, as well as questions dealing with use of the various oral contraceptives and a history of past benign breast lesions. Information on the physician prescribing and the hospital and physician treating the patient is obtained so that statements made can be corroborated through medical records. To date, 125 case and 48 control questionnaires have been completed.

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2.2274,

CANCER OF THE PENIS AND VAGINA

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A study is planned to examine the presence or absence of antibodies to herpes virus type 2 and to ascertain the number of persons who have been exposed sexually in cases of cancer of the penis and vagina throughout Upstate New York as compared to neighborhood controls in the same area. Names of cases will be obtained as they are reported to the New York State Tumor Registry. Cases and controls will be interviewed and have 15 ml of blood drawn for examination. The interview schedule will contain questions dealing specifically with socio-economic status, condition of foreskin, number of sexual partners, use of douche, and the like. This study will commence shortly.

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2.2275,

EPIDEMIOLOGY OF ORAL CANCER

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A case-control study of the various nutritional and dietary factors common to patients with cancer of the oral cavity is in progress. Data on oral hygiene, use of dental prostheses, smoking, and alcohol consumption are also being obtained. Both self-administered questionnaires and interviews are used. For interim results see J. Nat. Cancer Inst. 59 (6): 1611-18, 1977.

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2.2276,

HISTOLOGICAL FINDINGS IN BRONCHIAL EPITHELIUM IN RECENT AUTOPSIES

O. Auerbach, U.S. Veterans Admin., Dept. of Medicine & Surgery, Medical Center, Senior Medical Investigators Laboratory, *Tremont Ave. & S. Centre St., East Orange, New Jersey* 07019 (D-IARC-79-905)

During the past two decades tar and nicotine content of American cigarettes have been greatly reduced. Although lung cancer death rates have continued to rise, evidence from recent epidemiological studies shows that mortality rates have now started to decrease. If reduction of tar and nicotine reduces the risk of lung cancer, then the degree of histological changes in the tracheobronchial tree of men who were autopsied in recent years would be less than in men who died 15 or more years ago. If this could be shown, it would lend considerable credence to the epidemiological findings that reduced tar and nicotine content of cigarettes will result in lower lung cancer mortality. More than 900 cases with smoking histories were collected in the 1955-1960 era and from among these cases were matched on sex, smoking habit and in this 5-year age group with cases drawn from among 468 cases collected between 1970-1977. Coded slides were read in random order and the findings of number of cell rows, percent with a typical nuclei, carcinoma in situ and early invasive carcinoma were recorded. The data are being analyzed.

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2.2277,

HISTOLOGICAL CLASSIFICATION OF LUNG CANCER IN PERSONS EXPOSED TO ASBESTOS

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Studies of uranium miners who died of lung cancer have shown a different pattern of histological types from that in non-miners who die of lung cancer. Although there have been some studies of histological type of lung cancer in asbestos workers, these have been on a small series and not classified by the WHO classification of tumor type. Tissue specimens of lung cancer cases (autopsy and surgical specimens) on all subjects diagnosed with lung cancer in a 13 year period are being collected. Asbestos-exposed and non asbestos-exposed persons will be included in this study. Smoking, occupational and residence histories will be obtained from families of the deceased.

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2.2278,

CANCER IN PARENTS OF CONGENITALLY DEFECTIVE CHILDREN

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This record linkage study aims to determine the cancer incidence in parents of children who were born with anencephaly or spina bifida. Information on 1,400 cases and 1,400 controls is currently being gathered.

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2.2279,

RELATIONSHIP BETWEEN CANCER MORTALITY AND ENVIRONMENTAL FACTORS

P.W. Preuss, State Dept. of Environmental Protection, *P.O. Box 1390, Trenton, New Jersey* 08625 (D-IARC-79-908)

The proposed project will correlate the geographical patterns of cancer mortality with environmental and industrial data in the following manner: (1) Statewide environmental and industrial data will be collected for as far back in time as the sources permit. (2) A list of approximately 600 environmental and industrial variables will be identified to be correlates to the cancer mortality data. (3) These variables will be correlated to the cancer mortality data. The mathematical techniques will include bivariate correlation and factor analysis. Bivariate correlation is a statistical tool for measuring the relationship between two variables. Factor analysis provides a measure of the extent to which groups of different variables correlated. Through the use of these techniques, both individual factors and groups of factors which correlated with cancer mortality will be identified. (4) From these results of the correlation of the 600 variables, a list of those 20 to 40 which correlate most strongly with cancer mortality will be generated. (5) Intensive data searches will be conducted in order to reconstruct a 30 year period of population exposure to the 20 to 40 selected variables. (6) Annual exposure rates will then be correlated to annual mortality data to determine if relationships exist between exposure and mortality. In performing these correlations the 20-30 year latency period for cancer will be considered. (7) A final report will be prepared explaining all findings and recommending future courses of action.

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2.2280,

NATIONAL ENDOMETRIAL PROGRAM

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The objective is to determine the prevalence and incidence of endometrial carcinoma and precancerous states in 3,200 asymptomatic women, age 45 and above. A comparison of various systems of cytological sampling to assess their efficacy in the detection of these disease states will also be made.

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2.2281,

FAMILIAL STUDIES OF CANCER

S. Albert, Michigan Cancer Foundation, Dept. of Biometry & Medical Sociology, *110 E. Warren St., Detroit, Michigan* 48201 (D-IARC-79-878)

A retrospective study of cancer incidence among family members, associations between different forms of cancer and other characteristics of cancer lineages is being conducted. The study group consists of more than 6,000 families of post-partum women who participated in studies of viral-like particles in human milk from 1971-1977. Extensive family histories were obtained from these women in the effort to establish a relationship of the presence of viral-like particles to a family history of cancer. These data have been a valuable resource for epidemiological investigation and are central to several studies.

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2.2282,

INTERCENSAL ESTIMATES OF POPULATION DISTRIBUTION BY AGE, SEX, AND RACE AND TREND ANALYSES OF CANCER INCIDENCE AND MORTALITY

M.J. Brennan, Michigan Cancer Foundation, *110 E. Warren St., Detroit, Michigan* 48201 (D-IARC-79-880)

This study has two primary objectives. One is to determine the most accurate and practical methods of making annual intercensal estimates of the population distribution by age, sex, and race. Techniques of estimation and of modeling are being reviewed in order to determine the most reliable procedure. The second objective is to utilize the population estimates as the basis for analyzing trends in incidence and mortality rates among various demographic groups from 1969 through 1977.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2283,

INVESTIGATION OF HIGH PANCREATIC CANCER RATE IN WESTERN NEBRASKA

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Seventeen cases of pancreatic cancer were diagnosed in less than one year by professionals in the newly staffed Western Nebraska General Hospital of Scottsbluff, Nebraska. The unit serves a population of approximately 60,000 inhabitants. The number of cases constitutes an incidence four times greater than expected. This situation prompted the setting up of a survey to: (1) Confirm the high occurrence of pancreatic cases, (2) study places of birth and residence of cases for the purpose of establishing incidence rates, (3) establish a retrospective case-control study to look for common environmental or cultural factors prevalent among the cases which might be associated with the occurrence of pancreatic cancer in the area, and (4) determine any possible risk factors such as occupational exposure to known carcinogens or any factor suspected to be associated with the cases. There will be at least two controls for each case. Eleven western Nebraska counties, Scottsbluff, Sioux, Dawes, Sheridan, Box, Banner, Morril, Garden, Kimball, Cheyenne and Duel, with a population of 95,000, are included in the study.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2284,

HEAD TRAUMA AND SUBSEQUENT BRAIN TUMORS

J.F. Annegers, Mayo Clinic, Dept. of Epidemiology, *200 1st St. S.W., Rochester, Minnesota* 55901 (D-IARC-79-888)

A total of 2,953 patients with significant head injuries are being followed to determine the occurrence of intracranial neoplasms after head trauma. The observed number will be compared to the expected number based on local incidence rates of intracranial neoplasms.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2285,

MORTALITY EXPERIENCE OF STYRENE WORKERS

J.A. Zack, Monsanto Co , Dept. of Medicine & Environmental Health, *800 N. Linbergh Blvd., St. Louis, Missouri* 63141 (D-IARC-79-894)

Employees from several plant locations who have been exposed to styrene are being identified for study. The cohort will be traced prospectively and their mortality experience will be evaluated using the standardized mortality method. Particular attention will be given to deaths from malignant neoplasms and from neoplasms of lymphatic and hematopoietic tissue.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2286,

MORTALITY EXPERIENCE OF ACRYLONITRILE-EXPOSED WORKERS

J.A. Zack, Monsanto Co., Dept. of Medicine & Environmental Health, *800 N. Linbergh Blvd., St. Louis, Missouri* 63141 (D-IARC-79-895)

This is a mortality study of workers exposed to acrylonitrile through its manufacture and use. Approximately 400 wage employees from two plants have been identified for study. The mortality experience of these workers will be analyzed by the standardized mortality method, with particular attention given to malignant neoplasms of the lung and colon.

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2.2287,

THE NURSES HEALTH STUDY

F.E. Speizer, Peter Bent Brigham Hospital, Channing Laboratory, *721 Huntington Ave., Boston, Massachusetts* 02115 (D-IARC-79-872)

The risks of various possible carcinogenic exposures in women have not been well described. This prospective cohort study aims to evaluate cancer morbidity and mortality for a number of exposures including oral contraceptive use, cigarette smoking, and hair dyes. Information has been obtained by mail questionnaire for 123,301 married, female registered nurses, residing in one of 11 larger US states, and listed in the directory of the American Nurses' Association in 1972. Biannual follow-up mailings are being performed in 1978 and 1980 to determine the incidence rates of various cancers in relation to the exposures under investigation. Particlar emphasis is placed on risk factors for the development of breast cancer.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2288,

OCCUPATIONAL, ENVIRONMENTAL, AND PERSONAL-HABIT-RELATED DISEASES IN THE GREATER WORCESTER AREA

B.S. Levy, University of Massachusetts, Medical School at Worcester, School of Medicine, Dept. of Family & Community Medicine, *419 Belmont St., Worcester, Massachusetts* 01604 (D-IARC-79-875)

There is increasing evidence that much cancer results from occupational exposures. This case-control interview study aims to identify occupational and other factors related to the development of leukemia and cancers of the lung, urinary bladder, kidney, and larynx. Approximately 300 cancer patients who meet the study criteria are being identified from the cancer registries of the five major hospitals in Worcester, Massachusetts. These criteria include a tissue diagnosis of one of the malignancies under study at one of these hospitals in 1976 or 1977 in patients aged 21 years or older who live in Worcester or one of the immediately adjacent towns. After consent is obtained, these patients are interviewed (or their next of kin, if they are deceased) concerning their occupational, residential, and smoking histories; non-occupational exposures to possibly hazardous substances; family history of cancer; long-term use of medications; and ingestion of coffee and alcohol. An equal number of control subjects are being interviewed. The control subjects are patients at the same hospitals in the same years without a history of any malignancy who have been matched to cancer patients in the study by sex and five year age-group and who live in the same residential area. While the total number of cancer patients and control subjects is relatively small, it is hoped that this study may yield clues for investigation by more specific cohort

studies of workers of the same occupation, in the same industry, or with the same exposure.
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2289,

HERPESVIRUS HOMINIS TYPE 2 ANTIBODIES IN RELATION TO THE DEVELOPMENT OF CERVICAL NEOPLASIA

L. Johnson, New England Regional Primate Research Center, *1 Pine Hill Dr., Southborough, Massachusetts* 01772 (D-IARC-79-874)

An assay of herpesvirus hominis type 2 hemagglutinating antibodies is being made in sera of patients, before the onset of disease, during stages of cervical neoplasia and after treatment and compared with sera of controls who did not develop cancer. This prospective study is possible because sera were collected at the Boston Hospital for Women from pregnant and postpartum women during the years 1959-1965 in the Collaborative Study of Cerebral Palsy. These same women had Papanicolaou smears taken during the same time period in a study of the histogenesis of cervical neoplasia. A sample group of the women was re-examined for cervical neoplasia and serum was collected during the years 1974-1977.
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2290,

EVALUATION OF PERIODIC BREAST CANCER SCREENING WITH MAMMOGRAPHY AND CLINICAL EXAMINATION

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This is a randomized trial designed to test whether periodic screening with clinical and mammographic examinations results in a long-term reduction in breast cancer mortality. Linked to this primary objective are several issues of major importance in assessing benefits to be derived from breast cancer screening, e.g., the relative value of the two screening modalities, ages of women to be screened, periodicity of screening, identification of parameters related to development of the disease, and determinations of underlying cause of death. Approximately 62,000 women, aged 40-64 at the time of entry to the study and allocated to either a study or a control group, are under surveillance. Study women were offered screening examinations; of the 65 percent who accepted an initial examination, a large majority had at least one of the three additional screenings at annual intervals. Control women continued to receive their regular medical care. Screening ended in mid-1970, and follow-up on the entire study and control populations for breast cancer cases and death ascertainment continues. The survival status of all known breast cases through December of 1977 has been established, and no one is lost to follow-up. New data support earlier results on screening benefits. At ten years of follow-up from entry, 30 percent differential exists between the total study (screenees and refusers) and control group in breast cancer mortality. The impact of the screening program continues to be confined to women 50 years of age and over with no benefit at ages 40-49. Eight year case fatality rates show similar relationships. The differential between control and study cases is due almost entirely to the low rates among cases detected through screening, with cases detected through mammography alone showing a rate that is exceptionally low. At this point in the study there appears to be strong support for periodic screening at ages 50 years and over with the two modalities.
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2291,

MORTALITY OF WORKERS EXPOSED TO POLYCHLORINATED BIPHENYLS IN MANUFACTURE OF TRANSFORMERS AND CAPACITORS

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The entire workforce employed 1952-1957 in the largest U.S. facility manufacturing capacitors and transformers has been identified with assistance of the plant's union and management. The plant's operation goes back to 1947 and much information is available concerning polychlorinated biphenyl (PBC) exposure, including the types of PBC used over the years. Estimates are also available concerning the intensity of exposure in the various work positions. Age-, year-, and sex-specific deaths will be calculated for this large cohort, on the basis of both state and local death rate data, as well as data of the U.S. National Office of Vital Statistics. The entire cohort is being traced and the observed deaths will be compared with those estimated. While the duration from onset of exposure is shorter than optimal (being only 25 years in some cases), the information to be obtained will at least give data concerning the short-term mortality experience of a group heavily exposed to this halogenated hydrocarbon.
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2292,

MORTALITY AMONG AMOSITE ASBESTOS FACTORY WORKERS IN RELATION TO SMOKING HABITS, 1961-1977

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The mortality experience of workers in an amosite asbestos products factory is being reviewed prospectively from 1 July 1961, according to individually ascertained smoking habits. Deaths to 31 December 1977 have been recorded and causes of death, including cancer by specific site, asbestosis and other non-infectious lung disease, ascertained. Calculations include expected and observed deaths for those with a history of cigarette smoking and those who have smoked pipe and/or cigar only. Expected deaths are calculated according to age, year and sex specific death rates for the State of New Jersey, first by cause and then separately calculated in smoking specific categories, utilizing death rates over much of the period in question for similar men in a prospective study, by smoking category, of the American Cancer Society. During the period 1 July 1961-31 December 1977, 311 deaths occurred, including 62 from lung cancer. Observation of the cohort survivors continues.
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2293,

MORTALITY EXPERIENCE OF SHIP REPAIR WORKERS

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Although it is unlikely that there will be wide use of asbestos in new ship construction in the United States in the future, asbestos already in place in many U.S. and foreign ships promises to pose a hazard as these vessels are submitted for repair, maintenance, modernization and renovation. A cohort of all workers is being established in a major eastern U.S. shipyard which has been engaged entirely in ship repair and maintenance since the late 1930s, including all men and women so employed at some time between 1954 and 1964, for at least five years. The status of these individuals will be ascertained as of January 1, 1979. Cohort members will be categorized by trade and for those who have died, causes of death ascertained. A large proportion of the survivors in 1979 will be clinically examined for stigmata of asbestos-associated disease.
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2294,

METABOLIC EPIDEMIOLOGY OF COLON CANCER AND BREAST CANCER

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The primary objective of this investigation is to study the epidemiology of colon cancer cases and controls in a high-risk population (Finland) and a medium-risk population (US), paying special attention to the effect of diet on fecal constituents, and to study the constituents in breast fluid from those population groups. It is planned to continue collecting samples from populations at different risks for colon and breast cancer and analyze them for fecal constituents, hormones, mutagens, and/or other components. Results will be correlated epidemiologically to determine dietary or other associations with population differences.
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2295,

METABOLIC EPIDEMIOLOGY OF COLON CANCER - STUDIES IN LOW RISK FINISH POPULATION

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Colon cancer incidence data from the Nordic countries show a gradient from rural areas in Northern Finland, increasing from Northern to southern Sweden, with highest incidence being reached in Copenhagen, Denmark. Studies thus far completed indicate that excess dietary fat exerts an effect by altering endogenously produced metabolites such as bile acids which appear to have a promoting effect in colon cancer incidence and that dietary fiber has a protective effect in colon carcinogenesis. Although the total dietary fat intake in rural Kuopio, Finland is similar to countries with a high rate of colon cancer, the crucial difference in dietary intake between Kuopio and USA may relate to dietary fiber. The overall objective of this study is to acquire significant information in the high and low risk populations for development of colon cancer on the role played by dietary components on the etiology of this disease. In order to achieve this objective, feces of healthy controls and patients with colon cancer in Kuopio and Helsinki, Finland, and New York Metropolitan area will be analyzed for bile acids, beta-glucuronidase, 7-alpha-dehydroxylase and mutagens. Dietary intake of fiber and fecal bulk will also be determined in these populations.
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2296,

ROLE OF DIETARY FACTORS IN CANCER OF THE INTESTINAL TRACT

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The primary objective is to study the epidemiology of gastrointestinal cancers in a high-risk country for gastric cancer (Yugoslavia) and in a low-risk country (United States). A case-control study will be used to determine whether a diet high in cereals and starches and low in fresh vegetables may be linked to gastric cancer. The study will be conducted in three geographical regions: two areas in Yugoslavia, where a strong intra-country gradient exists, i.e., Panonia (high-risk) and Karst (medium-risk), and New York City. It is also intended to determine whether a diet high in fat and low in fiber may be linked to cancer of the colon, as determined by dietary history in a case-control study. The study is to be conducted in the same three geographical areas. The data will be examined to discover whether any epidemiological differences exist between diffuse and intestinal types of gastric cancer. The association between beer consumption and cancer of the rectum will be tested. Data for this case-control epidemiological study are collected by trained research interviewers and more than 500 cases and 600 controls have been interviewed in the American phase of the study. Data collection will begin in Yugoslavia in late 1978.
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2297,

EPIDEMIOLOGY OF THE LESS HARMFUL CIGARETTE

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By means of on-going case-control studies, the investigation (1) monitors the use of cigarettes with differing levels of tar and nicotine by hospitalized patients, and (2) identifies the effects of smoking the 'less harmful cigarette' on the development of a wide variety of diseases. Analysis of 3,716 patients with histologically proven cancer of the lung (Kreyberg I and II), mouth, larynx, esophagus, or bladder and more than 18,000 control patients has been published (Cancer Res., 37:4608-22, 1977). A strong relationship between socio-economic status and tobacco-related cancer is reflected in the smoking habits of different groups. Data from 1,934 white male and female patients with histologically verified cancer of the lung (Kreyberg I) and larynx cancer and matched controls have been analyzed (J. Natl. Cancer Inst., in press). Relative risks for developing either lung or larynx cancer were consistently lower among long-term smokers of filter cigarettes than for non-filtered cigarette smokers, irrespective of quantity smoked and after adjustment for duration of the

smoking habit, inhalation and butt length. Risk of developing either cancer declined with years since ceasing to smoke. The changing smoking habits of women were studied in relation to the pussible interaction between occupational health problems and cigarette smoking faced by an increasing proportion of the female population (Prev. Med., in Press). It was found that more women are beginning to consume daily the same quantities of cigarettes as their male counterparts. More non-smokers are represented in the older than the younger age groups of women, supportive evidence of the national trend of increased smoking among young women. The profile of today's female smokers is that of a young, well-educated, social, employed, career-oriented person. Data continue to be collected in New York City and five other cities across the U.S. towards the goal of identifying risks of disease associated with smoking.
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2298,

MEDICAL EXAMINATIONS OF A MARSHALLESE POPULATION ACCIDENTALLY EXPOSED TO FALLOUT RADIATION IN 1954

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Medical findings including radiation effects are collected annually. Twenty-four years of study: benign and malignant thyroid tumors induced by radiation have occurred, as well as one case of acute myelogenous leukemia. Latest report: A twenty year review of medical findings in a Marshallese population accidentally exposed to radioactive fallout. Brookhaven National laboratory (BNL) report 50424, 1975.
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2.2299,

METABOLIC EPIDEMIOLOGY OF COLON CANCER

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The distribution of cancer of the colon, particularly its infrequency in Japan, its increase among Japanese immigrants to the United States and the high rate of this disease among North Americans and most Western Europeans, strongly indicates that a dietary factor, mainly high fat and animal protein, is of etiological significance. Preliminary studies in metabolic epidemiology have shown that the dietary composition and intestinal microflora play a significant role in the composition of intraluminal compounds such as cholesterol metabolites and bile acids which can act as co-carcinogens for the colon. The overall objective of the proposed research is to delineate the relationship among dietary components, intraluminal compounds, intestinal microflora and colon cancer in man, and to develop a biochemical and/or a bacterial indicator for colon cancer. In order to elucidate the etiological role of bacterially modified intraluminal compounds on the incidence of colon cancer, feces of high risk and low risk populations, patients with colon cancer, polyps, familial polyposis and ulcerative colitis will be analyzed for cholesterol metabolites, bile acids, tryptophan metabolites, microflora and bacterial beta-glucuronidase and 7-alpha-dehydroxylase activities. From these studies, we wish to develop a biochemical and/or a bacterial indicator which distinguishes low and high risk populations for large bowel cancer.
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2300,

DATA BANK FOR STUDY OF THE EPIDEMIOLOGY OF CHILDHOOD CANCER

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The major objective of this study is to learn more about the epidemiology of childhood cancers. A questionnaire will be administered to the parents of all childhood cancer patients seen at the Duke Medical Center and to matched hospital controls with information banked for later case-control studies. The epidemiologic data collected will be used to study the descriptive epidemiology of various childhood tumors (singly and in various groupings) as well as associations with potential antenatal, childhood, familial, and environmental etiologic exposures. Information modules on nutrition and radiographic findings are to be added in the near future.
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2301,

ASSESSMENT OF PAST DIET IN CANCER EPIDEMIOLOGY

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The need for a reliable method of estimating dietary consumption in the past has become critical in case-control epidemiologic studies on the relationship of diet to cancer. The research objective of this study is to estimate the reliability and validity of estimates of past dietary intake which are derived from present diet histories or from retrospective diet histories. A population on which a current diet history was obtained in 1963 is located in Evans County, Georgia. This population is being reinterviewed for their recollections of their diet in 1963, and their current diet in 1977. The validity of the retrospective diet history will be assessed by comparing it to the diet history obtained in 1963. The degree of dietary change in this population in 14 years will be assessed by comparing the 1977 current diet history to the 1963 history. Comparisons will be made of average consumption of specific food items. Correlation coefficients of individual consumptions as reported on the respective surveys will also be calculated. This study will establish quantitative estimates of the validity and reliability of obtaining dietary history, retrospectively. Should these estimates prove low, waste of resources on unreliable studies will be avoided. Should they prove high, studies will not fail to be undertaken because of negative criticism of these methods.
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2302,

PILOT STUDY OF AMBIENT AIR POLLUTION AND SURVIVAL OF CANCER

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This study is concerned with analyzing potential relationships between reported levels of air pollution in the ambient air and length of survival for diagnosed cancer patients. Categorical indicators of pollution levels will be derived from data available from the National Aerometric Data Bank. Survival times for patients having histologically confirmed cases of cancer who have been accessioned into the Lakes Area Regional Tumor Registry will be analyzed by life table and other appropriate methods. This investigation will permit preliminary statements about the effect that various concentrations of ambient air pollutants may have upon the length of survival of patients having a serious chronic disease - cancer.
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2303,

STUDY OF WORKERS IN A SODERBERG ALUMINUM SMELTER

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Several recent studies have suggested that workers in aluminum smelting are subject to an excess risk of lung cancer and some types of leukemia and lymphoma. The indications are that pot room workers are most subject to the risk. This study of 2,700 workers is a follow-up of previous reports with the purpose of trying to relate specific work assignments in this plant with possible excess cancer risk in an occupational mortality study. Death certificates are being obtained and will be compared by work classification within each department of the production facility. This study is part of a tri-partite research project involving industry, labor unions, and government.
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2304,

MORTALITY STUDY OF NICKEL COMPOUND MANUFACTURING

C.R. Buncher, University of Cincinnati, School of Medicine, Dept. of Epidemiology & Biostatistics, *Eden & Bethesda Aves., Cincinnati, Ohio* 45221 (D-IARC-79-987)

Using about 2,000 employee work history records, employees involved in the manufacture of nickel salts and nickel catalysts will be compared to other workers in the same company with respect to causes of death. number of studies in the nickel smelting industry and with nickel carbonyl have shown increases in nasal and respiratory carcinoma. Studies of other persons involved in various uses of nickel have been few. Death certificates are being obtained for all former employees of this U.S. company who have worked at least one year and these will be subjected to a life table and proportionate mortality analysis.
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2305,

MORBIDITY AND MORTALITY PATTERNS AMONG OCCUPATIONALLY EXPOSED ASBESTOS WORKERS (ABBREV)

R.A. Lemen, U.S. Dept. of Health & Human Services, Public Health Service, Center for Disease Control, National Inst. for Occupational Safety & Health, *4676 Columbia Pkwy., Cincinnati, Ohio* 45226 (D-IARC-79-996)

Considerable controversy has arisen concerning the validity of true exposure to chrysotile asbestos and its relative importance in the etiology of mesothelioma. Animal experimental evidence is contradictory. One study indicates that Canadian and Rhodesian chrysotile asbestos is the least carcinogenic fiber for mesothelioma, while another study has shown no fiber difference. This investigation will evaluate the risk of mesothelioma from exposure to chrysotile asbestos. It will also evaluate the usefulness of cross-sectional medical data perimeters as indicators of future asbestos-associated disease, e.g., lung cancer, mesotheliomas, gastrointestinal cancer, etc. A prospective analysis of tobacco usage (smoking of cigarettes, pipes, cigars and tobacco chewing) obtained through cross-sectional medical studies will be evaluated in those workers known to have died as a result of lung cancer, mesothelioma and gastrointestinal cancer.
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2306,

EPIDEMIOLOGY OF CANCER OF THE PENIS

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Cancer of the penis will be studied in relation to recurrent antecedent surgery and other local irritative factors such as trauma of various sorts, exposure to various synthetic materials and previous infection. Any regional occurrence of cancer will be compared to that of cancer of the penis and the incidence of cancer of the penis will be surveyed for the past year to see if there has been an increasing or decreasing incidence or whether its occurrence is static. Local regional factors, such as industrial toxins, fumes, organic chemical usage and the like will be studied also to see if any relationship between these substances and cancer of the penis can be found.
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2.2307,

LONG-TERM STUDY OF MINERS EXPOSED TO RADON-222

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Eight 5-year cohorts of underground miners born 1880-1919, who are still living or have died in Malmberget, Sweden, have been followed up to 1976. Exposure doses are calculated from radon-daughter measurements in air and water and from radioactivity in water springs in the mines measured in 1914. Attention has been paid to the different depths of the mine over the years and ventilation in different places of work. substantial number of lung cancer cases have occurred in miners who never smoked or were ex-smokers. A survey of smoking prevalence in

active and retired miners has been done to permit assessment of the role of smoking in relation to radon-daughter exposures in the genesis of bronchial cancer.

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2.2308,

ANALYSIS OF MORTALITY PATTERNS IN ALUMINUM REDUCTION PLANTS

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A review of the literature on the health effects of worker exposures in the reduction of aluminum indicates that there may be an excessive incidence of respiratory cancers among workers exposed to high levels of coal pitch volatiles. Furthermore, there may be an excessive incidence of other cancers and of chronic obstructive respiratory disease. The largest study to date was a historical prospective study sponsored by the Aluminum Association. In that study, 23,033 men employed for five years or more during the period 1941-1973 at one of fifteen aluminum reduction plants in the United States were followed up through 1973. The present study will use these records as a data base. The objectives of the new study are as follows: (1) to verify the accuracy of the initial data collection, (2) to obtain job histories and include these in the analysis, (3) to obtain estimates of exposure levels, and (4) to extend the follow-up period through 1977. Mortality patterns of groups of workers with varying levels of exposure and of general populations will be compared.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2309,

DYSPLASIA OF GASTRIC MUCOSA

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The objectives of this project are two-fold: (1) Establishment of criteria for grading of gastric dysplasia, and (2) Study of prevalence of gastric dysplasia in different countries. It has long been recognized that certain conditions in the stomach are pre-cancerous. Among them are pernicious anemia, chronic atrophic gastritis, intestinal metaplasia, adenoma, and chronic ulcer. The common anatomical basis for increased cancer incidence in patients with these conditions is dysplasia of the epithelial cells. Study of prevalence of dysplasia is, therefore, important. In spite of this recognition, however, there is the need to establish uniform criteria for making the diagnosis. For this reason the International Study Group on Gastric Cancer has directed members of its pathology panel to establish the criteria. This assignment is in the process of being carried out. Once the criteria are established, they will be used by the group to determine prevalence rate of different grades of gastric dysplasia and to correlate the information with prevalence rates of gastric cancer.

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2.2310,

EPIDEMIOLOGY OF CHILDHOOD CANCER

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This general study will attempt systematic gathering of data from all children with malignant disease admitted to a large children's research hospital. The overall objectives are to characterize better the features of children with cancer and their families and to search for clues to etiology. Techniques to be used include the following: retrospective review of medical records; questionnaire/interview of families at diagnosis when possible; follow-up interviews and examinations for late effects, up-dates of initial information and progeny of long-term survivors; case-control studies where feasible. Over 300 newly diagnosed patients with cancer are admitted each year, mostly from the immediately surrounding, largely rural area. Areas to be systematically covered for all families include: socio-economic/occupational history, exposure to known carcinogens/pathogens (including ionizing radiation), previous diseases, other environmental factors and host factors (familial cancer, congenital abnormalities, etc.). An initial case-control study of children with colorectal cancer, using neighborhood controls has begun.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2311,

MORTALITY FOLLOW-UP STUDIES OF WORKERS EXPOSED TO CHLORINATED SOLVENTS

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Seven chlorinated solvents (vinyl chloride monomer, 1,4-dioxane, methylene chloride, trichlorethylene, perchloroethylene, methyl chloroform and ethylene dichloride) have been identified as compounds of interest for mortality and morbidity investigations of occupational exposure. Personnel and medical records of a major chemical company dating back to 1940 have been used for these studies. The cohorts of employees exposed to each of these solvents during the production process or as consumers of the product in subsequent production are being identified. A within-industry comparison group of non-exposed employees has been identified and the mortality follow-up completed. The study of 1,4-dioxane (165) has been completed and was published (April 1978 - Journal of Occupational Medicine). The study of 464 vinyl chloride monomer-exposed workers has just been submitted for publication. The study of methylene chloride-exposed workers is nearing completion. No excess of cancer deaths was observed among the 1,4-dioxane-exposed group, although the cohort size was too small for any conclusive statements. An excess of respiratory cancer was noted among the VCM-exposed workers, particulary at higher levels of exposure for those with a longer duration of exposure.

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2.2312,

EPIDEMIOLOGY OF PRIMARY LIVER CANCER IN SELECTED COUNTIES OF TEXAS

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Several counties in Texas have been identified as having high rates of primary liver cancer (PLC), approximately three times as great as that reported for the total U.S. Three of these 'high rate' counties are associated with heavy chemical and petrochemical industry concentrations. In 1977 a retrospective study of all liver cancer deaths occurring in Brazoria County, Texas, during the interval 1960-75 was conducted to determine if the proportion of chemical workers is higher among persons dying from primary liver cancer than among persons dying from non-malignant diseases. Occupational histories were obtained from participating industries for all cancer deaths and controls. Clinical and histopathologic review of all deaths due to PLC and other liver-related diseases is being conducted. The study is currently being extended to the two larger counties, Orange and Jefferson, which also have a heavy concentration of chemical and petrochemical plants. Additional studies are anticipated in Texas counties having high rates of PLC which are nonindustrialized but where exposure to hepatitis B, insecticides or aflatoxin B may be involved.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2313,

INCIDENCE AND NATURAL HISTORY OF CANCER IN THREE ETHNIC GROUPS IN TEXAS

E.J. MacDonald, University of Texas, University of Texas System Cancer Center, M.D. Anderson Hospital & Tumor Inst., Dept. of Epidemiology, *c/o Texas Medical Ctr., Houston, Texas* 77030 (D-IARC-79-1050)

Following review of national cancer mortality by state and region and correlation with 500 variables (Cancer Mortality: Environmental and Ethnic Factors, Academic Press, in press) and analysis of cancer incidence in Texas (Epidemiology of Cancer: Incidence by Type, Ethnic Group, and Geographic Location, Raven Press, 1978), work continues on differences by ethnic groups and geographical location by site of cancer with some survival rates.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2314,

IMPACT OF CANCER ON TEXAS - AN EPIDEMIOLOGICAL ANALYSIS

V.F. Guinee, University of Texas, University of Texas System Cancer Center, M.D. Anderson Hospital & Tumor Inst., Dept. of Epidemiology, *c/o Texas Medical Ctr., Houston, Texas* 77030 (D-IARC-79-1047)

In the first phase of the analysis, descriptive epidemiological studies are being based on cancer mortality (1969-76) as reported to the State on death certificates and county population data from the 1970 census. Age-adjusted rates for each county and Health Services Areas have been calculated. Total cancer mortality and the mortality from ten major cancer sites have been detailed in a publication 'Impact of Cancer on Texas'. Future analyses will include geographical and ethnic patterns, as well as in-depth studies of populations with apparent high and low risks of developing cancer. New mortality data will be incorporated in the computerized data base as they become available.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2315,

MORTALITY IN ALUMINUM REDUCTION WORKERS

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Workers in this industry showed excess cancer mortality in a death record occupational mortality study. Using a cohort of workers at a large prebake aluminum reduction plant, mortality is being studied in historical prospective study.

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2.2316,

REGISTRY FOR CARCINOMA IN SITU OF THE VULVA

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The registry operates under the auspices of the International Society for Study of Vulvar Disease. In accordance with the new nomenclature, this includes cases of squamous cell carcinoma in situ (formerly Bowen's disease, erythroplasia of Queyrat and carcinoma simplex) as well as cases of vulvar Paget's disease. The purpose of the Registry is to accumulate epidemiological and histological data in order to define the biological characteristics of the disease, determine its frequency and identify the high risk patient. Histological slides and completed registry forms are kept in a central file and the data are compiled at regular intervals. Over 100 cases have been collected since the Registry opened. Physicians desiring to register cases or obtain additional information are asked to contact Dr. Peter J. Lynch, Professor or Dermatology, University of Arizona Medical Center, Tucson, AZ 85724, or Dr. Raymond H. Kaufmann, Professor and Chairman, Baylor College of Medicine, Texas Medical Center, Houston, TX 77025.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2317,

CANCER INCIDENCE IN RELATION TO ASBESTOS IN DRINKING WATER IN THE PUGET SOUND REGION

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A high level of asbestos, occurring naturally, has been found in drinking water in Seattle, Everett, and other nearby areas. Cancer incidence and mortality rates for areas with different water supplies will be calculated. Control factors will include age, sex, race, and socio-economic status. Sites of interest are respiratory tract, gastro-intestinal tract, mouth and esophagus, pancreas, and urinary tract. Other control sites will be examined throughout the analysis. We are also starting a case-control study with interviews conducted in the high exposure area.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2318,

EPIDEMIOLOGICAL STUDIES OF CANCER

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The Environmental Epidemiology Branch of the National Cancer Institute of the United States conducts and coordinates a variety of studies in cancer epidemiology. Some of these are outlined below. (1) Following a county-by-county mapping of cancer mortality, several correlation and analytical studies are underway to help identify the environmental determinants of cancer in high-risk communities. (2) A program of occupational studies searches for cancer hazards associated with various industries, for example, petrochemicals, pharmaceuticals, printing, leather, dry-cleaning, automobile, pest control and metal smelters. (3) The carcinogenic effects of drugs are evaluated by studies of cancer risk following use of exogenous estrogens, alkylating agents, and immunosuppressive therapy. (4) Evaluation of radiation-induced cancer involves surveys of women receiving repeated chest fluoroscopy for tuberculosis, survivors of the atomic bomb, and recipients of radioactive iodine for diagnostic or therapeutic reasons. (5) Mechanisms of host susceptibility to cancer are clarified by the identification of high-risk disorders (e.g. primary and acquired defects of immunity) and by multi-disciplinary studies of cancer-prone families. (6) Studies are carried out to evaluate the effects of pollutants in the general environment, for example, halogenated hydrocarbons in drinking water. (7) Studies of cancer in domestic animals are conducted in hopes of identifying animal counterparts to human neoplasia. (8) Emphasis is given to multi-disciplinary collaboration with experimentalists to elucidate risk factors (e.g. nutritional, hormonal, viral, genetic) that require laboratory measures.

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2.2319,

THE ETIOLOGY OF ALCOHOLISM - A LONGITUDINAL STUDY

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PURPOSE: To elucidate the social cultural, psychic, and somatic characteristics that are predictive of a heightened risk of developing problem drinking or alcoholism.

SUBJECTS: 5,230 girls and boys, ages 13 (2700), 16 (750), 22 (750), and 25 (300), born in New Jersey. The subjects will be re-examined at 3- and 6-year intervals, depending on age.

METHODS: The study (designed to run 30 years), formally described as a replicated cross-sectional, multiple cohort longitudinal study, will examine individuals of different birthdates at frequent intervals following the principles first described in the classic work of Schaie (1965). Data will be gathered from four areas: sociology, physiology-biochemistry, personality-behavior, and perception-cognition. Scientists from these discipline areas and from life span developmental psychology and statistics will collaborate in the program. The Eagleton Institute of Politics, Rutgers University will obtain the samples of subjects to be used in the study through telephone contacts. In a parallel study, an anonymous matching survey will obtain information on drinking, socioeconomic status, geographic representativeness, religion, etc. of a random sample of non-participants. The main sample will be compared to the results of the survey to ensure proper representativeness despite refusals to participate. To maintain the interest of the subjects and to ensure their continued participation over the years, subjects will be paid for their participation. They will be contacted annually and brief progress reports will be elicited.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2320,

COLLABORATIVE STUDIES IN CEREBRAL PALSY AND OTHER NEUROLOGICAL AND SENSORY DISORDERS OF INFANCY AND CHILDHOOD

J.S. Drage, U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Neurological & Communicative Dis. & Stroke, *9000 Rockville Pike, Bethesda, Maryland* 20205 (41-AA-11)

PURPOSE: The Collaborative Perinatal Project (CPP) is a longitudinal multidisciplinary research effort which seeks leads to the etiologies of cerebral palsy, mental retardation, learning disorders, congenital malformations, minimal brain dysfunction, convulsive disorders, and communicative disorders through studies which relate the events, conditions, and abnormalities of pregnancy, labor, and delivery to the neurological and mental development of the children of these pregnancies.

SUBJECTS: During a period from 1959 through 1966, detailed research data were obtained from 50,000 women during pregnancy, labor, and delivery. The children born to these 50,000 women during their participation in the CPP have been examined at specific intervals up to the child's 8th birthday to identify abnormal conditions which might limit the child's ability to reach maximum developmental potential.

METHODS: A comprehensive analysis of the data will investigate the complex interactions between the child's condition and the antecedent factors which may have contributed to the condition. The analysis of this data is underway within the National Institutes of Health, within other governmental agencies, and under contract with teams of investigators at medical centers outside of government. The Perinatal Research Branch and the National Institute of Neurological and Communicative Disorders and Stroke have the responsibility for monitoring, coordinating, and administering the overall research effort. The goal of this effort is to make a series of publications available to the research community and the general public. The projected completion of this analysis is June 30, 1976. The data for the CPP were collected at 12 major medical centers in the United States.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2321,

CHILD HEALTH AND DEVELOPMENT STUDIES

B.J. Van den Berg, University of California, Berkeley Campus, School of Public Health, *Berkeley, California* 94720 (41-AA-3)

PURPOSE: To investigate the relationships of biologic, genetic, and medical and environmental factors in the parents (including events in pregnancy, labor and delivery) to the normal and abnormal developmnt of the offspring; and to investigate the relationships of these factors to pregnancy loss in the form of early fetal death, perinatal mortality, infant and childhood mortality, and to incidence of congenital anomalies, to growth and morbidity patterns in infancy and childhood, and to cognitive attainment, behavioral development, and physical characteristics at ages 5 and 10 years.

SUBJECTS: Members of the Kaiser Foundation Health Plan (a prepaid medical health plan) who reside in the San Francisco-East Bay Area.

METHODS: The method of study is longitudinal for both mother and child. In addition to information obtained specifically for the studies, the medical records for the gravida and child provided information on illnesses, injuries, and drugs. A special interview and developmental examination were given the child on his 5th birthday and to a large sample of children when they were ages 9 to 11. These include vision, hearing, speech, and tests of cognitive ability. It is planned to extend the observations with a follow-up examination of a subcohort of about 2,000 mothers and their children when the latter are about 16 years old. An epidemiological research project is in process, aimed at the identification of precursory factors for high blood pressure in young persons.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2322,

THE BERKELEY, CALIFORNIA GROWTH STUDY

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PURPOSE: To study the mental and physical growth of normally healthy persons from birth to the present.

SUBJECTS: 60 full-term, healthy newborns, born in Berkeley hospitals from 1928 to 1929 of white, English-speaking parents; and 140 offspring of these subjects, ages birth to 20, seen irregularly.

METHODS: The same data, appropriate for age, were collected for the subjects and their offspring. Beginning in the first week of life, tests of mental and motor development, pediatric examinations, and interviews were conducted at frequent intervals during growth. At all visits, inquiries were made concerning current health and recent illnesses. Anthropometrics, body photographs, and skeletal X-rays were taken at most ages. Socioeconomic data were collected. Studies of the physical aspects of growth include analyses that compare health histories with physical growth and with skeletal maturation. Emotional and other personality variables are being studied for consistency, and in various interrelations with maternal behavior in infancy, birth histories, socioeconomic status, and intellectual and physical growth.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2323,

LONGITUDINAL GROWTH STUDIES OF CHILDREN WITH CRANIOFACIAL BIRTH DEFECTS

S. Pruzansky, University of Illinois, Medical Center at Chicago, Abraham Lincoln School of Medicine, Dept. of Pediatrics, *1853 W. Polk St., Box 6998, Chicago, Illinois* 60680 (41-AA-9)

PURPOSE: To study the epidemiology, genetics, morphology, physiology, and postnatal development of children; and to plot the natural history of children with craniofacial birth defects.

SUBJECTS: Over 3,000 subjects, males and females, from infancy to adulthood.

METHODS: The subjects were initially studied as infants. Procedures included roentegenocephalometry, tomography, dental casts, and photographs. Speech and hearing, psychosocial, and pediatric evaluations supplied additional information.

FINDINGS: Patterns of growth have been delineated that are useful in clinical management. Some conditions have been shown to get worse; some show spontaneous improvement; and others remain unchanged. Syndrome-specific cranial morphologies have been described and genetic significance has been described.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2324,

CYTOGENETICS OF MENTAL RETARDATION

P.A. Jacobs, University of Hawaii System, Manoa Campus, John A. Burns School of Medicine, Dept. of Anatomy & Reproductive Biology, *2444 Dole St., Pacific Biomedical Res. Ctr., Honolulu, Hawaii* 96822 (41-HB-1)

PURPOSE: To determine the frequency of chromosome abnormalities in a population of unselected mental retardates; and to investigate (1) the contribution of chromosome abnormalities detectable, using banding techniques, to the etiology of mental retardation; and (2) the incidence of heteromorphisms in the various racial groups in Hawaii.

SUBJECTS: To date: 700 moderately to profoundly mentally retarded Hawaiian subjects, ages 0 to 29.

METHODS: Patients from the state institution for the mentally retarded and private educational facilities are surveyed. After a small blood sample is obtained, the chromosomes are examined on the microscope using modern banding techniques. Results agreed upon by at least two observers are recorded. All cytogenetic results and patient data are entered on the computer for statistical analysis.

FINDINGS: Of the 700 children examined, detectable chromosome abnormalities have been found to be the reason for retardation in 12%.

BIBLIOGRAPHIC REFERENCES: Jacobs, P. A. et al. A cytogenetic survey of an institution for the mentally retarded: 1. Chromosome abnormalities. Clinical Genetics, 1978, 13, 37-60.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2325,

MUSCATINE FAMILY STUDIES PROGRAM

H.G. Schrott, University of Iowa, School of Medicine, Dept. of Medicine, *Jessup Hall, Iowa City, Iowa* 52240 (41-GA-1)

PURPOSE: To study the familial aggregation and inheritance of coronary risk factors.

SUBJECTS: Between 4,000 and 5,000 family members of school children who have different blood lipid levels or different blood pressures.

METHODS: The researcher used the family study method to examine all first and second degree relatives.

FINDNGS: Data indicate increased coronary mortality in relatives of hypercholesterolemic school children and no increased coronary mortality in relatives of hypertriglyceridemic children.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2326,

SEXUAL ABUSE AND ESCAPE/AGGRESSION INCIDENCE IN JUVENILE DELINQUENTS

J.W. Reich, Arizona State University, Graduate School, Dept. of Psychology, *Tempe, Arizona* 85281 (41-KE-3)

PURPOSE: To determine if children who earlier were reported for sexual abuse in later life develop juvenile delinquency crime patterns of aggressiveness or patterns of escape and runaway infractions.

SUBJECTS: Sample 1: 20 girls and boys, ages 10 to 15, who had been reported to authorities for being sexually abused. Sample 2: 747 juvenile delinquents, ages 10 to 15, who had not been reported for either sexual or physical abuse.

METHODS: To test for the accuracy of the apparently wide-spread notion that abuse (both physical and sexual) leads to later aggressiveness in children, two samples of juvenile delinquents were developed. The experimental sample was composed of 153 children referred to the Arizona Department of Economic Security Child Protective Services office for abuse. Of these children, 20 had been referred for sexual abuse. This set of cases was then compared to the juvenile files of the Maricopa County (Arizona) Juvenile Court Center, and patterns were determined of juvenile crimes for which the children had been arrested. This sample was compared to the crime patterns of a random sample of 747 juveniles for whom there had been no earlier report of abuse. The crime patterns were based on the assumption of psychologically important differences between juvenile crimes involving aggression (fighting, aggravated assault, disturbing the peace, etc.) and so-called escape crimes (runaway, missing juvenile, truancy). The former were defined for this project as indicating a hostile and basically antiperson psychological state; whereas, the escape crimes were defined as nonaggressive and asocial in their psychological origins. Chi-square tests were performed to determine the significance of the differences in crime frequencies between the experimental (sexual abuse) sample and the control (nonabused) sample for aggressive and escape crimes.

FINDINGS: The results indicated that sexually abused children had a significantly higher frequency of escape crimes than did the controls and did not differ from controls on aggressive crimes. The data thus offer no support to the belief that sexual abuse leads to more aggressive behavior. The data do support the prediction that sexual abuse leads to later asocial behavior in the form of escape and runaway infractions.(Text Truncated - Exceeds Capacity)

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2.2327,

CHILD FATALITIES STUDY

M. Lauderdale, University of Texas, Austin Campus, School of Social Work, Dept. of Social Work, *200 W. 21st, Austin, Texas* 78712 (41-RH-4)

PURPOSE: To develop client profiles and systems information relating to nonaccidental child fatalities in Texas from 1974 to 1976.

SUBJECTS: 271 children and data relating to their families with comparative cohort of 5,000 children where abuse and neglect have been substantiated but have not resulted in child fatility.

METHODS: Information was analyzed from the Texas Central Registry and from case records and is being analyzed from personal interviews with workers. The focus will be on developing individual profiles of parents and also on analysis of systems aspects.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2328,

HEALTH OF CHILDREN IN HAWAII

T.A. Burch, State Research & Statistics Office, *1250 Punchbowl St., Honolulu, Hawaii* 96782 (41-SA-4)

PURPOSE: To answer questions about the health of children in Hawaii; and to evaluate health programs.

SUBJECTS: A random sample of households throughout the State of Hawaii consisting of approximately 6,000 households per year, and all vital records in the state.

METHODS: Cross-tabulations were conducted by age, sex, race, and other parameters with various health indices, conditions, disabilities, socioeconomic factors, etc. The data were evaluated by various statistical methods for assessing and evaluating the health status, health problems, and health trends in various subgroups of the populations.

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2.2329,

LONGITUDINAL COMMUNITY WIDE STUDIES OF ANTECEDENTS AND CURRENT FACTORS ASSOCIATED WITH CHILD AND ADOLESCENT MENTAL HEALTH AND DRUG USE

S.G. Kellam, University of Chicago, School of Medicine, Dept. of Psychiatry, *5801 S. Ellis Ave., Chicago, Illinois* 60637 (41-SG-1)

PURPOSE: To determine how early social adaptation and psychological well-being relate to each other, in the context of the family and classroom, to inhibit or enhance adolescent mental health and drug use from the beginning of school or midadolescence.

SUBJECTS: Total populations of children form the Woodlawn area of Chicago in 1st grade during the 1960's; and a 10-year follow-up of the entire 1966-67 sample of 1st grade children and their families (N equals 1,242).

METHODS: Systematic, quantified measures were used to assess (1) the child's social adaptational status in 1st grade, in 3rd grade, and at age 16 to 17; which included teacher observations, readiness, and intelligence test scores and grades; (2) mother's reports of her child's social development in 1st grade and at age 16 to 17; and (3) the child's drug use, antisocial behavior, and the extent and quality of social involvement. Extensive data on family characteristics were obtained in 1st grade and at the follow-up. These data concerned structure, social interaction, and psychological atmosphere aspects of the family.

FINDINGS: There appear to be strong antecedents in 1st grade of teen-age drug use as well as psychological well-being. These patterns are much clearer for boys than for girls. Shyness and aggressiveness in 1st grade, both coupled almost always with learning problems, are associated in quite contrasting fashion to drug use in adolescence. Shy 1st graders grow up to use drugs much less, while aggressive 1st graders are the heaviest drug users 10 years later. Learning problems in 1st grade, with or without shyness or aggressiveness, were associated with lower psychological well-being in the teen-age years. Again, these results hold mainly for boys. Girls appear to have much less continuity over these years and a much less clear pattern of their antecedents of adolescent outcomes.

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2.2330,

CHILDHOOD LEAD, PYRIMIDINES, AND METABOLIC DEBRIS

C.R. Angle, University of Nebraska, Medical Center, School of Medicine, Dept. of Pediatrics, *42nd & Dewey Aves., Omaha, Nebraska* 68105 (41-SH-2)

PURPOSE: To define, in a large-scale childhood lead poisoning program, the biochemical significance of the inhibitory effect of lead on red cell pyrimidine 5'-nucleotidase (P5N) and its molecular relevance to globin synthesis.

SUBJECTS: Preschool girls and boys, ages 2 to 5, identified and followed in the Omaha Childhood Lead Poison Program.

METHODS: The correlation of blood lead levels of children with red cell P5N and cytidine is being assessed. An in vitro assay of the effect of cytidine and P5N deficiency on alpha and beta chain globin synthesis with be conducted.

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2.2331,

STUDY OF CANCER PATTERNS AT BARAGWANATH HOSPITAL FOR BLACKS, JOHANNESBURG

J.S. Harington, National Cancer Assn. of South Africa, Cancer Research Unit, *9 Jubilee Rd., Johannesburg 2000, Transvaal, South Africa* (D-IARC-78-429)

In the Baragwanath Hospital survey, material on black cancer cases admitted to Baragwanath Hospital, Johannesburg, over the years 1948-64 was analysed, and it was possible to obtain a useful incidence rate, a ratio study and a tribal analysis for purposes of comparison. The incidence rate, when compared to an earlier Johannesburg survey, showed a rise in oesophageal cancers for males and females. Both lung and prostate cancers showed rising rates in the men, while the female breast and cervix cancer rates remained relatively constant. Liver cancers had decreased in both sexes. This study is being continued and brought up to date.

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2.2332,

CASE STUDY OF ATAXIA-TELANGIECTASIA IN ISRAEL AND ITS RELATIONSHIP TO MALIGNANCY

S. Levin, Hebrew University of Jerusalem, Kaplan Memorial Hospital, Dept. of Pediatrics, *Rehovot, Israel* (D-IARC-78-291)

Studies of the immune system in ataxia-telangiectasia, which has high incidence in Israel are being conducted. Attempts are being made to correlate immune status and increased incidence of malignancy.

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2.2333,

STUDIES ON INCIDENCE OF PRIMARY CARCINOMA OF LIVER AND PATTERN OF ITS CLINICAL AND PATHOLOGICAL BEHAVIOR

D.B. Reddy, Guntur Medical College, Dept. of Pathology, *Guntur 522004, Andhra Pradesh, India* (D-IARC-79-273)

The frequency of liver cancer as reported from different parts of the world shows a striking difference. It has been pointed out by various studies that the incidence of this disease is high in South India. A study has been undertaken to find out the incidence of this disease in the Andhra Pradesh Area of South India and also the pattern of its clinical and pathological behavior.

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2.2334,

EPIDEMIOLOGICAL STUDY OF CANCER AMONGST EPILEPTICS ON ANTI-CONVULSANT DRUGS

S.J. White, University of London, University College Hospital Medical School, *University St., London WC1E 6JJ, England, United Kingdom* (D-IARC-79-651)

Animal studies have suggested that epileptics taking phenobarbitone and other anticonvulsant drugs may be less likely to develop cancers of various sites than the general population. By studying the causes of death amongst epileptics it is hoped to assess whether or not there is evidence for this hypothesis. Two groups of epileptics are being looked at. The first consists of a hospital-based cohort of long-stay patients, and the second of less severe epileptics who are not admitted to hospital. For the first cohort it has not been possible to obtain comparable control group but a control group of persons with limb disabilities has been taken for the second cohort. Information is recorded on age, date of the first fit, and, where possible, type and duration of anticonvulsant drug treatment. When the subject dies, the cause of death is noted from the Cause of Death Notification received by the National Health Service Registry. For the first cohort, the deaths from cancer of various sites are compared with the corresponding rates for the general population, and for the second cohort with those for the control group.

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2.2335,

EPIDEMIOLOGICAL BONE TUMOR REGISTRY FOR THE FRG

G.A. Wagner, Deutsches Krebsforschungszentrum, Institut fuer Dokumentation Information und Statistik, *Im Neuenheimer Feld 280, 6900 Heidelberg, Federal Republic of Germany* (D-IARC-79-213)

The institute runs the central bone tumour registry for the Federal Republic of Germany. It includes all types of malignant and semimalignant tumours of the skeletal system. The material is intended to provide more exact data on the incidence of these tumours, and will form a basis for future aetiological research.

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2.2336,

MORTALITY STUDY OF WORKERS IN THE CHROME PIGMENT INDUSTRY

J.M. Davies, Inst. of Cancer Research, Division of Epidemiology, *Clifton Ave., Sutton SM2 5PX, England, United Kingdom* (D-IARC-79-698)

This is an ongoing mortality study of about 1,000 past and present workers at three English factories where lead chromate and zinc chromate pigments have been manufactured. The main purpose is to ascertain whether the workers have suffered excess mortality from respiratory cancer, but all causes of death are being studied. The mortality of all workers will continue to be monitored in the future. Results are now complete in respect of respiratory cancer.

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2.2337,

THE MORTALITY FROM LEUKEMIA AND OTHER CANCERS AMONG PATIENTS WITH DOWN'S SYNDROME (MONGOLS)

W.W. Holland, St. Thomas Hospital Medical School, Dept. of Community Health, *60 Sancroft St., London SE11 5NG, England, United Kingdom* (D-IARC-78-564)

An association between Down's Syndrome and increased mortality due to leukemia has been established over the last two decades. The hypothesis that the additional acrocentric chromosome in those with this disorder may also predispose to cancers other than leukemia has been impossible to test because of insufficient mortality data relevant to older age groups. The present study was designed to assess the mortality of older patients with Down's Syndrome in whom cancers other than leukemia would be expected to assume a more important role. Between 1945 and 1967, 2556 patients with Down's Syndrome were studied. The groups was drawn from patients attending the Hospital for Sick Children, Great Ormond Street, in-patients of twelve mental subnormality hospitals, and patients in the care of the former Middlesex County Council. The relative risk of mortality from leukemia and other cancers among those with Down's Syndrome was determined by comparing the number of deaths attributed to these causes in the defined group with the expected number of deaths from these causes in a sex and age equivalent group of the general population of England and Wales. While an excess mortality from leukemia was observed in the group with Down's Syndrome, there was also a significantly higher-than-expected number of deaths due to cancers other than leukemia in males aged 40 years and over (p less than 0.05). Three of the eleven deaths in males due to cancers were due to tumors of the testes, which is 40 times more common than in the general male population (p less than 0.001).

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2.2338,

PRENATAL EVENTS AND CHILDHOOD CANCER

N. Munoz, Centre International de Recherche sur le Cancer, Interdisciplinary Programme & International Liaison, *150 Cours Albert Thomas, 69372 Lyon Cedex 2, France* (D-IARC-79-178)

This programme uses material from established prospective studies to assess the role of prenatal events in the incidence of congenital malformations. The Oxford study was started in 1972; by December 1977 cohort of 18,000 had been assembled. The pregnancy records in this study contain information on illnesses during pregnancy and on exposure to drugs and chemicals; two or more antenatal serum samples and one postnatal sample were collected for each woman admitted to the study. The Hungarian study dates from 1975 and now consists of the records of 12,500 pregnant women. In this study antenatal specimens will also be available, in addition to the pregnancy record. The children born to women participating in either of these studies are being followed to identify those with congenital malformations or cancer. The occurrence of these diseases will be correlated with specific intrauterine exposures recorded in the pregnancy records, and the serum specimens and controls will be used appropriately.

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2.2339,

ORAL FOCAL EPITHELIAL HYPERPLASIA (ABBREV)

F. Praetorius, Kobenhavns Tandlaegehojskole, Dept. of Oral Pathology, *Universitetsparken 4, DK2100 Copenhagen OE, Denmark* (D-IARC-79-135)

Oral focal epithelial hyperplasia is widespread among Eskimos and Amerindians, but rare among Caucasians (Europides). In Greenlanders there seems to be a direct relationship between the prevalences found and the degree of mixture of the population with Caucasians. This may be due to an influence of a genetic factor, and serological studies are, therefore, performed. Histology and electron microscopy seem to indicate a viral etiology of the disease; the size and morphology of the virus-like particles correspond to what has been described in verruca, condylomata, and in oral papillomatosis in dogs and rabbits. Pilot studies with immunofluorescence technique have shown that the patients with focal epithelial hyperplasia produce antibodies against an antigen in the affected cells. It is likely that the disease is contagious. Epidemiological studies have been performed on 3,500 persons in Greenland and on population groups of Greenlanders and Danes in Denmark. Follow-up studies are undertaken in Greenland. Electronic data analysis of the collected material is performed in collaboration with J.E. Bearman. Blood group type studies are done on saliva samples from the same persons and are performed in collaboration with Dr. H. Guertler, Copenhagen. Family studies are carried out in collaboration with Dr. R. Gessain, Paris, who is in possession of records of the entire Eskimo population of the east coast of Greenland, dating back to about 1820. Biopsies from Greenland are studied histologically and ultrastructurally; immunofluorescence studies are also carried out. The electron microscopic studies are performed in collaboration with Dr. O.Fejerskov, Arhus, Denmark. Tissue culture studies are also performed.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2340,

ASSESSMENT OF THE CARCINOGENICITY OF ISONIAZID IN PATIENTS WITH PULMONARY TUBERCULOSIS

H. Stott, Medical Research Council, Tuberculosis & Chest Disease Unit, *Fulham Rd., c/o Brompton Hospital, London SW3 6HP, England, United Kingdom* (D-IARC-79-646)

There is evidence that isoniazid in high dosage can induce neoplasms of the lung and lymph nodes and sometimes leukaemia. This study aims to assess the carcinogenicity of isoniazid by the follow-up of nearly 4,000 adult tuberculous patients admitted to two hospitals from 1950 to 1957. Details of the dosage of isoniazid received by the patients (including the daily dosage and duration) have been reported, as well as other antituberculous drugs received, a crude estimate of exposure to ionising radiation and of the smoking history in males. Reports of deaths among the population are obtained from the Office of Population Censuses and Surveys for England and Wales (as well as from replies to routine postal questionnaires) and the mortality in these patients is compared with that expected in the general population in England and Wales of the same age, sex and occurring during the same period. The follow-up at present ranges from 16 to 23 years after entry to the study and in view of the long induction time between first exposure to a carcinogen and the development of cancer, it is being continued indefinitely.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2341,

A STUDY OF THE CANCER MORTALITY IN WHITES, COLOUREDS AND ASIANS IN SOUTH AFRICA, 1949-1969

J.S. Harington, National Cancer Assn. of South Africa, Cancer Research Unit, *9 Jubilee Rd., Johannesburg 2000, Transvaal, South Africa* (D-IARC-78-430)

In the cancer mortality study, rates for Whites, Coloureds and Asians for the period 1949-69, were analysed, and a changing pattern was found. Some comparisons with other countries were made, and the risk for each race group was delineated for cancers at the commonest sites. This study is being continued.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2342,

COMPARISON OF THYROID GLAND HISTOLOGY IN CONSECUTIVE AUTOPSIES IN OSLO AND TROMSO

E. Nordal, Universitetet i Tromso, Inst. of Medical Biology, Dept. of Pathology, *P.O. Box 977, 9001 Tromso 2, Norway* (D-IARC-79-442)

The incidence of thyroid carcinoma is 2-4 times higher in northern Norway than in the southern parts of the country. Gross and microscopic studies are carried out on thyroid glands obtained at one hundred consecutive autopsies from each of two laboratories, one in the south and one in the north, searching for latent carcinomas and possibly associated changes.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2343,

CLUSTERING IN ALIMENTARY CANCER

C.R. Gillis, Greater Glasgow Area Health Board, Cancer Intelligence Unit, *520 Bilsland Dr., c/o Ruchill Hospital, Glasgow G20 9NB, Scotland, United Kingdom* (D-IARC-78-526)

This study describes an investigation which has discovered epidemicity in alimentary cancer using the population data for Ayrshire and the appropriate cancer registration data which have been shown to be sufficient for statistical analysis. Epidemicity has been found in rural rather than in urban areas of this county and investigations are proceeding in order to find out whether this statistical finding has biological significance.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2344,

EPIDEMIOLOGIC STUDY OF LUNG, BREAST, AND STOMACH CANCER IN THE RUSSIAN REPUBLIC

M.I. Tchapliuk, Moscow Research Inst. of Oncology, Dept. of Epidemiology, *2 Botkinskiy Proezd 3, Moscow 125284, Union of Soviet Soc. Republics* (D-IARC-78-1012)

No summary has been provided to the Smithsonian Science Information Exchange.

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2.2345,

ANALYSIS OF CAUSES OF DEATH OF VETERANS IN SOUTH AUSTRALIA AND MULTIPLE CORRELATION ANALYSIS

R.V. Southcott, Australian Dept. of Veterans Affairs, *186 Pulteney St., Adelaide, South Australia 5000, Australia* (D-IARC-79-11)

Studies are being made on the incidence of the various causes of death among Australian veterans residing in South Australia (males only, in view of the numbers involved), over recent years, for comparison with larger Australian non-veteran male populations. It is hoped to relate such data also to the incidence of other diseases, e.g. areas of birth and service, height, weight and other data, including hair and eye color, etc.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2346,

NEURAL NEOPLASMS IN THAILAND

S. Shuangshoti, Chulalongkorn University, School of Medicine, Dept. of Pathology, *Phya Thai Rd., Bangkok, Thailand* (D-IARC-79-546)

OBJECTIVES: (1) To study relative proportion of type, age, sex and location of all neoplasms of the nervous system in Thailand, (2) to study individual types of neural neoplasms, (3) to study highly interesting or unique cases of neural neoplasms and report them separately.

SCOPE: Review of surgical specimens and postmortem materials from two large general university hospitals in Bangkok: Chulalongkorn Hospital and Siriraj Hospital. Materials from other hospitals in Bangkok and from the rest of the country, sent in for consultation, are also included.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2347,

TROPHOBLASTIC DISEASE IN SINGAPORE

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Since 1957, all cases of hydatidiform mole have been followed up in a special clinic in this unit. The risk of developing a malignant form of trophoblastic disease in this unit is about 15%. Various different types of treatment have been used in the treatment of these cases including surgial excision of single pulmonary metastases. Chemotherapy is the main line of treatment, and a fixed protocol is followed. Up to now, over 750 cases have been documented and followed up from time to time. A review is made so that the management may be altered to give the best possible treatment to the patients. Hence there is no fixed duration to the study. Although most of the work done has been clinically oriented, some of our publications have correlated the incidence with climatic conditions, time of year, ethnic group, blood groups and other epidemiologic parameters.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2348,

POONA CANCER REGISTRY

U. Shah, University of Poona, B.J. Medical College, Dept. of Social & Preventive Medicine, *Poona 411001, Maharashtra, India* (D-IARC-79-279)

The purpose of this study is to obtain reliable morbidity data on cancer from a precisely defined urban area (Poona) with a population of about 1-2 million. Apart from Bombay no such study has been carried out in India before. All institutions in Poona, medical profession, hospitals and Poona municipal corporation and authorities of cantonments cooperate fully. Staff, field workers and statistical laboratory are provided. The Poona Cancer registry has continued its work since 1973. The report for the first three years will soon be published. A rural cancer registry has been started at Sirur District, Poona, Maharashtra State. Also population-based this registry covers a defined population of 43,000 persons living in 22 villages.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2349,

RESEARCH INTO OCCULT CARCINOMA OF THE THYROID GLAND IN AUTOPSY MATERIAL AND SURGICAL SPECIMENS

F. Fialho, Hospital de Clinicas Gaffree e Guinle - FEFIERJ, Laboratorio de Anatomia Patologica, *Rua Marques de Abrantes #219, Apt. 302, Rio de Janeiro, Brazil*

OBJECTIVE: Research into occult carcinomas of the thyroid gland with a view to the study of its pathologic anatomy, its incidence and its biology.

METHOD: Research will be performed on autopsy material and on surgical specimens, correlating the findings with the clinical protocols.

PROGRESS: Material from 400 autopsies has already been reviewed and an incidence of 2.7% has been found. In 90 surgical specimens, 15 occult carcinomas were found.

In the cases diagnosed through the study of surgical specimens, the association with other pathologic conditions of the thyroid gland is investigated. Currently, cytologic studies are also performed.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2350,

EPIDEMIOLOGIC INVESTIGATION AND CASE-CONTROL STUDIES OF BLADDER CANCER PATIENTS

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All bladder cancer patients treated at the Rotterdam Radiotherapy Institute are interviewed about their occupational history and about other suspect factors such as smoking and phenacetin use. Since March 1977, in collaboration with Health Insurance Unions, interviews are also conducted on bladder cancer patients below 60 years of age living outside the Rotterdam region.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2351,

ENDOMETRIAL ADENOCARCINOMA-ASSOCIATED OVARIAN PATHOLOGY

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OBJECTIVES: To determine the frequency of morphologic abnormalities of the ovary in patients with endometrial adenocarcinoma (EAC). To study the nature of the ovarian pathology (OP) found. To correlate these findings with other clinical and pathologic variables in order to detect the importance of OP in the induction, diagnosis, treatment and outcome of EAC. To determine, if possible, better ways of early diagnosis and treatment of patients with OP causally related to the appearance of EAC.

METHODS: The material will be obtained from private and welfare hospitals of the city of Rosario with a stable population of 1 million people and through gynecologists and pathologists affiliated to GEO. The clinical records, the pathology reports and the available pathology slides, paraffin blocks and/or wet tissue stock from patients that have undergone adnexo-hysterectomy as part of the treatment for EAC, will be critically reviewed and reclassified when indicated. Control cases will be provided when possible for the same age range, socioeconomic status and institution of origin.

PROGRESS REPORT: A test study has already been conducted involving 308 study and 387 control cases. No efforts were made to obtain additional information and the clinical and pathologic diagnoses made in different institutions, by different physicians and within a period from 5 to 20 years were accepted without review. The incidence of OP in EAC cases was double that of controls and was twice as frequent in people under 41 and above 69 years of age. Sterility was high in the EAC group and its frequency was double that found in EAC cases under 41 years. Non-sterile patients under 41 years had a lower number of pregnancies and offspring and low fertility patients - sterile or with only one pregnancy - contributed the gross of the young population with EAC and were more frequently obese. The presence of OP, in general, tended to produce an early diagnosis of EAC and an early stage of neoplastic development. These findings suggest that OP frequently precedes the development of EAC and is probably operative in its induction. The chief ovarian abnormality is a primary or secondary hyperplasia of the ovarian stroma and, to a lesser extent, the existence of a chronic status of impaired ovulation or functioning tumor.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2352,

BCG VACCINATION AND LEUKEMIA

L. Katz, Israel Center for Registration of Cancer & Allied Diseases, *18 20 King David St., Jerusalem, Israel*

The possibility that the reported non-specific immunity conferred by BCG may have some influence in the prevention of leukemia in children is being investigated. In Israel a unique opportunity presents itself for studying the incidence of leukemia in BCG vaccinated children and non-vaccinated control group as since 1955 routine BCG vaccination of newborns has been carried out in all maternity wards in Israel - with the exception of the Jerusalem hospitals, where it was never introduced. The incidence of leukemia in children born in Israel since 1955, diagnosed from 1960 onwards (foundation of the Israel Cancer Registry) and up to the age of ten will be studied. 263 cases of leukemia in children have been identified. Their places of birth are now being ascertained.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2353,

HIGH RISK GROUPS FOR BREAST CANCER

L. Juhasz, Szabolcs Szatmar County Hospital, Policlinic Unit, *44 Voeroeshadsereg u. 68, H4401 Nyiregyhaza, Hungary* (D-IARC-79-249)

For each newly diagnosed breast cancer case, two age- and residence-matched hospital controls are chosen. Questions are asked about demographic variables, reproduction-associated variables and family history. Blood groups are determined.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2354,

EPIDEMICLOGICAL CHARACTERISTICS OF GASTRIC CANCERS BY HISTOLOGICAL TYPE

L. Juhasz, Szabolcs Szatmar County Hospital, Policlinic Unit, *44 Voeroeshadsereg u. 68, H4401 Nyiregyhaza, Hungary* (D-IARC-79-250)

Biopsy and autopsy material from stomach cancer patients is typed according to the Lauren system. This information is compared with data on epidemiological factors previously obtained by interview.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2355,

NITRATE LEVEL AND GASTRIC CANCER

L. Juhasz, Szabolcs Szatmar County Hospital, Policlinic Unit, *44 Voeroeshadsereg u. 68, H4401 Nyiregyhaza, Hungary* (D-IARC-79-248)

The water in the county of Szabolcs-Szatmar has a high nitrate content. As part of a larger study it is proposed to study the correlation between nitrate level and gastric cancer incidence and mortality. The distribution of methaemoglobinaemia and soil types will also be examined.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2356,

CASE-CONTROL STUDY OF GASTRIC CANCERS IN THE COUNTY OF SZABOLCS-SZATMAR

L. Juhasz, County Hospital, Policlinic Unit, *Beri-Balogh Adam 7/23, 7100 Szekszard, Hungary* (D-IARC-79-247)

Using a modified questionnaire, this case-control study continues. For each newly diagnosed case of gastric cancer two hospital controls are chosen, matched by age and residence, to better characterize high risk groups. Questions are asked on food habits and family history. Blood groups and somatotype are determined.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2357,

LONG-TERM TRENDS IN STOMACH CANCER MORTALITY AMONG KRAKOW REGION INHABITANTS

W. Jedrychowski, Akademia Medyczna W Krakowie, Inst. of Social Medicine, Dept. of Epidemiology, *Ul. Kopernika 7, 31034 Cracow, Poland* (D-IARC-79-453)

The aim of the study is to compare mortality from malignant gastrointestinal neoplasms in groups of inhabitants living in four city districts differing in their demographical features and nutritional habits. The analysis is based on death certificates and interviews on dietary habits carried out in representative samples of the inhabitants. The results of a preliminary study based on a 1974 survey show higher mortality rates for all causes, and for gastrointestinal neoplasms in particular, in the center of the city, with the exception of mortality due the stomach cancer in women, than among the suburban population. Mortality rates due to gastrointestinal neoplasms of stomach, liver, gallbladder and pancreas, colon and rectum were also high in men living in the newly developed part of the city. The differences in the consumption patterns of basic food products failed to explain fully the observed divergence between the mortality rates. However, the higher mortality rates in the center could be explained to some extent by the higher atmospheric pollution level.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2358,

EPIDEMIOLOGY OF LYMPHOMAS

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It has been observed that the incidence of malignant lymphomas is high in Guntur District and surrounding areas, compared to other districts of South India, and, further, that the incidence of these neoplasms has considerably increased in recent years. Data about the age and frequency, geographical distribution, occupation and economic status of the patients with lymphomas are being collected. These districts in Andhra Pradesh are mainly dependent on agriculture, and the population uses and handles large quantities of fertilizers, pesticides, etc. It is proposed to determine whether there is any relation between these exposures and the high incidence of lymphomas.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2359,

RELATIVE FREQUENCY OF CANCER IN ISFAHAN, IRAN

H. Emamy, University of Isfahan, School of Medicine, Dept. of Pathology, *Hezargerib, Isfahan, Iran* (D-IARC-79-285)

The most common cancers in the Isfahan region of Iran are those of skin, prostate, stomach and malignant lymphoma. The 3,500 biopsy specimens filed in the Department of Pathology of Isfahan University Medical School are being examined to determine the distribution of malignancy in this region for comparison with other areas in Iran.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2360,

INCIDENCE OF COLORECTAL TUMORS

G.R. Ekelund, Malmoe General Hospital, Dept. of Surgery, *S Forstadsgatan 101, S21401 Malmo, Sweden* (D-IARC-79-515)

All cases of colo-rectal carcinoma are being collected as reported in Acta Chir. Scand., Suppl. 438, 1973, 'Carcinoma of the colon and rectum in a defined population. An epidemiological, clinical and postmortem investigation of colo-rectal carcinoma and coexisting benign polyps in Malmoe, Sweden'. Special interest is focused, however, on metachronous colo-rectal carcinomas.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2361,

GEOGRAPHICAL PATHOLOGY OF CANCER IN BANGLADESH

M.A. Rahim, Bangladesh Cancer Epidemiology Research Program, Radiotherapy Centers in Bangladesh, *49 E. Azimpur Gov. Estate, Dacca 5, Bangladesh* (D-IARC-79-42)

The relative frequency of different types of cancer in different areas (Districts) is being studied with the help of cancer registries designed by the Cancer Epidemiology Research Project.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2362,

ANIMAL CONTACTS IN YOUNGER VICTIMS OF HODGKIN'S DISEASE

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With the support of all 54 children's hospitals, 101 offices of the sanitary board, the cancer registry of Hamburg, etc., 140 children (2-14 years old) with Hodgkin's disease have been traced in Northern Germany (Schleswig-Holstein, Niedersachsen, Hamburg and Bremen) since the 1939-1945 war. All cases were histologically proven. Personal contact could be established with 133 families. Of the parents of these children, 33.1% had been engaged in agricultural occupations. In the retrospective studies contact with domestic animals was most impressive, especially that with rabbits (84.2%). Other animals, however, could not be overlooked e.g., pigs (45.95%). The difficulties in obtaining suitable controls - because of the widespread and changing keeping of animals - are considerable. The epidemiological results lead to the conclusion that Hodgkin's disease is a zoonosis. This work (Arch. Geschwulstforsch. 45: 283-298, 1975) continues with analysis of the 15-19 years age group, looking initially for clustering and contacts with domestic animals in a case-control study of some 50 cases.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2363,

LYMPHOPROLIFERATIVE AND MYELOPROLIFERATIVE DISORDERS IN TASMANIA

J.N. Lickiss, University of Tasmania, Clinical School, Dept. of Community Health, *43 Collins St., Hobart, Tasmania 7000, Australia* (D-IARC-79-14)

Study of lymphoproliferative and myeloproliferative disorders in Tasmania (population 400,000) with detailed case study including familial and lifetime residential and occupational data. A case control study is underway. The epidemiological study is linked with laboratory studies: B and T cell typing, HL-A and D locus typing are being undertaken when feasible.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2364,

ETIOLOGY AND PREVENTION OF ORAL LEUKOPLAKIAS AND THEIR MALIGNANT TRANSFORMATION

J.J. Pindborg, Kobenhavns Tandlaegehojskole, Dept. of Oral Pathology, *Universitetsparken 4, DK2100 Copenhagen OE, Denmark* (D-IARC-79-134)

Oral leukoplakia is well-known as a precancerous condition. On this assumption the aim of the present study has been to analyze prospectively the aetiology and pathogenesis of oral leukoplakias as well as the aetiology and pathogenesis of carcinomas developing in such leukoplakias. In this context availability of means of early diagnosis of oral carcinoma is important. By October 1978 the study comprised 750 persons who had all had a biopsy taken at the first examination. Follow-up biopsies have been performed in case of morphological changes of the lesions. Over the years the annual follow-up for each year has covered 95.6% of the persons with only small variations from one year to another.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2365,

EPIDEMIOLOGY OF CANCER IN CANADIAN HUTTERITES

K. Morgan, University of Alberta, Dept. of Genetics, *Edmonton, Alberta, Canada* T6G 2E1 (D-IARC-79-70)

Hutterites are members of a genetically isolated Christian sect who live in approximately 240 farming colonies in the Canadian Prairie Provinces and United States border states. In 1971 there were approximately 13,000 Hutterites living in the Prairie Provinces of Alberta, Saskatchewan, and Manitoba comprising over 70 percent of North American Hutterite colonies. Three major subdivisions of the Hutterites, the Dariusleut, Lehrerleut, and Schmiedeleut are distributed as follows: both Dariusleut ad Lehrerleut in Alberta and Saskatchewan, and only Schmiedeleut in Manitoba. Over 200 Hutterite cases of cancer were ascertained from the three population-based provincial registries by a search of surnames for the period 1951-76. Approximately half of these cases were diagnosed in Alberta and most of the remainder in Manitoba. Comparative analyses of cancer incidence will be undertaken with respect to geography and the three major endogamous subdivisions of the Hutterite population. Preliminary results for this data set corroborate the patterns of both high- and low-risk sites determined for Alberta Hutterites.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2366,

COLLABORATIVE EPIDEMIOLOGICAL STUDY ON THE FEASIBILITY OF PREVENTING COLONIC AND RECTAL CANCERS

F.M. Martin, Universite de Dijon, Faculte de Medecine, Dept. of Immunology, *7 Blvd. Jeanne d'Arc, Dijon, France* 21000 (D-IARC-79-167)

Colonic and rectal cancers represent a major cause of cancer mortality in France. They seem to result, in most cases, from transformation of precancerous lesions - intestinal polyps. The survey aims at evaluating the exact frequency of colonic and rectal polyps in gastroenterology clinic population, assessing the value of examinations used for their detection (double contrast enema, fiberoptic endoscopy, assessing the prevalence of polyps and cancers in the study population, determing the effect of routine excision of polyps on the incidence of colorectal cancers. For this, eight medical or surgical centers register patients or asymptomatic individuals, among whom routine screening of colorectal tumors are carried out. This study was activated on January 1977; by November 1978, 1,242 cases had been registered.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2367,

FEASIBILITY STUDY OF BREAST CANCER SCREENING

A.B. Miller, National Cancer Inst. of Canada, Epidemiology Unit, *77 Bloor St. W., Toronto, Ontario, Canada* M5S 2V7 (D-IARC-78-90)

A project is being initiated in Toronto with the collaboration of the College of Family Physicians of Canada and the Women's College Hospital of Toronto to evaluate the feasibility of the procedures planned for a national study of breast cancer screening in Canada. Approximately twelve family physicians will be invited to identify women aged 40 to 64 in their practice, from whom data on identifying information and risk factors for breast cancer will be collected by means of a self-administered questionnaire. These women will then be assessed by the physician for their stability for participation in the study in which approximately half the women would be chosen at random to (1) be invited to attend the Women's College Hospital for a breast cancer screening examination including mammography and clinical examination by a nurse, or (2) to remain under the care of the family physician without such referral. All women participating in this study will be taught breast self-examination. Informed consent to the transfer of the questionnaire to the National Cancer Institute of Canada, Epidemiology Unit, and to randomization will be obtained. In six month period approximately 1,000 women will be screened. Additional data on dietary and other variables will be obtained from those attending the screening center. It is anticipated that this will be the first stage of a study which will eventually be carried out across Canada and which will involve the recruitment and randomization of approximately 100,000 women aged 40 to 59.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2368,

DIET AND BOWEL CANCER

A.B. Miller, National Cancer Inst. of Canada, Epidemiology Unit, Dept. of Preventive Medicine & Biostatistics, *121 St. Joseph St., Toronto, Ontario, Canada* M5S 2R9 (D-IARC-79-106)

The study has been designed to investigate the role of diet in the causation of bowel cancer. A high intake of protein, fat and refined carbohydrates and a low intake of fibre have all been associated with high incidence of large bowel cancer. This is a case-control study to be conducted in two geographically distinct areas of Canada -Metropolitan Toronto and Calgary. In both areas an unselected series of newly diagnosed patients with bowel cancer will be admitted to the study. Data from such patients will be compared against age- and sex-matched neighbourhood and frequency-matched hospital controls.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2369,

CANCERS OF THE OESOPHAGUS AND RECTUM-ANUS - A CASE-CONTROL STUDY AT THE CITIES OF SAO PAULO AND RECIFE, BRAZIL

A.P. Mirra, Universidade de Sao Paulo, School of Public Health, Dept. of Epidemiology, *Avenida Dr. Arnaldo, 715-10 A, Sao Paulo, Sao Paulo, Brazil* (D-IARC-79-55)

The objectives of these investigations are: (1) to study the association between possible risk factors and cancer of the oesophagus and rectum-anus in a sample of patients from Sao Paulo and Recife (Brazil) and (2) to study in a sample of autopsies from residents of Sao Paulo frequency of precancerous lesions in the oesophagus and rectum, and to measure the association between these findings and

the same possible risk factors of the case-control study. For the case-control study both cases and controls will be selected from the files of the cancer registries of Sao Paulo and Recife. These patients will be of both sexes, 35-64 years old, with diagnosis confirmed histologically. For the precancerous lesions study the oesophagus and rectum will be cut in ten slices in four blocks and nine slices in three blocks respectively and slides will be examined by four different pathologists.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2370,

EXOGENOUS OESTROGENS AND THE DEVELOPMENT OF CANCER OF BREAST AND ENDOMETRIUM

R.W. Morgan, University of Toronto, Faculty of Medicine, Dept. of Preventive Medicine & Biostatistics, *92 College St., Toronto, Ontario, Canada* M5S 1A1 (D-IARC-79-107)

This retrospective cohort study is designed to examine the risk of breast cancer and endometrial cancer in menopausal and postmenopausal women who had received oestrogen therapy for other than contraceptive purposes. The study group is composed of 1,678 women (ages 40-55) in Toronto, who, between 1960 and 1970, were started on long-term oestrogen therapy for menopause (Cohort A). Drug use information and epidemiological data are being obtained from the following sources: gynecologists' records, Ontario Cancer Registry, Ontario Cancer Foundation, and telephone interviews. The incidence rates for breast cancer and endometrial cancer will be compared with age-specific incidence and mortality rates of the female population of Ontario (Cohort B). The mortality rates for the study population will also be compared with age-specific cancer mortality rates of the Canadian female population (Cohort C). An estimate will be made of the relative and attributable risk of developing malignant breast disease or endometrial carcinoma and of dose-response relationships of oestrogens to disease.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2371,

EVALUATION OF LONG-TERM CANCER INCIDENCE TRENDS

D.T. Wigle, Canadian Dept. of National Health & Welfare, Health Protection Branch, Lab Center for Disease Control, *Tunneys Pasture, Ottawa, Ontario, Canada* K1A 0L2 (D-IARC-78-79)

The objective of the study is to detect significant changes in cancer incidence by age, sex and site. Cancer incidence data for the province of Saskatchewan by age (five-year groups), sex, site and year (1950-1975) will be analyzed.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2372,

RELATIVE AND ATTRIBUTABLE CANCER RISKS BY SMOKING HISTORY

D.T. Wigle, Canadian Dept. of National Health & Welfare, Lab. Centre for Disease Control, *Tunneys Pasture, Ottawa, Ontario, Canada* K1A 0L2 (D-IARC-79-90)

The purpose of the study is to estimate the current relative and attributable risks by sex and cancer site for smokers in a relatively unpolluted environment. All persons who first attended one of the four cancer clinics in Alberta during the period 1971-1973 were interviewed prior to further clinical investigation. The questionnaire included several items on the history of residence, occupation and smoking. Relative and attributable risks for several cancer sites will be calculated using several comparison groups: persons with cancer sites with no known association with smoking; persons interviewed in the Canadian Labor Force Survey; and persons interviewed during the Nutrition Canada Survey.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2373,

RETINOBLASTOMA IN FINLAND SINCE 1912 - INCIDENCE OF OTHER MALIGNANT NEOPLASMS IN RETINOBLASTOMA PATIENTS AND THEIR RELATIVES

A. Tarkkanen, Helsingin Yliopisto, *Fabianinkatu 33, SF00290 Helsinki, Finland* (D-IARC-79-154)

It has been suggested that retinoblastoma might be used as an index cancer to which the frequency of other cancers could be compared. Hence efforts should be made to bring to light data on this cancer from different countries of the world. It has also been shown that bilateral retinoblastoma survivors may be more likely to develop another primary malignant neoplasm than any other cancer patients. It is proposed to estimate the incidence of other malignant neoplasms in retinoblastoma patients and their relatives. The data will be collected from Finland with the pathology laboratory of the Helsinki University Eye Hospital as the main source of information.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2374,

ENVIRONMENTAL ANTECEDENTS OF CANCER

T.D. Sterling, Simon Fraser University, School of Interdisciplinary Studies, *Burnaby, British Columbia, Canada* (D-IARC-79-58)

An attempt is being made to determine the relative effects on cancer of various sources of pollution - from occupation, from community sources, and from tobacco products. Analysis is based on a number of data files that have been collected concerning mortality of the U.S. veterans population (previous Dorn Study), on the 1969 through 1974 survey results of the Household Interview Survey of the National Center for Health Statistics, on files on Occupational Compensation claims, and from direct studies of a population of workers in a pulp and paper mill on Vancouver Island.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2375,

QUANTITATIVE AND STATISTICAL PROBLEMS IN CANCER EPIDEMIOLOGY

T.D. Sterling, Simon Fraser University, School of Interdisciplinary Studies, *Burnaby, British Columbia, Canada* (D-IARC-78-59)

Evaluation of antecedents of cancer presents complex problems of design and data evaluation. Age, sex, occupation, social class and other variables interact in complex ways. Our attempt is to re-evaluate the flaws of previous studies on antecedents of cancer in order to develop better methods for study design and data analysis.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2376,

RELATION OF ATROPHIC GASTRITIS AND OPERATED STOMACH TO GASTRIC CARCINOMA

M. Siurala, (No Performing Organization Reported), *Finland* (D-IARC-78-135)

OBJECTIVES: (1) Long-term follow-up of atrophic gastritis (AG). One hundred and sixteen with AG of the body mucosa and 261 control subjects with normal mucosa or superficial gastritis have been followed up for 23-27 years. Ten gastric carcinomas and four adenomas were found in the AG group. By 1977 one case of carcinoma had been found in controls. (2) Morphology, function and immunology in gastric carcinoma families. Three hundred and eleven first-degree relatives of 73 probands with gastric carcinoma and 358 first-degree relatives of 73 control probands computer matched from a general population were studied by direct vision gastric biopsy, and by functional and immunological methods. Preliminary results suggest that AG, intestinal metaplasia, mucosal atypia and achlorhydria occur in cancer families more often and at a younger age than in the general population.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2377,

MALIGNANT TUMORS AS CAUSES OF DEATH OF FORMER ATHLETES

L. Schmid, Universitat Karlova, Inst. of Sport Medicine, *Salmovska 5, Prague 2, Czechoslovakia* (D-IARC-79-126)

The incidence of malignant tumors in athletes has been the subject of several of our earlier studies. This work continues.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2378,

AN EMPIRICAL DEMONSTRATION OF BERKSON'S BIAS

D.L. Sackett, McMaster University, School of Medicine, Clin Epidemiol Biostat & Med, *1200 Main St. W., Hamilton, Ontario, Canada* L8S 4J9 (D-IARC-78-70)

To gain information on the frequency and magnitude of sampling and information biases which distort analytic studies of cancer and other disorders. Berkson's bias has been verified empirically, and the magnitude of this bias is great.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2379,

HOSPITAL BASED CANCER REGISTRY, AMERICAN UNIVERSITY OF BEIRUT

P.A. Salem, American University of Beirut, American University Hospital, Cancer Program, *P.O. Box 113-6044, Beirut, Lebanon* (D-IARC-78-368)

The purpose of this registry is to map the distribution of malignant diseases at the American University Hospital, Beirut.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2380,

EPIDEMIOLOGY OF MALIGNANT TUMORS IN CHILDHOOD - PROGNOSIS OF WILMS' TUMOUR

Z. Erdoes, Semmelweis Orvostudomanyi Egyetem, Dept. of Paediatrics, *Ulloi Utca 26, Budapest, Hungary* (D-IARC-79-244)

The frequency of malignant neoplasms, especially Wilms' tumour, has been followed since 1947 in the 1st Dept. of Paediatrics of the Semmelweis Medical School, Budapest. No increase in the number of malignant tumours was found, a finding consistent with data from other countries. In this period, considerable improvement in the prognosis of Wilms' tumour, recovery in 50-70 percent of the cases has been noted; one patient with cured Wilms' tumour has been followed up for 36 years. Observations continue. Over the next 2 years it is intended to record the exact geographical sites where children with cancer are found. In odults it has been found that the highest frequency in Hungary occurs in the regions bordering on Austria. In the Transdanubian region in Hungary the number of cancer cases on the southern shore of the Lake Balaton is higher than in other parts of the country; the highest frequency of Down's Syndrome was also noted in this region.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2381,

LARGE BOWEL CANCER INCIDENCE 1972-74

F.H. Foster, New Zealand Dept. of Health, National Health Statistics Centre, New Zealand Cancer Registry, *P.O. Box 6314, Te Aro, Wellington, New Zealand* (D-IARC-79-429)

The study based on new cases registered at the New Zealand National Cancer Registry will describe differences in large bowel cancer incidence in New Zealand from 1972-74 in terms of geographical location, occupation, country of birth, and, for deaths, length of time foreign-born residents have lived in New Zealand. The findings will be compared with an earlier study.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2382,

A STUDY OF THE ETIOLOGY OF CANCER OF THE HEAD AND NECK IN THE REPUBLIC OF IRELAND

B.A. Herity, National University of Ireland, University College at Dublin, Faculty of Medicine, Dept. of Community Medicine & Epidemiology, *Earlsfort Terr., Dublin 2, Ireland* (D-IARC-79-292)

This is a retrospective case-control study of cancers of the oral cavity, nose and paranasal sinuses, pharynx and larynx. The aim of the study is to explore differences between cases and controls in relation to tobacco and alcohol consumption, social conditions, occupation, and previous medical history. Clinical data, staging of tumors, histology and treatment given will also be recorded. Patients attending St. Luke's Hospital for the treatment of skin conditions are used as controls. Controls are matched with cases by age, sex and domicile.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2383,

CANCER INCIDENCE IN THE DISTRICT OF CLUJ, ROMANIA

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This cancer registry covers the district of Cluj, Romania and is located in the Oncological Institute of Cluj-Napoca. The population of the district, at the census taken on 1st July 1972, was 334,789 males and 342,820 females. Crude mortality from cancer, both sexes, in 1971 was 136.1 per 100,000. Preliminary results from the cancer registry in 1974-1975 show a crude incidence of 181.1 per 100,000 in males and 153.1 per 100,000 in females. (1,216 and 1,052 new cases respectively). The cancer registry has to become an integral part of the cancer prevention and medical care activities.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2384,

ATLAS OF CANCER MORTALITY BY CITIES, TOWNS AND VILLAGES IN JAPAN

S. Anzai, Ministry of Health & Welfare, Dept. of Statistics & Information, *42 Honmura Chiyo, Ichigaya, Shinjuku-ku, Tokyo, Tokyo, Japan* (D-IARC-79-387)

Mapping of age-adjusted cancer mortality by cities, towns and villages from 1969 to 1975 for comparison with other maps giving distribution of various environmental factors. Although difficulties have arisen in calculating the rates for small areas because of rapid change of population size and amalgamation of administrative districts, most of the problems have already been solved. The maps have partly been completed. Work continues.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2385,

FEMALE GENITAL TRACT CANCER IN PERU

M. Bedoya Hevia, Universidad Nacional Mayor de San Marcos, Dept. of Obstetrics & Gynecology, *Republic de Chile 295, Lima, Peru* 454 (D-IARC-78-400)

The incidence of cancer of the female genital tract is high in Peru, particularly among the lowest socioeconomic classes. It is proposed to investigate prospectively patients with precancerous lesions to determine risk factors.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2386,

RELATIONSHIP OF PAPILLOMA VIRUSES TO HUMAN GENITAL CANCER

R. Schmauz, Christian Albrechts Universitat, Medizinischen Hochschule, Abt. fuer Pathologie, *Ratzeburger Allee 160, 2400 Lubeck, Federal Republic of Germany* (D-IARC-78-214)

A study is conducted in Uganda on (1) the epidemiological features of condylomata acuminata to see whether these features are similar to those of some human genital cancers, and (2) the occurrence of dysplasia in condylomata acuminata.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2387,

GEOGRAPHICAL DISTRIBUTION, SOCIOLOGY AND CLINICAL AND MICROSCOPICAL PICTURE OF CERVIX UTERI CARCINOMA IN STEIERMARK

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Correlation will be sought for patients with cervix uteri carcinoma residing in the Federal Land of Steiermark between place of residence, social status and clinical stage of the tumor. Relations between the above and the frequency and localization of lymph node metastases, histological appearance and frequency of recurrence will be examined.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2388,

ECOLOGICAL ANALYSIS OF CANCER MORTALITY IN LOWER SAXONY

M. Pflanz, Medizinische Hochschule Hannover, Institut fuer Epidemiologie und Sozialmedizin, *Karl Wiechert Allee 9, D3000 Hannover 61, Federal Republic of Germany* (D-IARC-79-209)

The study aims to detect relationships between cancer mortality (1968 and 1971) and socioeconomic or environmental factors by multivariate analysis. The sex-specific age-standardized data will be correlated with about 70 socioeconomic variables. Spatial relationship between chemical plants, lead smelters and other environmental hazards on one hand, and counties with high cancer mortality for specific sites on the other hand, will be examined. The study method is similar to that used in the analysis of cancer mortality in the United States counties.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2389,

MALIGNANT DISEASES IN GREENLAND

N.H. Nielsen, Kobenhavns Universitet, Inst. of Forensic Medicine, Dept. of Forensic Pathology, *Frederik den Femtes Vej 11, DK2100 Copenhagen OE, Denmark* (D-IARC-79-133)

This is an epidemiological study of total cancer incidence in Greenland as well as incidence of all specific types of malingancy. Records of all malignant cases diagnosed in this century are reviewed for medical and demographic information. The aim of the project is primarily to evaluate possible spatial or geographical gradients of frequency and to identify possible risk factors or risk groups.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2390,

EPIDEMIOLOGY OF UTERINE CERVIX CANCER

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From 1966 to date an epidemiological study has been undertaken of patients with uterine cervix cancer of all clinical stages, in a region with a population of 220,000. A similar study is being conducted on a control group. The prevalence of this disease is under current investigation in a smaller population of 35,000.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2391,

EPSTEIN-BARR VIRUS (EBV) IN HUMAN DISEASE - A SERO-EPIDEMIOLOGICAL STUDY

J.A. Didier, Universite Paul Sabatier, Faculte de Medecine, Bacteriologie & Virologie Lab, *C.H.U. Rangueil, 31400 Toulouse Cedex, France* (D-IARC-78-180)

EBV antibodies are sought in various groups of normal subjects and patients including infectious mononucleosis syndromes, various acute or chronic diseases, malignant disease and persons with a transplanted organ. The study of the different types of antibodies produced, in response to EBV-induced antigens, in the host cell enables definition of the profile of EBV antibodies in these subjects. By comparing the different serological profiles and studying their development over time and in relation to whether there are clinical signs, it is possible to assess the host-virus relationship and the role of the EBV infections in human desease.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2392,

INCIDENCE OF BRONCHIAL CARCINOMAS IN MINERS IN THE SAARLAND

G. Dhom, Universitaet des Saarlandes, Universitaetskliniken, Pathologisches Institut, *6650 Homburg Saarlands, Federal Republic of Germany* (D-IARC-79-214)

It is known from English and American investigations that coal miners have a lower mortality from bronchial carcinoma than the rest of the male population. The aim of this study is to see whether similar findings can be obtained for the miners from the Saarland. For this purpose, data available in the Cancer Registry of the Saarland and the health insurance company (Knappschaftskrankenkasse) will be used.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2393,

STUDIES OF MORTALITY IN AN INSTITUTION FOR AGED INVALID PATIENTS

P. Berthaux, Hopital Charles Foix, Service de Geriatrie, *Ave. de la Republique, 94200 Ivry sur Seine, France* (D-IARC-79-168)

For the past eight years a necropsy has been done as often as possible for all patients dying in the institution (2,200 beds). Causes of death and associated pathology are investigated and compared with the clinical and biological data obtained during the life of the patients. It is proposed to identify high risk groups on the basis of previously collected data on immunodeficiency, age at menopause, etc.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2394,

ETIOLOGICAL FACTORS IN CANCER OF UPPER RESPIRATORY AND DIGESTIVE TRACTS

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Four main groups of neoplasms (oral cavity, oropharynx, larynx and hypopharynx) are being analyzed. A comparative study is carried out with special reference to occupation, dental status, smoking and drinking habits, precancerous lesions, sex and age. This information will be compared for the four groups and for ENT Department outpatients without evidence of neoplasm.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2395,

CANCER MORTALITY IN FRANCE - STUDY OF TIME AND SPACE DISTRIBUTION IN RELATION TO SOCIO-ECONOMIC FACTORS (1954-1964)

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After the development of a statistical and computing tool for processing cancer mortality data in France (INSERM monographs - years 1968-1970) providing rates per 100,000 by department, site, sex and age, standardized to several reference populations (France, Europe, world), possible correlations with the socio-economic, vital and geographical data which are available in France for 1954-1974 will be sought. To this end, the conventional statistical methods (bivariate) and multivariate analysis will be used. In this way it is hoped to demonstrate relationships leading to hypotheses to be tested by analytical aetiological research.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2396,

STATISTICAL ANALYSIS OF PUBLISHED EPIDEMIOLOGICAL STUDIES ON ATMOSPHERIC POLLUTION AND LUNG CANCER

J. Misfeld, Technische Universitat Hannover, Institut fuer Mathematik, *Welfengarten 1, D3000 Hannover, Niedersachsen, Federal Republic of Germany* (D-IARC-79-208)

Epidemiological studies which examine the relationship between atmospheric pollution and lung cancer

are being carried out and the results analyzed statistically.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2397,

EPIDEMIOLOGY OF THYROID NODULES

H. Lucot, Centre Claudius Regaud, Services de Medecine Nucleaire de Chirurgie et de Medecine, *11 Rue Piquemil, 31052 Toulouse, France* (D-IARC-79-194)

Mortality from thyroid cancer seems more common in Midi-Pyrenees than in other regions of France. Over a period of 20 years the Claudius Regaud Center has collected a very large number of patients with thyroid nodules, many of which have been microscopically confirmed. The purpose of the study is to correlate habitat with: (1) benign and malignant thyroid tumors: (2) different types of malignant tumors. The Midi-Pyrenees region is demographically rather simple. In the North, in the Massif Central range, there is an epidemiological cluster of goiters (Aveyron-Tarn) and in the South, in the Hautes-Pyrenees-Ariege range, there is another. Some of our patients come from the Aude department, between the Montagne-Noire and the Pyrenees. There are also Italian migrants (mainly from Treviso, Udine, Venice) and Spanish migrants (mainly from Aragon and Catalonia) as well as white migrants from North Africa, numerous before 1962, and Poles who migrated into mining regions around 1931. Each patient with benign and malignant thyroid nodules has been questioned about residential history, diet, familial history of thyroid disease and personal habits. The distribution of thyroid disease will be compared with that of population distribution, distinguishing between those with change of residence from the others. There is a clear excess of females (83 percent of benign and 75 percent of malignant neoplasms). Follicular cancers seem to be more frequent than papillary, particularly where benign lesions are common.

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2.2398,

RELATIONSHIPS BETWEEN HAPTOGLOBIN PHENOTYPE AND LUNG CONDITIONS (MAINLY CANCER)

J.P. Kleisbauer, Universite dAix Marseille, Inst. de Recherche Pneumologique, *232 Blvd. de St. Marguerite, 13009 Marseille, France* (D-IARC-79-187)

In individuals with primary bronchial cancer the frequency of Hp2 gene is 0.29. In the Marseille population it is 0.39. A study is being carried out to explain these differences. Known causal agents such as tobacco are taken into account. Haptoglobin types, acid mucopolysaccharides and fingerprints will be examined in 100 patients with primary lung cancer and in 100 controls with other varied respiratory conditions to determine whether there are significant differences between the two groups.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2399,

THE SOISSONS CANCER REGISTRY

E. Garbe, Inst. Nacional de la Sante et de la Recherche Medicale, Service de Statistique, *44 Chemin de Ronde, 78110 Le Vesinet, France* (D-IARC-79-170)

The purpose of this registry in the arrondissement of Soissons, Department of Aisne, France (population 100,000) is to register all cases of cancer diagnosed in the population as from 1st January 1977. This data will be used for clinical follow-up of patients and for epidemiological studies.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2400,

CANCER RISK IN VEGETARIANS

R.R. Frentzel Beyme, Deutsches Krebsforschungszentrum, Institut fuer Dokumentation Information und Statistik, *Im Neuenheimer Feld 280, 6900 Heidelberg, Federal Republic of Germany* (D-IARC-79-211)

Animal experiments have shown many nitrosamines to be carcinogenic. Nitrosamine precursors in human food and vegetables have been investigated and high concentrations in certain vegetables suggest the possibility of a higher risk of cancer in persons consuming particular types of greens. Analytical studies together with a morbidity and mortality survey of a cohort of vegetarians are being undertaken to investigate a postulated relationship between cancer incidence and dietary habits. Control groups will be comprised of persons who have also willingly chosen a so-called 'reformed' life style (i.e., preference of a natural diet, but not exclusively vegetarian) as well as industrial employee populations considered to live on a conventional diet and being otherwise comparable (education, age, sociological background).

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2.2401,

A RETROSPECTIVE COHORT ANALYSIS OF DEATHS DUE TO PRIMARY MALIGNANT PLEURAL TUMORS DURING THE PERIOD 1943-1975 IN DENMARK

F.B. Behrendt, Aarhus Universitet, Dept. of Hygiene, *Ndr. Ringgade, 8000 Aarhus, Denmark* (D-IARC-79-127)

The objective is to establish risk groups defined by time, place and demographic variables. This study is part of a collaborative mapping of the incidence of mesotheliomas in the countries of the European Economic Community (EEC).

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2.2402,

OESOPHAGUS CARCINOMA AND THE HABITS OF SMOKING, ALCOHOL DRINKING AND 'CHIMARRAO'

J.K. Almeida, Universidade Federal do Rio Grande do Sul, School of Medicine, Dept. of Surgery, *Rua Goitacaz 129, Vila Assuncao Paulo Gama, Porto Alegre 90000, Brazil* (D-IARC-79-52)

Oesophagus carcinoma is frequent in the state of Rio Grande do Sul. A characteristic of the rural population of this state is the drinking of 'gaucho' tea (Chimarrao, mate), a very hot beverage. This tea is consumed daily in large quantities from an early age. Other habits such as smoking and consumption of alcohol also exist. The main objective of the present study is to investigate the degree of association between the habits of smoking, alcohol drinking and 'Chimarrao' and oesophagus carcinoma. The study is prospective in nature.

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2.2403,

CANCER REGISTRATION

J. Clemmesen, Finseninstitutet, Danish Cancer Registry, Cancer Epidemiology Inst, *Strandboulevarden 49, DK2100 Copenhagen, Denmark* (D-IARC-79-128)

Epidemiological analysis of data on cancer incidence in Denmark.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2404,

EPIDEMIOLOGY AND CLUSTERS OF TUMORS IN CHILDHOOD, FREQUENCY AND GEOGRAPHICAL DISTRIBUTION

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OBJECTIVES: In 1960-1968, 104 cases of childhood leukemia were observed in South Moravia. A significant clustering in space (0-12 km distance) and time (0-1, 0-2 years) was found (Blut, 21, 180-185, 1970). We intend to continue this study as these population groups, which could be regarded as genetic isolates, are very suitable for comparative studies of genetic factors. The main object of the study will be: (1) To register all cases of childhood leukemia from 1969 onwards; (2) to compare the previous (1960-1968) and the new (1969-1980) results; (3) to study the families with malignancy genealogically and (4) to study the influence of environmental factors on the incidence of leukemia, if any.

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2.2405,

CAIRO METROPOLITAN AREA CANCER REGISTRY

A.L. Aboul Nasr, Cairo University, Inst. of Statistical Studies & Research, Dept. of Surgery, *Tharwat St., P.O. Box 1017, Cairo, Egypt* (D-IARC-79-141)

The objective of this registry is to define the magnitude of the cancer problem in the Metropolitan Cairo Area and define the relative frequency of different cancers by sex and in different age groups as well as examining on sound statistical grounds the possible relationships between certain types of cancer and prevalent diseases or habits, e.g. bilharziosis, malaria, nutritional disorders and male circumcision.

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2.2406,

RISK OF DEATH FROM CANCER BY INDUSTRY IN BRITISH COLUMBIA

J.M. Elwood, University of British Columbia, Dept. of Health Care & Epidemiology, *2075 Wesbrook Pl., Vancouver, British Columbia, Canada* V6T 1W5 (D-IARC-79-111)

This is a pilot project to investigate the distribution of risk of death due to cancer among workers in the major industries in British Columbia (BC). The purpose will be to identify, for further and more detailed study, industries whose workers have a high risk of dying from cancer. BC death registrations from 1960 to 1974 will be the source documents.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2407,

STUDIES AIMED TOWARDS FACILITATING LESS HARMFUL SMOKING HABITS

W.F. Forbes, University of Waterloo, Faculty of Mathematics, *University Ave. W., Waterloo, Ontario, Canada* N2L 3G1 (D-IARC-78-100)

Cigarette smoking is known to represent one of the main risk factors for lung cancer, and is also important in the aetiology of a number of other diseases. The objectives of the present study include: (1) the study of regional variations of various smoking-related and other diseases; (2) the undertaking of various surveys and the analyses of survey data, both at school age and in adult populations to estimate the prevalence of smoking habits in Canadian populations; (3) the study of individual smokers to determine their ability to adjust to a less hazardous cigarette (i.e., one delivering less tar, nicotine and carbon monoxide); (4) the analysis of cigarette consumption and sales data to estimate the effect of price on consumption, and to study the relationship between advertising, sales, and tar content for Canadian cigarettes; and (6) the collection of autopsy material from smokers and non-smokers, in order to investigate differences in trace-metal levels between smokers and non-smokers (particularly for cadmium and lead), and to evaluate the importance of cadmium and lead in human disease processes.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2408,

THE ADVERSE EFFECTS OF OCCUPATIONAL EXPOSURE TO AGRICULTURAL CHEMICALS

R. Egedahl, Edmonton General Hospital, *11111 Jasper Ave., Edmonton, Alberta, Canada* (D-IARC-79-62)

An investigation of the occupations of bladder patients revealed greater observed than expected frequency of farmers within the study. Repeated exposure to pesticides, herbicides, fungicides and chemical fertilizers was noted among members of this occupational group. A study has been undertaken to investigate cancer incidence and mortality patterns among agricultural fieldmen and seed treating agents employed by Alberta Municipal Councils. Data will also be gathered regarding adverse health reactions to these chemicals as well as possible premalignant symptomatology.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2409,

OCCUPATIONALLY RELATED CANCER

G.R. Howe, National Cancer Inst. of Canada, Epidemiology Unit, Dept. of Preventive Medicine & Biostatistics, *121 St. Joseph St., Toronto, Ontario, Canada* M5S 2R9 (D-IARC-79-99)

Employment records for a 10% sample of the Canadian Labour Force from 1965 to 1968, and for a (different) 5% sample for 1969 to 1971 (a total of about 600,000 individuals) are being linked, using computer techniques, to the national mortality and cancer incidence data bases maintained by Statistics Canada. The objective is to determine mortality from all causes and cancer morbidity for the various occupations and industries represented in the cohort.

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2.2410,

MORTALITY STUDY OF PRESENT AND FORMER URANIUM MINERS

D. Hewitt, University of Toronto, Dept. of Preventive Medicine & Biostatistics, *92 College St., Toronto, Ontario, Canada* M5S 1B2 (D-IARC-79-98)

This sub-study, commissioned by the Royal Commission on the Health and Safety of Workers in Mines (James M. Ham, Commissioner), has the objective of characterizing the mortality experience of Ontario uranium miners, by certified cause of death, in relation to such variables as duration and intensity of exposure to radon daughters, and time elapsed since exposure.

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2.2411,

REGISTRATION OF CANCERS OF THE DIGESTIVE SYSTEM IN BURGUNDY

C. Klepping, Universite de Dijon, Faculte de Medecine, Dept. of Hepatogastroenterology, *7 Blvd. Jeanne d'Arc, Dijon, France* 21000

This cancer registry has several goals: (1) Collect all available information concerning benign and malignant tumours of the digestive system occurring among residents of the department of Cote d'Or and to submit this to epidemiological statistical analysis, (2) estimate the cost of diagnosis and treatment of cancers of the digestive system in the future, (3) determine survival time for each tumour type bearing in mind all influencing factors and, (4) identify groups at risk in order to aid early detection and to indicate dietary factors which might predispose to certain cancers of the digestive system.

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2.2412,

CANCER MORTALITY IN SWITZERLAND BY SITE, 1969 - 1972

R.F. Gass, University of Bern, Dept. of Social & Preventive Medicine, *Waldheimstrasse 18, 3012 Bern, Switzerland*

The purpose of this project is to identify variables associated with high or low mortality from cancer of different sites, based on the age-adjusted rates in the 25 cantons and 183 districts of Switzerland. The analysis is based on all deaths having occurred in Switzerland from 1969 through 1972, and on the population figures from the census of December 1970. A computer program has been prepared, testing for homogeneity, linearity, normality and mortality ratios, and for their statistical significance. Demographic, socioeconomic and environmental factors are examined by multiple regression analysis. Cancers of the stomach, oesophagus and breast are of primary interest. The results permit formulation and specification of hypotheses which will require further testing.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2413,

CASE-CONTROL STUDY OF ETIOLOGICAL FACTORS IN ORAL, PHARYNGEAL, LARYNGEAL AND SOME OTHER FORMS OF CANCER AND ORAL PRECANCEROUS LESIONS

P. Gangadharan, Tata Memorial Hospital, Medical Records & Statistics, *Dr. Ernest Borges Marg, Parel, Bombay 400012, Maharashtra, India* (D-IARC-78-246)

Almost 50% of all cancer cases seen in the Tata Memorial Hospital were in the regions of oral cavity, pharynx and larynx. Earlier studies have shown that chewing and smoking were statistically associated with the occurrence of cancer in these anatomical locations. The aim of the present investigation is to study the role of these factors in detail with regard to social groups (religious communities), anatomical locations of cancer, histologic types, dose-effect relationship, effect of other factors like oral hygiene, alcohol, etc. Patients attending the outpatient departments of the Tata Memorial Hospital are interviewed (using a special pro forma) with regard to their smoking and chewing habits. Other pertinent information is also collected from them. Since 1963 we have thus interviewed more than 10,000 cancer patients. This data is under analysis and will be compared with data obtained from the non-cancer patients attending the Tata Memorial Hospital. Differences between cases and controls will be subjected to detailed analysis in this retrospective study.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2414,

STUDY OF RISK FACTORS IN CERVICAL CANCER

M.R. Galesanu, Inst. de Medicina si Farmacie, School of Medicine, Radiological Clinic, *Strada Universitatii 16, c/o Radiological Hospital, Iasi, Romania* (D-IARC-79-474)

The purpose of the study is to establish possible correlations between the incidence of cervical cancer and some individual factors such as age at puberty, age at marriage, number of births and number of abortions. Such factors are found in rural areas where puberty and marriage occur at an early age, with numerous children. The studied population is taken from inpatients treated at the X-ray Clinic, Medical and Pharmaceutical Institute, Iasi, Romania. As about 400 new patients are admitted each year, we hope to study at least 2,000 cases within five years.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2415,

LEUKEMIA IN NAGPUR, INDIA

S.V. Grover, Government Medical College, Dept. of Pathology, *Ajni, Nagpur, India* (D-IARC-79-276)

The objective of this study is to assess the prevalence of leukemia and lympho-reticular malignancies in Nagpur. In a total of 242 patients with lymphoproliferative disorders the prevalence of acute lymphatic leukemia and chronic lymphatic leukemia was 26.03%, Hodgkin's disease 33.06%, non-Hodgkin's lymphoma 33.47%, multiple mononucliosis, mycosis fungoides, Waldenstroem's macroglobulinemia and unclassified 2.89%. The maximum number of chronic infections occurred in patients with Hodgkin's disease in the form of tuberculosis, leprosy and fungal infections (especially lymphocytic depleted type). In Hodgkin's lymphoma and non-Hodgkin's lymphoma the serum IgC and IgA were significantly increased. IgM was significantly lowered in Hodgkin's lymphoma, but not in non-Hodgkin's lymphoma. Patients with Hodgkin's disease and associated infections had raised serum IgC and IgA but lowered IgM. These patients were Mantoux negative, hence it is presumed that the cell mediated immunity was impaired while the humoral immunity was maintained. Assessment of cellular immunity status is still being worked out.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2416,

RISK OF CERVICAL CANCER AFTER A MASS SCREENING PROGRAM

M.K. Hakama, Tampere Yliopisto, Dept. of Public Health, *Vuolteenkatu 11, 33100 Tampere 10, Finland* (D-IARC-79-161)

Mortality and incidence before and after a large-scale mass screening campaign are evaluated by specific risk indicators, and transition probabilities in the natural history of cervical cancer are estimated.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2417,

A PROSPECTIVE STUDY OF FECAL STEROIDS AND BACTERIA IN NORMAL PERSONS WHO DEVELOP CANCER OF THE LARGE BOWEL, BREAST AND ENDOMETRIUM

M.J. Hill, Central Public Health Lab., Bacterial Metabolism Research Laboratory, *Colindale Ave., London NW9 5DX, England, United Kingdom* (D-IARC-79-626)

In a preliminary retrospective case-control study (Lancet, 1:535, 1975) it was shown that the combination of a high fecal bile acid concentration and the presence of certain clostridia in the feces characterized large bowel cancer patients. The value of this combination in discriminating between large bowel cancer patients and controls will be tested prospectively in 10,000 persons aged 45-75. Other cancers will be added if the retrospective studies in hand indicate that they would be worthwhile.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2418,

SELECTION AND FOLLOW-UP OF HIGH-RISK GROUPS FOR BREAST CANCER IN THE ESTONIAN S.S.R.

E. Hint, Ministry of Health of the Estonian SSR, Inst. Eksper. i Klin. Medit., Dept. of Clinical Oncology, *42 Hiiu St., Talliinn 200015, Estonian S S R, Union of Soviet Soc. Republics* (D-IARC-79-1084)

Epidemiological information concerning risk factors for breast cancer has been obtained from 15,000 women using a special punch card. Two main groups are being followed. The first group (7,500) has been screened by clinical examination of the breast. If disease was suspected, and confirmed, conservative or surgical treatment was given and this entire group will in future undergo regular breast examination, lesions being treated as they are found. The second group (7,599) consists of women for whom only the epidemiological information has been collected. These women will be offered treatment on request as for the general population. On the basis of data from the Cancer Registry, the incidence of breast cancer in general population and in both of the above groups will be compared. The significance of various risk factors and genetic variables in particular, and the effect of this screening program will be evaluated.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2419,

ENVIRONMENTAL AND OCCUPATIONAL FACTORS IN THE AETIOLOGY OF HUMAN BLADDER CANCER

J. Connolly, University of Toronto, *92 College St., Toronto, Ontario, Canada* M5S 1B2 (D-IARC-79-97)

To study the association between occupation, dietary and social patterns and bladder cancer, 348 bladder cancer patients (248 males, 100 females) and 2 controls per case (matched by sex, age within 5 years, and geographical location) were interviewed. Information was obtained about occupation (including contact with fourteen classifications of industrial chemicals), family background, past illnesses, analgesic intake, beverage consumption, smoking habits. The data are being analyzed.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2420,

ASBESTOS SURVEY

K.P. Duncan, Health & Safety Center, *97 Horseferry Rd., London SW1P 2DY, England, United Kingdom*

All asbestos workers in the UK are seen at 2-yearly intervals and morbidity questionnaire completed with clinical examination of lung fields. The mortality experience of the same population is also measured.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2421,

STUDY OF ISONIAZID, TUBERCULOSIS AND CANCER

A.B. Miller, National Cancer Inst. of Canada, Epidemiology Unit, Dept. of Preventive Medicine & Biostatistics, *121 St. Joseph St., Toronto, Ontario, Canada* M5S 2R9 (D-IARC-79-102)

Isoniazid (INH) has been used extensively for both the prophylaxis and treatment of tuberculosis since

its widespread introduction in 1952. It has been reported, however, that INH is carcinogenic in rodents and it is therefore important to examine its possible carcinogenic effects in man using a large human population. The present study is of a cohort of tuberculosis patients first admitted to Canadian sanatoria between the years 1952 and 1960. Records for all such admissions were maintained on the National Tuberculosis Register and these have been coded and key punched. The records contain identifying information together with information on the treatment used including a record of whether or not INH was given. These records have been linked using computerized record linkage techniques in order to bring together records pertaining to the same individual. Such records have been combined into composite records and these records in turn have been linked to the mortality data base maintained by Statistics Canada for the years 1952-1973 in order to ascertain the mortality experience of the cohort. In addition, a further linkage has been carried out to the cancer incidence data file maintained by Statistics Canada for the years 1969-1973. Analyses are currently being conducted to examine the mortality and cancer incidence experience of the cohort with respect to their exposure or non-exposure to INH. The study population consists of approximately 76,000 individuals and the numbers should be adequate to reveal any significant excess of cancer of the major target organs occurring in the group exposed to INH.
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2422,

THE SWEDISH TWIN REGISTRY STUDIES

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In 1961 the Twin Registry covered about 10,000 same-sexed pairs born 1886-1925. The registry was expanded in 1973 to include also about 15,000 paris born 1926-1958. The aim of the twin registry is to study influences of the environment on morbidity and mortality. Morbidity data can be obtained from the Swedish Cancer Registry. The mortality data are evaluated through a continuous follow-up of mortality within the registries. Progress to date was reported in Acta Medica Scandinavia, Suppl. 612, 1977, in 'The Interactions of Smoking, Environment and Heredity and Their Implications for Disease Etiology'.
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2423,

IMMUNOGENETIC AND IMMUNOLOGICAL ASPECTS OF NASOPHARYNGEAL CARCINOMA (NPC)

S.H. Chan, University of Singapore, School of Medicine, Dept. of Microbiology, *Sepoy Lines, Singapore 3, Singapore*

HL-A profiles associated with risk of development of NPC and with prognosis have now been established. The haplotype A2 BW46 (Sin 2) is associated with a relative risk (RR) of 1.97 and 2.29 in two studies of newly diagnosed NPC patients. Another haplotype, AW19 B17, is associated with a RR of 2.80 and 2.60 in the two studies. AW19 B17 and, to a lesser extent, A2 BW46 have been found to be associated with poor survival in a restrospective study. HL-A - DR locus antigen typing in NPC patients has begun. NPC patients showed a higher frequency of DR locus blank antigen than controls. A local DR antisera, AH21, showed higher reactivity among the patients than controls (RR equals 8.0). A prospective study of HL-A profiles and prognosis in NPC is in progress. A prospective study of HL-A, Epstein-Barr virus serology and development of NPC in a normal population has also been started.
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2424,

INCIDENCE AND DISTRIBUTION OF LEUKEMIAS AND LYMPHOMAS

D.E. Powell, Bridgend General Hospital, Dept. of Pathology, *Bridgend CF31 1JP, Wales, United Kingdom* (D-IARC-79-578)

Observation of time-space relationships, and consideration of possible environmental and infective factors are being undertaken.
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2425,

CANCER INCIDENCE AND MORTALITY OF SAO PAULO COUNTY

A.P. Mirra, Universidade de Sao Paulo, School of Public Health, Dept. of Epidemiology, *Avenida Dr. Arnaldo, 715-10 A, Sao Paulo, Sao Paulo, Brazil* (D-IARC-79-56)

OBJECTIVE: To study the cancer incidence and mortality in Sao Paulo County (descriptive epidemiology). In the second step to study the analytic epidemiology. The data are collected in standard files by collectors from the following sources: hospitals, clinics, homes for the aged, service of drug control, pathology laboratories, autopsy services and death certificates. The data received, after codification, are transferred to punched cards and magnetic tapes. The classification of cancer cases is made by the first name of the patient, last name of the patient and number of registration. Our unit is the cancer case and not the cancer patient. Each neoplasm is registered individually. The notification of cancer is compulsory.
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2426,

RADIATION EXPOSURE AND MORTALITY IN FLUORSPAR MINERS

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The objective of the study is to evaluate the risk of death due to lung cancer as a function of cumulative exposure to radon and radon daughters in the fluorspar mines of St. Lawrence, Newfoundland. The mortality and adaptation exposure experience of over 2,000 men employed between 1933 and 1977 will be reviewed. Fluorspar mining in St. Lawrence (population 2,078, 1956 census) began in 1933 and by the period 1952-60, lung cancer accounted for 21 of the 71 total deaths: only 0.73 lung cancer deaths were expected based on proportional mortality rates for the province (O/E equals 29). Investigation in 1959 revealed the presence in air of radon and radon daughters at levels up to 193 SWL (1 SWL equals 100 pc/l for radon and 1.3 x 10 to the 5th power MeV total potential alpha-energy per liter for daughters) in non-working, unventilated areas. The average exposure of miners was estimated to be 2.5-10 SWL. Improved ventilation and monitoring of individual exposure were started in 1960. Current studies are directed towards evaluation of control procedures and analysis of the associations between radiation exposure and mortality utilizing individual exposure data and man-years at risk.
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2427,

TEESSIDE STUDY

G. Dean, Medico Social Research Board, *73 Lower Baggot St., Dublin 2, Ireland* (D-IARC-79-290)

The objectives of this study were to determine how, during a recent period, mortality from lung cancer, bronchitis, heart disease, and stroke related to air pollution, social class, smoking (with particular emphasis on whether the cigarette smoked was filter or plain) and other factors, and to examine changes in lung cancer and bronchitis mortality during the last ten years in relation to changes in air pollution levels and smoking habits. The surviving relatives of those people in Cleveland County who had died from lung cancer or bronchitis in 1969-72 (males) or 1969-1972 (females), heart attack in 1971-1972 (males only) or stroke in 1966-1972 (also males only) were interviewed. Details of number of factors, including, in particular, the decedent's probable exposure to air pollution and smoking habits, were obtained. Similar information for the living population was obtained for a random sample in 1973. It was thus possible to relate mortality to the factors measured and also to compare mortality rates from lung cancer and bronchitis with those of the similar study carried out in Teesside in 1963. The study is to be published in two parts by the Tobacco Research Council, London, as their Research Paper 14 'Report on a second retrospective mortality study in North-East England'. Part I 'Factors related to mortality from lung cancer, bronchitis, heart diseases and stroke in Cleveland County, with particular emphasis on the relative risks associated with smoking filter and plain cigarettes' appeared in September 1977. Part II 'Changes in lung cancer and bronchitis mortality and in other relevant factors occurring in areas of North-East England 1963-72' appeared in the 1978 TRC Research Papers, 14.
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2428,

INTERDISCIPLINARY STUDY OF LYMPHOMAS

N. Goldblum, Hebrew University of Jerusalem, Hadassah Medical School, Chanock Centre for Virology, *P.O. Box 1172, Jerusalem 91000, Israel* (D-IARC-78-283)

Epidemiological study: incidence, mortality, survival, clustering in time and space of Hodgkin's cases. Childhood lymphoma with special emphasis on Burkitt's tumors. Isolation and characterization of the malignant cells in vivo and in vitro.
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2429,

CANCER AND DIET

G. Hems, University of Aberdeen, Dept. of Statistics/Community Medicine, *Aberdeen AB9 1AS, Scotland, United Kingdom* (D-IARC-79-561)

OBJECTIVE: To determine associations between cancer rates and environmental factors, especially diet. Cancer rates are for countries, and dietary data from published national surveys.
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2430,

ANTIMONY STUDY

K.P. Duncan, Employment Medical Advisory Service, *Chepstow Pl., London W2, England, United Kingdom* (D-IARC-79-619)

OBJECTIVE: To discover whether workers in an antimony smelting factory have excess mortality from lung cancer.
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2431,

VINYL BENZENE STUDY

K.P. Duncan, Employment Medical Advisory Service, *Chepstow Pl., London W2, England, United Kingdom* (D-IARC-79-617)

OBJECTIVE: To evaluate the mortality pattern of subjects exposed to vinyl benzene, with particular reference to the cancer rates.
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2432,

CARBON BLACK STUDY

K.P. Duncan, Employment Medical Advisory Service, *Chepstow Pl., London W2, England, United Kingdom* (D-IARC-79-618)

OBJECTIVE: To see whether excess lung cancer mortality in the rubber industry and printing industry is associated with carbon black.
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2433,

FREQUENCY STUDIES OF CANCER

G.M. Edington, Ahmadu Bello University, Dept. of Pathology, *Zaria, Nigeria* (D-IARC-78-396)

The aim is to define the cancer pattern in the northern savanna of Nigeria and study individual tumor types.
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2434,

CHILDHOOD CANCERS IN TUNISIA - RELATIVE FREQUENCY OF HISTOLOGICAL TYPES

M. Cammoun, Salah Azaiz Inst., Dept. of Pathology, *Blvd. du 9 Avril, Bab Saadoun, Tunis, Tunisia* (D-IARC-78-487)

The relative frequency of the various histological types of childhood cancer is being investigated in two large institutes. Data on about 600 cases have now been collected.
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2435,

PVC MANUFACTURERS STUDY

K.P. Duncan, Employment Medical Advisory Service, *Chepstow Pl., London W2, England, United Kingdom* (D-IARC-79-615)

OBJECTIVE: To evaluate the mortality pattern of workers exposed to vinyl chloride.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2436,

RUBBER AND CABLE MAKING STUDY

K.P. Duncan, Employment Medical Advisory Service, *Chepstow Pl., London W2, England, United Kingdom* (D-IARC-79-616)

OBJECTIVES: To monitor the incidence of bladder cancer in subjects who enter the industry after known carcinogens have been removed and also to monitor the general cancer incidence.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2437,

LONG-TERM CANCER MORTALITY TRENDS AMONG KRAKOW INHABITANTS IN RELATION TO DEMOGRAPHY AND ENVIRONMENT

W. Jedrychowski, Akademia Medyczna W Krakowie, Inst. of Social Medicine, Dept. of Epidemiology, *Ul. Kopernika 7, 31034 Cracow, Poland* (D-IARC-79-454)

The spatial analysis of mortality due to malignant neoplasms in the population of Cracow will cover the ten-year period 1974-1984. The city of Cracow has over half a million inhabitants and its four districts differ in regard to degree of air pollution, smoking habits, fertility and other social and environmental factors. The aim of the study is to make a comparison between data on mortality from malignant neoplasms in the four districts. Death certificates taken from the statistical office on a monthly basis have been used in the analysis of malignant neoplasms. Cancer mortality data are analyzed according to sex, place of residence and primary site. Age-specific and age-adjusted rates are computed for the total population and for each district. So far, data covering the years 1974-1978 have been collected and are currently being analyzed. The pilot study done for the year 1974 has shown that the most frequent causes of death in Cracow by sex were lung carcinoma in men and breast carcinoma in women. The highest age-adjusted rates were in the city center where the fertility rate was low and the level of atmospheric pollution, tobacco consumption and the proportion of working-class population appeared to be high.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2438,

THE CYTOLOGICAL DIAGNOSIS OF BLADDER TUMORS IN DYESTUFF WORKERS

S. Ishizu, Tokyo Womens Medical College, Dept. of Public Health, *10 Kawadacho Shinjuku-Ku, Tokyo 162, Tokyo, Japan*

The production and use of benzidine and beta-naphthylamine in the dye industry of Japan were prohibited by law in 1971. However, there are still 4,037 workmen (including retired men) who have been exposed to carcinogenic amines, and risk developing a bladder tumor in the future. This study aims to perform continuous follow-up urine examination of the workers. For the early detection of bladder tumors, routine cystoscopy was considered to be quite unsuitable. The Papanicolaou smear technique of urine examination was introduced into the dye industry of Japan in 1961. A total of 4,037 men were screened first by wet smear and then by Papanicolaou smear. During the 22 years from 1955 to 1977, 192 cases of occupational bladder tumor were discovered; 15 out of 108 men with positive Papanicolaou smears have shown no tumors on cystoscopy; 7 men with negative Papanicolaou smears showed bladder tumors on cystoscopy (false negative); 47 out of 137 men with suspicious Papanicolaou smears had bladder tumors. Seventeen specimens obtained from the occupational bladder tumor patients were histopathologically examined. Of these 17 specimens, 8 showed papillary cancer type, 6 showed an inverted proliferating tumor, and 3 were carcinoma in situ. This study continues.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2439,

MORTALITY OF BRITISH COKE-OVEN WORKERS

M. Jacobsen, Inst. of Occupational Medicine, Statistics Branch, *Roxburgh Pl., Edinburgh EH8 9SU, Scotland, United Kingdom* (D-IARC-79-588)

The objective of this investigation is to estimate death rates from cancers in general and lung cancer in particular among British coke-oven workers. A cohort of men employed in 1967 at industrial establishments involving coking operations is being studied. Men involved are or were employees of the British Steel Corporation or of a subsidiary of the National Coal Board. Analysis of a nine-year follow-up period suggests an occupationally related lung cancer hazard at some works, and that this hazard is considerably smaller than that reported among American coke workers. The study continues.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2440,

INSTITUTE OF PETROLEUM EPIDEMIOLOGICAL SURVEY

M.R. Alderson, Inst. of Cancer Research, Division of Epidemiology, *Clifton Ave., Sutton SM2 5PX, England, United Kingdom* (D-IARC-79-695)

The aim is to monitor background data in order to quantify the overall level of morbidity and mortality and examine the variation from disease in relation to broad categories of work or 'environment'. Some twenty companies in the oil industry have agreed to fund an epidemiological study through the Institute of Petroleum. Present plans are to collect data from eight refineries (three Shell, three BP, one Esso, and one Mobil); details are required about men who have been employed for at least a year from 1950 to 1975, including those who have left the industry, retired, or died. The analysis will examine mortality rates by cause (taking age, location, and type of work into account). Comparisons will be made between men doing different work within refineries, and with the mortality data for men in other industries in the same region as each refinery and in the country as a whole. Such a study can quantify the general mortality (and thus indirectly the overall level of health in the industry). Examination of material on individual diseases may identify specific issues that warrant detailed study. This study is now being extended to workers at various distribution centers for refinery products and maintenance staff at London Transport garages.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2441,

INCIDENCE OF TESTICULAR TUMORS IN SCANDINAVIAN COUNTRIES ANALYZED BY HISTOLOGY

L. Teppo, Finnish Cancer Registry, Inst. for Statistical & Epidemiol. Cancer Res. in Finland, *Liisankatu 21B, 00170 Helsinki 17, Finland* (D-IARC-79-155)

The differences in the total incidence of testicular tumours are 5-fold in the Scandinavian countries. The objective of the study is to clarify the incidence rates by histology. The WHO nomenclature will be used. In each country, a set of slides representing all cases of testicular tumors in the country during a specific time period is collected, and all sets are classified by pathologists in the four countries.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2442,

ANALYSIS OF URINES FOR NITROSAMINES FROM PATIENTS WITH BILHARZIASIS

R.M. Hicks, University of London, Middlesex Hospital Medical School, School of Pathology, *Riding House St., London W1P 7LD, England, United Kingdom* (D-IARC-79-624)

There is a high bladder cancer incidence in Egypt, in areas irrigated by canals from the Nile, and it is always linked with endemic bilharziasis. Bilharzial patients also frequently have chronic intractable bacterial infections of the urinary bladder. Many bacteria are capable of reducing nitrate to nitrite, and then nitrosating secondary and tertiary amines to nitrosamines. Secondary amines are normally in human urine. I have suggested, therefore, that nitrosamines could be a factor in the incidence of bladder cancer in Egypt, and if it is so, the bilharziasis is a co-factor, rather than a direct carcinogen. A pilot study has been undertaken with the collaboration of IARC, in which urines from bilharzia infested patients in Cairo and surrounding districts were analyzed by gas chromatography and mass spectrometry. Many of these patients had significantly higher levels of several nitrosamine species in their urines than did uninfested Egyptian and European individuals. For comparison, urines of European patients with chronic bacterial infections of the urinary tract were analyzed in the same way. This investigation will now be extended to other areas where bilharziasis is endemic.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2443,

AETIOLOGICAL FACTORS IN LARYNGEAL CANCERS

L. Koeselioglu, Ankara Oncology Hospital, *Imrahor Caddesi, Incesu, Ankara, Turkey* (D-IARC-79-554)

Our hospital statistics have shown that 13.7 percent of cancers in males and 1.4 percent in females arose in the larnyx, and there is only a 2 percent difference between the urban and rural areas. This shows that there is a common cause in the two populations which is being studied.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2444,

CANCER AND AGING

T. Berge, Malmoe General Hospital, Dept. of Pathology, *S Forstadsgatan 101, S21401 Malmo, Sweden* (D-IARC-79-514)

To study the connection, if any, between cancer and age by means of a large autopsy material from a defined population.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2445,

MULTIPLE PRIMARY MALIGNANT TUMORS

T. Berge, Malmoe General Hospital, Dept. of Pathology, *S Forstadsgatan 101, S21401 Malmo, Sweden* (D-IARC-79-513)

To study frequencies and possible relationships between different types of malignant primary tumors in an autopsy material from a defined population. The study will comprise the years 1958-1975.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2446,

GENETIC ASPECTS IN RELATION TO CANCER

V. Balakrishnan, Cancer Research Inst., Epidemiology Div., *Dr. Ernest Borges Marg, c/o Tata Memorial Ctr., Bombay 400012, Maharashtra, India* (D-IARC-79-260)

Indian society is divided into a large number of religious and linguistic communities, many of which are further subdivided into endogamous groups (castes and sub-castes). These groups not only differ in food habits, customs etc., but also restrict marriages within a group, leading to great differences in their gene pools. While some of these groups prohibit marriages between persons related up to three or four generations, some other groups have probably the highest levels of inbreeding in the world. Patients from all parts of India attend the Tata Memorial Hospital. Information collected from these patients is to be used to build up cancer profiles of the endogamous groups to see whether these differ in a manner not explained by their habits and customs. Information on close consanguinity is also collected to assess the effects of inbreeding. Patients diagnosed as not suffering from cancer will be used as controls. Information on about 2,500 cancer cases and 1,600 non-cancer cases collected during 1975-1976 was analysed. The cancer cases were distributed over about 30 sites, only sites in males and two sites in females having more than 100 cases. About 2,000 cases were interviewed in 1977. Collection of information is continuing.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2447,

FOLLOW-UP OF WORKERS EXPOSED TO CHEMICALS

C.F. Ottevanger, Shell Internationale Petroleum Maatschappij N.V., Dept. of Industrial Health, *P.O. Box 7000, Rotterdam, Netherlands* (D-IARC-79-420)

Workers exposed to organochlorine and alkylchloride compounds, and to vinyl chloride, trichloroethylene and unsaturated compounds will be followed.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2448,

UICC BREAST AND GONADAL GEOGRAPHIC PATHOLOGY PROJECT, NORWEGIAN PARTICIPATION

H. Stalsberg, Universitetet i Tromso, Inst. of Medical Biology, Dept. of Pathology, *P.O. Box 977, 9001 Tromso 2, Norway* (D-IARC-78-399)

Norwegian participation is undertaken in an international project coordinated by Professor Pelayo Correa, M.D., Louisiana State University. The objective of the international project is to study the occurrence of histological types of breast and gonadal tumours. For a time period not yet defined, all malignant tumours of breast and gonadal tumours diagnosed in Norway will be subjected to histological review and reclassification.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2449,

CASE-CONTROL STUDY OF HIGH RISK FACTORS IN OVARIAN CARCINOMAS

J.J. Szamborski, Akademia Medyczna W Warszawie, Inst. of Obstetrics & Gynaecol, Dept. of Pathomorphology, *Karowa 2, 00315 Warsaw, Poland* (D-IARC-79-459)

The work published during the last years has shown some differences in prognosis and curability of ovarian carcinoma in relation to the histological type. The aim of this prospective study is to collect the clinical data concerning the biological status and previous gynecological history of patients with ovarian carcinoma and to explore the differences in these data between the patients with: serious carcinoma, mucinous carcinoma, endometrioid carcinoma and controls. Cancer-free patients attending the gynecological ward are used as controls. They are selected according to age to give a sample with approximately the same age structure as the ovarian carcinoma groups. The data is collected using a modified form of the ovarian tumour classification suggested by WHO. Subsequent analysis of possible risk factors will be undertaken.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2450,

EPIDEMIOLOGY OF RETINOBLASTOMA IN NEW ZEALAND

R.D. Suckling, Christchurch Hospital, Dept. of Ophthalmology, *Private Bag, Christchurch, New Zealand* (D-IARC-79-427)

OBJECTIVES: To continue recording all cases in New Zealand since 1948 to determine presence or absence of clustering, prognosis, and, eventually, the number of inherited cases. New Zealand ophthalmologists are requested to report all cases. (Cancer statistics, births and deaths records are used to check.)

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2451,

STATISTICS ON BRAIN TUMORS, DENMARK 1943-72

J. Clemmesen, Finseninstitutet, Danish Cancer Registry, *Strandboulevarden 49, DK2100 Copenhagen, Denmark* (D-IARC-78-121)

Analysis of data with attention to all parameters on record.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2452,

CASE-CONTROL STUDY OF URINARY BLADDER CANCER IN LODZ, POLAND

B. Bieniak, Pirogow Hospital, Dept. of Urology, *Wolczanska 193, 90531 Lodz, Poland* (D-IARC-78-407)

This study aims to explore risk factors in male patients with urinary bladder cancer and control patients with prostate hypertrophy in relation to: month of birth, immigrant/born in Lodz, occupation, anthropological data (color of the hair and eyes, fat, muscularity, height, blood group), family history of cancer, gonorrhea and lues, alcohol and tobacco consumption, nervous system and digestive tract troubles, diabetes, stress situation such as: war, jail, concentration camp, cold, etc. Controls are selected to give a sample with approximately the same age structure. There are differences between the two groups of patients.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2453,

AETIOLOGICAL FACTORS IN BREAST CANCER

H.K. Akoguz, Ankara Oncology Hospital, Dept. of Surgery, *Imrahor Caddesi, Incesu, Ankara, Turkey* (D-IARC-79-549)

In our country 27.70 percent of female cancers are breast carcinomas (statistics of our hospital). This study aims to establish the relationship of breast carcinoma to age, marriage, and fertility.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2454,

EPIDEMIOLOGICAL STUDIES OF HODGKIN'S DISEASE

J.H. Abramson, Hebrew University of Jerusalem, Hadassah Medical School, Dept. of Social Medicine, *P.O. Box 1172, Jerusalem 91000, Israel* (D-IARC-79-295)

This study is part of a multidisciplinary study of Hodgkin's disease in Israel. The epidemiological studies include studies of mortality, incidence, survival, clustering among social contacts, clustering in space and time, correlates of the disease (based on case control comparisons), HL-A and virus antibody studies of cases and controls, and serological studies of population groups.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2455,

STUDIES ON FAMILIAL GASTROINTESTINAL POLYPOSIS IN JAPAN

J. Utsunomiya, Tokyo Medical & Dental University, School of Medicine, Dept. of Surgery, *I-Chome, Yushima, Bunkyo-Ku, Tokyo 113, Tokyo, Japan* (D-IARC-79-397)

The objective of this study is to ascertain and register family members of patients with gastrointestinal polyposis in Japan in order to control this disease and to provide information for the genetic study on cancer. Information on the subjects was collected through inquiry, from literature, autopsy records and voluntary visits; pedigrees constructed by means of reviewing the official family register record (Koseki) and the presence of polyposes among relatives was ascertained by consulting the death certificate or by communicating with family members. Currently, 292 families suffering from familial polyposis coli (fpc) including Gardner Syndrome, 106 of Peutz-Jeghers Syndrome, 121 of multiple polyps and 50 of familial colon cancer with or without polyps are registered. A survey has been completed on 200 families of fpc and based on these materials, comprehensive studies are under way including clinicopathological studies of associated changes (gastric polyposis and occult osteomatous changes of fpc), genetical epidemiological analysis, cytogenetical study, genetic marker study and others.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2456,

A BREAST REGISTRY IN NORTHERN ALBERTA WITH RESEARCH AND CLINICAL APPLICATIONS

P.E. Burns, Dr. W.W. Cross Cancer Inst., Dept. of Radiation Oncology, *11560 University Ave., Edmonton, Alberta, Canada* T6G 1Z2 (D-IARC-79-61)

A breast registry was created in Northern Alberta to study the aetiology, epidemiology, diagnosis, treatment, and survival patterns of malignant and benign breast tumors. About 700 patients with benign conditions and 250 with newly diagnosed breast cancer attend the breast clinics at the Cross Institute each year. Interview data are collected from all patients, who represent 90% of all breast cancer registrations and about 30% of women treated for benign breast disease. More than half of all patients registered with breast cancer are assessed pre-operatively at these clinics by one of two clinicians. Data from the registry have been used to compare diagnostic accuracy, to study incidence trends, to assess the influence of exogenous hormones and other aetiologic factors, to compare 1968 and 1973 UICC staging and to determine factors related to survival of breast cancer patients.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2457,

FOLLOW-UP ON RADIUM LUMINIZERS

J. Vennart, Medical Research Council, Radiobiology Unit, *Harwell, Didcot, Oxfordshire OX11 ORQ, England, United Kingdom* (D-IARC-79-585)

There are two groups of luminizers, some with a record of body content of radium determined some years ago, and some without this measurement. Mortality data are being collected through national registration system.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2458,

DEMOGRAPHIC, CLINICAL AND HISTOPATHOLOGICAL STUDIES OF PRIMARY MALIGNANT BONE TUMOURS RECORDED IN THE SWEDISH CANCER REGISTRY

S.E. Larsson, Umea University, Dept. of Orthopedic Surgery, *S90187 Umea, Sweden* (D-IARC-78-461)

1) Correlation of epidemiological, clinical and histopathological data. 2) Studies of exogenous and endogenous factors related to tumour incidence. 3) Studies of diagnostic problems. 4) Correlation of diagnostic measures and clinical treatment to prognosis. 5) Planned: prospective study on the effect of a uniform diagnostic and therapeutic approach to these tumours within the whole country.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2459,

LONG-TERM FOLLOW-UP OF PATIENTS EXPOSED TO THOROTRAST

K.G. Buckton, Western General Hospital, *Crewe Rd., Edinburgh EH4 2XU, Scotland, United Kingdom* (D-IARC-79-587)

The aims are to assess morbidity.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2460,

CANCER MORTALITY IN CALI, COLOMBIA

G. Llanos, Universidad del Valle, Dept. of Social Medicine, *Apartado Aereo 2188, Cali, Colombia* (D-IARC-79-118)

The aims are to: (1) obtain the weight of cancer in the general mortality in Cali; (2) analyze the trends of cancer mortality in Cali, Colombia; (3) compare cancer mortality with morbidity trends; (4) begin survival studies; and (5) assess quality of death certificate.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2461,

DIFFERENTIAL MORTALITY PATTERNS BETWEEN NATIVE-BORN AUSTRALIANS AND MIGRANTS

M.G. McCall, University of Western Australia, School of Medicine, Dept. of Medicine, *Perth, W. Australia 6009, Australia* (D-IARC-79-23)

The initial data were published following the 1966 census. The cooperation of the Commonwealth Bureau of Statistics has been obtained to continue the study and data on all deaths in Australia (1962-1971) have been collated. 1971 was the last year of which census data are available and denominators for twenty-four migrant groups with seven periods of residence have been computed. Provision has been made for the inclusion of 1976 data when they

become available. The difficulty caused by the change to the ICD 8th Revision classification has been resolved and a numerator file for any given disease is available. From this, standardized mortality ratios for a wider range of malignancies and population groups can be computed and several publications are being prepared.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2462,

FAMILIAL POLYPOSIS OF THE COLON IN THE BANTU

J.R. McQuaide, Livingstone Hospital, Dept. of Surgery, *Stanford Rd., Port Elizabeth, South Africa* (D-IARC-78-436)

OBJECTIVE: Following up family pedigree. Familial polyposis has been rarely reported in Africans heretofore.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2463,

THEORY OF COMPETING RISKS OF DEATH IN CANCER EPIDEMIOLOGY

T.R. Hakulinen, Finnish Cancer Registry, Inst. for Statistical & Epidemiol. Cancer Res. in Finland, *Liisankatu 21B, 00170 Helsinki 17, Finland* (D-IARC-79-147)

The objective of the study is to develop and validate methods for eliminating the confounding effects of competing risks of death when estimating mortality rates from cancer registry material.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2464,

STUDY OF WOODWORKERS IN FURNITURE INDUSTRY - A HIGH RISK GROUP FOR ADENOCARCINOMA OF SINUSES

E.H. Hadfield, Wycombe General Hospital, *High Wycombe, England, United Kingdom* (D-IARC-79-596)

The high risk group of woodworkers in furniture industry is examined annually (at the workers' work place) by R.G. Macbeth. When some clinical change is visible in their noses they are sent to E.H. Hadfield at the hospital for biopsy and/or treatment.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2465,

MORTALITY FROM CANCER IN DENMARK

O. Horwitz, Danish Inst. for Clinical Epidemiology, *25 Svanemollevej, 2100 Copenhagen, Denmark* (D-IARC-78-125)

Mortality from cancer in Denmark 1943-74, based on all death certificates for the period is being analyzed according to demographic factors.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2466,

SMOKING AND CHEWING HABITS IN RELATION TO HEALTH - A PROSPECTIVE STUDY IN BOMBAY

K. Jayant, Cancer Research Inst., Epidemiology Div., *Dr. Ernest Borges Marg, c/o Tata Memorial Ctr., Bombay 400012, Maharashtra, India* (D-IARC-79-261)

A number of retrospective studies carried out in this country have demonstrated the association of smoking and chewing habits with oral and pharyngeal cancers. Laboratory and experimental studies on bidi smoke and betel quids have also served to establish this cause-effect relationship. To see whether the results obtained in retrospective studies are sustained in prospective studies in which large populations with known habits are followed for several years for the occurrence of cancer, a limited study of this nature has been in progress, following earlier pilot studies. About 7,000 white-collar workers and 3,500 blue-collar workers over the age of 35 have been followed up for varying periods since 1969. A preliminary analysis of the data on white collar workers is being undertaken.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2467,

CONTINUING RETROSPECTIVE STUDY OF ALL CASES OF MESOTHELIOMA IN NORTHERN IRELAND TO DETERMINE THEIR SOURCE OF ASBESTOS EXPOSURE

J.H. Langlands, Belfast City Hospital, Respiratory Investigation Center, *93 Lisburn Rd., Belfast BT9 7AB, United Kingdom* (D-IARC-79-566)

The objective of this study is to detect sources of asbestos exposure in the community which are sufficient to cause mesothelioma, in order to determine whether preventive measures applied to recognized sources of exposure are sufficient. Arrangements are made for all cases of mesothelioma to be reported to the investigators as soon as possible so as to obtain pathological material for examination after death.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2468,

A CONTINUING AND LONG-TERM STUDY OF THE NATURAL HISTORY OF CANCERS IN A COMMUNITY OF 9000 PERSONS

J. Fry, (No Performing Organization Reported), *United Kingdom* (D-IARC-79-564)

The family practitioner (general practitioner) has some special opportunities to study the early beginnings and the cause of the various cancers as they occur in a community. Such a study has been going on in my practice of 9000 persons for over 25 years and still continues. An interim report will be published in 'A Guide to Common Diseases', Fry, J., Lancaster: MTP Press, 1979.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2469,

EPIDEMIOLOGICAL STUDY OF CHILDHOOD ACUTE LYMPHOCYTIC LEUKEMIA IN VICTORIA

T.S. Selwood, Monash University, School of Medicine, Dept. of Social & Preventive Medicine, *Commercial Rd., Prahran, Victoria 3181, Australia* (D-IARC-78-33)

Almost all children with neoplastic disease in Victoria are treated in two hospitals in Melbourne. Possible risk factors associated with childhood leukemia in Victoria have been examined without finding any significant relationship. Case histories of children with all forms of neoplastic disease, presenting in the period 1972-1976, are currently being analyzed to determine if any factor seems to be associated with any of these diseases.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2470,

TIME TRENDS IN AGE-SPECIFIC BREAST CANCER MORTALITY IN RELATION TO CHANGING DIETARY IODINE LEVELS

A.J. McMichael, Commonwealth Scientific & Industrial Research Org., Div. of Human Nutrition, *Kintore Ave., Adelaide, S. Australia 5000, Australia* (D-IARC-79-6)

From epidemiological and experimental research elsewhere, it has been postulated that dietary iodine deficiency increases the risk of female breast cancer. Increased oestrogenic stimulation of breast tissue, following increased activity of the hypothalamic-pituitary axis, has been suggested. In both Australia and the U.S.A. regions of iodine deficiency have been well documented (especially Tasmania and the Ohio-Kentucky region). Dietary iodine supplementation programs during the past 30-50 years may be reflected in a reduced risk of premenopausal breast cancer (i.e., the 'hormone-dependent' category) in recent years, particularly in women who have been iodine-sufficient since childhood. Mortality data for Australia and the U.S.A. are being analyzed for evidence of such trends in erstwhile iodine-deficient regions. Preliminary data for Tasmania (Australia) supports the hypothesis.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2471,

HODGKIN'S DISEASE IN WESTERN AUSTRALIA WITH SPECIAL REFERENCE TO CONTACT BETWEEN PATIENTS WITH THE DISEASE

M.L. Matthews, Cancer Council of Western Australia, Leukaemia & Allied Disorders Registry, *184 St. Georges Terr., Shenton Park, Perth, W. Australia 6000, Australia* (D-IARC-79-30)

Previous studies have suggested that Hodgkin's disease occurs more frequently in individuals who have had contact with patients with Hodgkin's disease than in those who have not. These studies have been designed to test this hypothesis. Patients with Hodgkin's disease have been notified to the Leukemia and Allied Disorders Registry in Western Australia since 1959. Data on these patients are being used to study space - time clustering of Hodgkin's disease and the coincident occurrence of this disease in pupils and teachers at schools in Western Australia. 108 patients with Hodgkin's disease registered since 1964 and surviving to June 1976 have been matched by sex, age and area of residence with members of the general population of Western Australia. Patients and controls have been interviewed to uncover evidence of contact. Data on relatives and close associates of Hodgkin's disease patients have been collected also to determine whether any of them have developed a lymphoproliferative or myeloproliferative disorder. Data are now being analyzed.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2472,

TOBACCO CONSUMPTION AMONG BELGIAN MILITARY RECRUITS

M. Graffar, Universite Libre de Bruxelles, Dept. of Epidemiology & Social Medicine, *50 Ave. Franklin Roosevelt, Campus Plaine, 1050 Brussels, Belgium*

The prevalence of cigarette smoking has been studied in a representative sample of Belgian draftees in order to assess the importance of this major health hazard. Among 2,023 French-speaking young men screened in 1977 cigarette smokers amounted to 60.7%, with a significant higher rate (63%) in young subjects compared to those 21 years old and more (55%). The prevalence is negatively correlated with degree of education: 65% for those with a primary or low technical degree, 56% for those with a secondary or middle technical degree and only 47% in those with university or higher technical education. In order to assess the effect of an anti-smoking campaign at the primary and secondary school level, organized by the Belgian Red Cross, another screening of draftees is planned in 1979.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2473,

EPIDEMIOLOGY OF LEUKEMIA AND ALLIED DISORDERS IN WESTERN AUSTRALIA

L.E. Dougan, Cancer Council of Western Australia, *184 St. Georges Terr., Shenton Park, Perth, W. Australia 6000, Australia* (D-IARC-79-27)

Patients have been notified to the Leukemia and Allied Disorders Registry in Western Australia since 1959. Further registrations were made by search of hospital morbidity indices, pathology and hematology department records and death certificate scrutiny. For patients prevalent in the period 1960 to 1969 the diagnoses were confirmed or otherwise by a diagnostic group of pathologists and hematologists after review of clinical and pathological material. Epidemiological and clinical data have been collected for those patients with confirmed diagnoses and incidence and mortality rates have been calculated by sex, age and geographical area. Other data collected includes irradiation exposure, drug ingestion, past medical history, family history, occupation, domicile, birth order, family size, parental ages, presence of other malignancy or congenital malformations, autopsy findings and death certification. Follow-up study is continuing in order to complete survival figures and data on the development of other malignancies. Since 1969 the registration of patients has continued but diagnoses are accepted without confirmation by the diagnostic group and less detailed epidemiological information is recorded. Copies of tabulations from the 1960-1969 survey are available on request.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2474,

GYNECOLOGICAL CANCER IN WESTERN AUSTRALIA WITH SPECIAL REFERENCE TO ROLE OF EXOGENOUS AND ENDOGENOUS OESTROGENS IN ENDOMETRIAL CANCER

B.K. Armstrong, Western Australian Public Health Dept., *60 Beaufort St., Perth, W. Australia 6000, Australia* (D-IARC-79-24)

The study will describe trends in mortality from gynecological cancer in Western Australia between 1930 and 1974 and incidence data collected by cancer registration between 1971 and 1974. The latter data will permit study by area of residence, occupation, race and country of birth. A retrospective case-control study of the role of oestrogen therapy with mainly ethinyl oestradiol in the aetiology of endometrial cancer is being undertaken and will include about 200 cases and 200 controls. Data on oestrogen receptors, and plasma and urinary oestrogen have been collected already on over 50 patients with endometrial cancer. Data will be collected also for appropriately matched controls and related to physical characteristics, obesity, diet and other factors.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2475,

INCIDENCE OF CHRONIC DISEASE AND UTILIZATION OF HEALTH SERVICES BY MIGRANTS TO WESTERN AUSTRALIA

B.K. Armstrong, Western Australian Public Health Dept., *60 Beaufort St., Perth, W. Australia 6000, Australia* (D-IARC-79-25)

The statutory collection of demographic and medical information on patients discharged from all hospitals in Western Australia renders possible the study of the incidence of chronic diseases which normally require hospitalization. Preliminary analyses have shown excesses of hospital admissions for gall bladder disease, acute pancreatitis, inflammatory bowel disease, lung cancer and chronic renal disease. These and other conditions are being studied in detail to ascertain whether true differences in incidence exist among migrants or whether the excesses observed are due to differential utilization of health services.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2476,

NATIONAL SURVEY OF CHILDHOOD CANCERS

K. Wilson, Marie Curie Memorial Foundation, Epidemiology Unit, *The Chart, Oxted RH8 0TL, England, United Kingdom*

This long-standing retrospective survey was orginally started in Oxford by Dr. A. Stewart in 1953 to study the aetiology of childhood cancers. It consists of interviews with the parents of children under 16 dying of cancer or leukemia in the United Kingdom and with parents of control children matched for age, sex and district; antenatal information is confirmed by application to clinics and doctors, and the case child's medical history is followed up through general practitioner and hospital notes. Surviving children have similarly been interviewed and followed up since 1962 by means of the regional cancer registries. In the past extensive studies have been made of the relation of obstetric low-level radiation to the increased risk of the child later developing neoplasia. The effect of viral diseases during pregnancy has also been found to increase the risk, but less convincingly. Present projects include: 1. A study of the effects of the use of ultrasound and of drug therapy during pregnancy, and of the possible relationship of these agents in the aetiology of childhood cancers. 2. A study of congenital defects found in children who later develop cancer or leukemia, and congenital defects in their siblings, together with a similar study of defects in matched control children and their siblings. 3. A study of all cases of Wilms' tumor, surviving and dead, whose diagnosis and initial treatment occurred in 1969-1973 to assess the difference in prognosis between those who were included in the M.R.C. Trial and those outside. This study is being done in collaboration with the C.C.R.G. in Oxford. 4. A study of 95 second primary tumors occurring in children after cure of their initial cancer is being undertaken with special attention to the effect of radiation and genetics.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2477,

OBLIGATORY COLLECTION OF DATA ON LUNG CANCER

I. Nyarady, Koranyi National Inst. for Tuberculosis & Pulmonology, Dept. of Organisation Methodology & Statistics, *1529 Budapest 124, Hungary* (D-IARC-79-245)

OBJECTIVE: Study of long-term effects of a nationwide case-finding, notification and care-system on lung cancer epidemiology.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2478,

EPIDEMIOLOGICAL STUDY OF CANCER IN THE STATE OF QUINDIO

E. Gaitan Marquez, Instituto Nacional de Cancerologia y Epidemiologia, Epidemiologia, *Calle 1 No. 9-85, Bogota, Colombia* (D-IARC-79-116)

The aim is to determine frequency and prevalence, morbidity and mortality from cancer and its distribution by age, sex and site, in a population group of about 300,000 inhabitants. All cases are followed after treatment. The programme has been running for nine years and is scheduled to last ten years. A preliminary report has been issued and the final report will be published next year.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2479,

GENETICS OF RETINOBLASTOMA

M.L. Briard, Inst. Nacional de la Sante et de la Recherche Medicale, Unite de Recherche Genetique Medicale, *149 rue de Sevres, c/o Hopital Enfants Mal, 75015 Paris, France* (D-IARC-79-189)

It is now recognized that bilateral retinoblastoma is a condition with dominant autosomal transmission and complete penetrance, but the mode of transmission of the unilateral form is not yet clear. This study aims at monitoring 600 families that have been registered through at least one proband and examining the offspring of patients during the next generation.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2480,

EPIDEMIOLOGICAL STUDY ON WORKERS EXPOSED TO CHLOROMETHYL-METHYL ETHER (CMME) AND BIS-CHLOROMETHYL ETHER (BCME)

B. Terracini, Universita degli Studi di Torino, Istituto di Anatomia e Istologia Patologica, Dept. of Pathology, *Via Santena 7, I10126 Turin, Italy* (D-IARC-79-337)

In the Montedison plant in Castellanza (Varese, Italy) CMME was used in the manufacture of ion-exchange resins during 1946-63 and it has been used in the laboratory since that time. In addition, in several areas of the plant the concurrent presence of formaldehyde and HCL (precursors of BCME) has been observed. The number of workers employed since 1946 in the plant is about 2,500. Deaths are being traced through the records of the town of birth of each worker. Mortality rates will be related to the length and sector of work in the plant and compared to those of the general population in the province of Varese.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2481,

RETROSPECTIVE STUDY OF LEUKAEMIAS, LYMPHOMAS AND OTHER HEMATOLOGICAL NEOPLASMS

E. Quiroga Micheo, Grupo Argentino Cooperativo de Estudios Epid. en Hematologia, *Las Heras 1895, 1127 Buenos Aires, Argentina* (D-IARC-79-3)

Differences in mortality rates for these neoplasms have been observed among the different immigrant groups in Argentina. In addition, it was observed that where the water had a high content of arsenic, the mortality for lymphomas was greater than elsewhere. This case control study was planned to test this hypothesis. The controls were patients seen at the same hospital with diseases other than cancer and of the same sex and age group. Other factors which are believed to be related to these diseases are being investigated: familial occurrence, residence, prenatal factors, exposure to toxic agents, animals, radiation, and previous history of different diseases.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2482,

A CASE-CONTROL STUDY OF AETIOLOGICAL FACTORS IN CANCER IN CHILDHOOD

P.L. Morosini, Assessorato San. Reg. Lombardy, *Via Pontaccio 10, Milan, Italy* (D-IARC-78-310)

A questionnaire has been developed concerning occupational history, drug exposure (mainly ascertained by asking about diseases), drinking and smoking habits of mother and father. Questions are also asked about the child and his sibling. The questionnaire has been tested and will be administered by social workers to mothers of new cases of cancer - aged 0 to 4 - and of controls matched by age, sex and place of residence. About 100 cases and 400 controls taken from the general population are envisaged.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2483,

THE EFFECT OF EXOGENOUS OESTRIOL AND ANTIOESTROGENS ON BREAST CANCER INCIDENCE

M.A. Basombrio, Academia Nacional de Medicina, Inst. de Investigaciones Haematologicas, Seccion Leucemia Experimental, *Pacheco de Melo 3081, 1425 Buenos Aires, Argentina* (D-IARC-79-2)

Previous work has shown that full-term pregnancy before 25 years of age significantly reduces the incidence of breast cancer in women. The possible mechanism underlying this observation may be that the high production of oestriol which occurs during pregnancy could block cell receptors for the more 'carcinogenic' oestrogens, oestrone and oestradiol. The observation that oestriol prevents chemically induced mammary cancer in rats (Lemon, H.M.; Cancer Res. 35: 1341, 1975) poses the question of whether exogenous oestriol given early in life may prevent mammary cancer in women. A registry of women who are at high risk of developing first or second breast cancer, consisting of first order relatives of breast cancer patients and patients with unilateral breast tumor who have been 'cured' surgically, is being set up. Using this high-risk population, it is anticipated that the time normally required for a prospective study on the occurrence of the disease as a consequence of environmental factors will be more than halved. Particular attention is paid to the effect that administration of oestriol and/or antioestrogens may exert upon breast cancer incidence. The study is being organized as an inter-hospital registry which will record data on high-risk factors, parity and oestrogen treatments.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2484,

STUDY ON THE RELATIONSHIP BETWEEN CERVICAL CANCER AND HERPES SIMPLEX VIRUS TYPE 2

V. Vonka, Inst. of Sera & Vaccines, Experimental Virology, *W. Pieck 108, Prague 10, 10103, Czechoslovakia* (D-IARC-78-118)

Herpes simplex type 2 virus is suspected to be aetiologically related to squamous carcinoma of the cervix. This suspicion is mainly based on the epidemiological similarity of the venereal spread of the virus and the occurrence of cervical cancer, and on the excess occurrence of neutralizing antibodies to the virus among women with cervical neoplasia when compared with control women. A prospective study of 12-15,000 women between the ages of 25 and 40 is undertaken to find answers to the following two questions: 1) Does herpesvirus infection precede the cervical neoplastic changes? 2) Are the virus infection and the cancer covariables of sexual promiscuity? Pelvic examination will be performed on all women at enrollment and the examination will include cervical cytology and colposcopy. Severe dysplasia, carcinoma in situ and invasive cancer will be considered as evidence of neoplastic disease. Antibodies to herpes simplex type 2 virus will be assayed initially on a random sample of the study group and on all women who develop cervical neoplasia as well as in control subjects. Data regarding sexual and reproduction-associated attributes will be obtained. The women will be re-examined at intervals of 2 and years after enrollment. The observed disease will be used to estimate the risk with past herpes simplex

type 2 infections and with various aspects of the sexual and reproduction-associated attributes.
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2485,

DIAGNOSTIC AND AETIOLOGICAL IMPLICATIONS OF MAMMOGRAPHIC CALCIFICATIONS IN BREAST DISEASE

D.V. Vakil, University of Toronto, Faculty of Medicine, Dept. of Preventive Medicine & Biostatistics, *92 College St., Toronto, Ontario, Canada* M5S 1A1 (D-IARC-79-109)

The presence of multiple punctate calcification in the breast and its association with breast carcinoma has been reported by many investigators. In the course of clinical mammography during the past several years we have detected calcifications in numerous cases of carcinoma of the breast and, in many of these, the presence of calcification on the mammogram in the absence of a palpable mass was the only sign of carcinoma. We have obtained genetic, epidemiological, pathological, and radiological information on 2,338 women who were radiographed for clinical indications of breast disease at the Toronto Western Hospital from 1968 to 1973. Biopsies or mastectomies were done for surgical or radiological suspicion of malignancy in these women. The biopsies indicated that 354 women had breast cancer, 1,713 had benign breast disease, and 272 had no apparent breast disease. We are studying the genetic, epidemiological, pathological, and radiological factors in those diagnosed as having breast cancer, those who had benign breast disease, and those without apparent breast disease. From the available pathological and radiological information on these women, we are also determining if a certain pattern of calcification correlates with (1) the presence of breast cancer, (2) the type of breast cancer, and (3) the type and degree of fibrocystic disease if carcinoma is not diagnosed pathologically.
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2486,

THE POPULATION STUDY IN GLOSTRUP OF MEN AND WOMEN BORN IN 1914

M. Schroll, Kobenhavns Amts Sygehus Glostrup, Inst of Preventive Medicine, *2600 Glostrup, Denmark* (D-IARC-79-137)

The Glostrup population study of 60 year olds in 1974 was an epidemiological investigation of a cohort delimited by age and geographical conditions, which had been investigated previously in 1964. The investigation illustrates risk factors for arteriosclerotic cardiovascular disease in a Danish population, but many variables are registered at 50 and 60 years and interrelations found. In 1974, 15 men and 10 women of the originally investigated 514 men and 461 50 year old women had died from cancer. In 1974, all cancer diagnoses and treatment given during the ten years were registered. All participants were given a thorough clinical examination including X-rays of thorax and spine and all women had a vaginal smear taken. The cohort will be followed.
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2487,

NATURAL HISTORY OF POSTMENOPAUSAL BREAST CANCER

F. De Waard, Rijskuniversiteit te Utrecht, Inst. of Social Medicine, *Bijhouwerstraat, NL-2501, Utrecht, Netherlands* (D-IARC-79-423)

Population screening for breast cancer (palpation, xeroradiography) of 20,000 women 50-64 years of age, at regular intervals (12-18 months) will enable the investigators to study factors which determine incidence and growth rates of preclinical breast cancer occurring after menopause. Particular attention will be paid to endocrine and nutritional factors. Urine is being collected for determination of 11-deoxy-17-ketosteroids and frozen for future research (prospective study). Body weight and height and skinfolds are being measured. Blood pressure is taken and data on antihypertensive drug treatment and other possible risk factors are being collected. Blood samples are being taken at the second examination.
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2488,

SYSTEMATIC DETERMINATION OF GENOTYPE OF TWINS AT BIRTH

R.M. Derom, Rijksuniversiteit te Gent, School of Medicine, Dept. of Obstetrics, *Pintelaan 135, 9000 Ghent, Belgium* (D-IARC-79-51)

Type, frequency and concordance of congenital malformation. Cancer epidemiology in monozygotic and dizygotic twins. Frequency of malignant conditions in twins which have been exposed to radiation in utero.
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2489,

RELATION OF PLEURAL THICKENING AND PLEURAL PLAQUES TO MESOTHELIOMA IN FORMER ASBESTOS WORKERS

W.J. Smither, East Ham Memorial Hospital, Chest Clinic, *Katharine Rd., London E16, England, United Kingdom* (D-IARC-79-645)

OBJECTIVE: Annual review of cohort of former asbestos workers by chest X-ray, clinical examination, lung function.
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2490,

EPIDEMIOLOGY OF MESOTHELIOMA IN DOCKYARD WORKERS IN DEVONPORT, UNITED KINGDOM

M.M. Wagner, Medical Research Council, Pneumoconiosis Unit, Dept. of Pathology, *c/o Llandough Hospital, Penarth CF6 1XW, Wales, United Kingdom* (D-IARC-79-683)

There is an annual incidence of about 10 cases of pleural mesothelioma in workers previously exposed to asbestos in Devonport dockyard. This is a prospective study relating the disease to previous exposure and to histopathological and immunological changes. It is hoped to identify any high risk groups within this population, including those who have already developed some form of asbestos related disease.
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2491,

AN INVESTIGATION INTO ORAL CANCER AND ORAL PRECANCEROUS LESIONS IN INDIAN RURAL POPULATIONS IN RELATION TO TOBACCO HABITS

F.S. Mehta, Tata Inst. of Fundamental Research, Basic Dental Research Unit, *Homi Bhabha Rd., Bombay 400005, Maharashtra, India* (D-IARC-79-269)

Oral cancer is one of the most common forms of cancer in India. There is a strong belief that such cancer may be preceded by certain white lesions in the oral cavity, which are thus termed precancerous. It is known, mostly through hospital-based studies, that oral tobacco usage habits are associated with oral cancer and precancerous conditions. The main objectives of the present study are to (1) investigate the degree of association between tobacco usage habits, oral cancer and precancerous conditions and (2) elucidate the natural history of oral precancerous conditions from clinical and histological viewpoints. The study design is prospective in nature. In a first survey in 1967-68 conducted in five districts in different parts of India, where different tobacco usage habits prevail, 50,000 individuals were interviewed about their tobacco usage habits and examined for the presence of oral precancerous conditions. Since 1969 these individuals have been followed up annually, clinically, histologically, and cytologically, for change of habits and development of oral precancerous conditions. Follow-up surveys comprising a period of 10 years have been completed and data are now being analysed.
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2492,

INVESTIGATIONS OF ORAL CANCER AND PRECANCEROUS CONDITIONS

F.S. Mehta, Tata Inst. of Fundamental Research, Basic Dental Research Unit, *Homi Bhabha Rd., Bombay 400005, Maharashtra, India* (D-IARC-79-268)

Oral cancer is the most common form of cancer in India. It is said to be frequently preceded by white lesions termed precancerous lesions. Two studies are carried out to elucidate the natural history of these oral precancerous lesions and their association with tobacco usage. About 100,00 individuals residing in Ambegaon and Junnar Taluks of Poona districts were examined for the presence of oral precancerous lesions and tobacco usage habits. The individuals with lesions and suitably matched controls are now followed up annually. About 4,000 Bombay policemen were examined in 1959 for the presence of oral precancerous lesions and tobacco usage habits. These policemen are re-examined at five-year intervals. Three follow-ups have been completed and the fourth one is now being planned.
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2493,

RELATIVE INCIDENCE OF CARCINOMA OF PENIS IN NORTHERN THAI PEOPLE IN RELATIONSHIP TO PHIMOSIS, TRAUMA, AND INFECTION, 1966-1975

W. Menakanit, Chiang Mai University, School of Medicine, Dept. of Pathology, *Hue Kaeo Rd., Chiang Mai, Thailand* (D-IARC-78-485)

The files relating to the 239 cases of microscopically diagnosed penile cancers seen during 1966-1975 are being analyzed with regard to phimosis, trauma, infection and other risk factors.
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2494,

CANCER REGISTRY COVERING MEMBERS OF SOCIAL SECURITY SYSTEM

H. Espinosa de Restrepo, Inst. de Seguridad Social, *Apartado Aereo 59-09, Medellin, Colombia* (D-IARC-79-119)

A cancer registry was initiated in the Social Security Institute in Medellin in 1972. Efforts were made to register all cases of cancer diagnosed for the first time since 1st January 1968. The objectives of this cancer registry covering a selected population are: (1) to obtain data on incidence and mortality from cancer; and (2) to undertake analytical studies to determine the relation of risk factors to specific types of cancer in groups with defined occupations and other socioeconomic characteristics. The first five years of registration showed differences for skin, larynx, and oral cancer compared to the general population. Another interesting finding was the high incidence of stomach cancer in males native to certain parts of the region (Antioquia). These findings are subjects of special studies at the present.
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2495,

RETROSPECTIVE SURVEY OF HUMAN OSTEOSARCOMA IN NORTHERN IRELAND 1954-73

J.H. Elwood, Queens University of Belfast, Dept. of Community Medicine, *Belfast, Northern Ireland, United Kingdom* (D-IARC-78-501)

There are few epidemiological studies of osteosarcoma reported to date. This survey aims at ascertaining all such cases which occurred in the population of Northern Ireland with a view to describing the survivorship of these patients. Individuals having Ewing's tumour, chondrosarcoma and other primary tumours of bone will be studied - a total of around 500 patients in all, over a twenty year period of observation. Several sources of morbidity and mortality information are being used. All living patients will be followed up and re-assessed. In addition, bone biopsies from new patients having primary malignant neoplasms of bone and from a control group not having cancer of any body site will be examined for radioactivity content.
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2496,

AETIOLOGICAL FACTORS IN SKIN CARCINOMA

C. Erkan, Ankara Oncology Hospital, Dept. of Surgery, *Imrahor Caddesi, Incesu, Ankara, Turkey* (D-IARC-79-552)

According to our statistics, skin carcinoma is the most common cancer in Turkey in both sexes: 25 percent of male cancers and 27.24 percent of female cancers. This study aims to analyse the relationship between occupation and skin carcinomas.
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2497,

THE COINCIDENCE OF TUBERCULOSIS AND LUNG CANCER

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Many epidemiological studies suggest higher incidence of bronchogenic carcinoma among people who suffered from tuberculosis of the lung in comparison with other populations. Among people treated at the sanatorium Kvetnica during 1960-1970 were 213 cases of bronchogenic carcinoma. Fifty four of these (25.3%) also harboured tuberculous lesions of the lung parenchyma. We want to go on and analyse the group of patients treated at our sanatorium during 1971-1978 from the point of view of coincidence of tuberculosis and lung cancer.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2498,

PROGNOSIS IN BRONCHIAL CARCINOMA IN A LIMITED GEOGRAPHICAL AREA IN FINLAND

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The true or overall prognosis quoad vitam of patients with bronchial carcinoma is difficult to assess in clinical materials, these usually being selected in one way or another. In this study, all cases of bronchial carcinoma from 1968 to 1971 have been collected from a limited geographical area. The patients are being followed up to determine the prognosis and to see which factors are associated with a good, and which with a poor prognosis. Special attention has been paid to the histopathology of the tumours which have been classified as suggested by a WHO committee. The study is prospective and the number of patients is about 441. Factors that will be analyzed, among others, include symptoms, smoking habits, previous radiological findings before diagnosis, site of tumour, findings at bronchoscopy and mediastinoscopy, and various biochemical characteristics. The TNM classification (as suggesed in 1966) will be used.

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2.2499,

ENVIRONMENTAL AND OCCUPATIONAL FACTORS AND DISTRIBUTION OF LUNG CANCER AND BRONCHITIS IN UMBRIA

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Umbria is one of the central regions of Italy. Some areas of this region are very different from others with respect to economic and social development, kinds of industries, density of population and climate. These differences are especially marked between the two biggest cities of the region, Perugia and Terni. Preliminary studies have shown that mortality from lung cancer and from bronchitis is higher in Terni than in Perugia. Research is in progress on atmospheric pollution in these towns which seems higher in Terni than in Perugia. For this reason it is proposed to study retrospectively the mortality and the morbidity from lung cancer and bronchitis in the two cities in relation to environment and occupation.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2500,

THE CLINICAL FEATURES OF LUNG CANCER IN HIGH AND LOW RISK GROUPS

D.J. Ashley, Morriston Hospital, Pathology Laboratory, *Swansea SA6 6NL, Wales, United Kingdom* (D-IARC-78-636)

Variations in histological type, respectability and prognosis in lung cancer in urban and rural individuals; smokers and non-smokers and men and women are studied.

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2.2501,

DISTRIBUTION OF SITE-SPECIFIC CANCER MORTALITY IN AUSTRALIA

N.D. McGlashan, University of Tasmania, Dept. of Geography, *P.O. Box 252C, Hobart, Tasmania 7001, Australia* (D-IARC-79-15)

The objective of the study is to utilize death certification to define stochastic and geographical internal variations of cancer mortality within Austrialia. A particular feature is the use of probability testing to assess significantly high and low incidences by area. Hopefully this will be followed by local inquiry towards explanation.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2502,

EPIDEMIOLOGY OF LUNG CANCER IN ANTIMONY PROCESS WORKERS

R.I. McCallum, University of Newcastle Upon Tyne, Dept. of Occupational Health & Hygiene, *6 Kensington Terr., Newcastle Upon Tyne NE1 7RU, United Kingdom* (D-IARC-79-662)

This is a mortality study of men exposed to inorganic antimony compounds during the processing of the imported ore to determine whether or not there is an excess of deaths from lung cancer, and the influence on this of smoking habits and other factors in the environment, including exposure to arsenic.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2503,

MESOTHELIOMA REGISTER

H.T. Planteydt, Pathologisch Anatomisch Laboratorium, *Noordpoortplein 2, Middelburg, Netherlands* (D-IARC-79-413)

In order to obtain information about the frequency of mesothelioma of pleura, peritoneum and pericardium, from 1969 onwards, all pathologists in the Netherlands were asked to cooperate in the registration of all histologically verified cases. These results are compared with the data of the Central Bureau of Statistics. In many cases slides and/or tissues were available: in a limited number of cases, electron microscopical investigations of lung tissue were done for asbestos. The occupational history was investigated extensively. Many cases are reviewed by a mesothelioma committee (Planteydet, de Jagar, van der Schoot). The geographical distribution, relation to occupational history and exposure to asbestos are recorded in several ways. From 1976 onwards registration, together with the other investigations, follows the same lines as the mesothelioma register in the United Kingdom. Since 1976 collaboration with other mesothelioma registers in the EEC has been established.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2504,

MORTALITY AND MORBIDITY SURVEY OF THE OCCUPATIONAL RISK OF DIMETHYLSULFATE (AS A POTENTIALLY CARCINOGENIC SUBSTANCE)

A.M. Thiess, Badische Analin & Soda Fabrik Ag, Werksaerztliche Abteilung, *Brunckstrasse 56, 6700 Ludwigshafen, Federal Republic of Germany* (D-IARC-79-222)

The study is to assess cancer incidence in occupational risk groups as suggested by carcinogenic effects of dimethylsulfate observed in animal experiments. The chemical workers over-exposed to the substance are followed up for mortality experience (cause of death) and for morbidity (as far as data are available). The follow-up includes careful tracing of retired and resigned persons.

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2.2505,

MORTALITY AND MORBIDITY SURVEY OF THE OCCUPATIONAL RISK OF DIMETHYLCARBAMAZINE-CHLORIDE (ABBREV)

A.M. Thiess, Badische Analin & Soda Fabrik Ag, Werksaerztliche Abteilung, *Brunckstrasse 56, 6700 Ludwigshafen, Federal Republic of Germany* (D-IARC-79-221)

DIMCA (dimethylcarbamylchloride) ((CH3)2 NCOCl) has been described as a multipotential carcinogen to ICR/Ha Swiss mice by application to skin and subcutis. After one year on test, a 68% incidence of tumours (46% papillomas and 22% carcinomas) resulted from application and 72% incidence of local sarcomas by subcutaneous injection. Another localization was lung tissue, though with comparatively low incidences (4-8%, compared to 0% in untreated controls). DIMCA is considered a directly acting alkylating carcinogen. The study is designed to assess the total continuously exposed work force in the production of DIMCA in order to investigate cancer incidence as suggested by carcinogenic effects in animal experiments.

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2.2506,

MORTALITY AND MORBIDITY SURVEY INTO THE OCCUPATIONAL RISK OF NICKEL FROM CHEMICAL PRODUCTION IN LUDWIGSHAFEN, GERMANY (ABBREV)

A.M. Thiess, Badische Analin & Soda Fabrik Ag, Werksaerztliche Abteilung, *Brunckstrasse 56, 6700 Ludwigshafen, Federal Republic of Germany* (D-IARC-79-223)

The study is to assess cancer incidence in occupational risk groups as suggested by carcinogenic effects of dimethylsulfate observed in animal experiments. The chemical workers exposed to the substance are followed up for mortality experience (cause of death) and for morbidity (as far as data are available). The follow-up includes careful tracing of persons who either retired or resigned.

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2.2507,

SENEGALESE CANCER STATISTICS

A. Autret, Universite de Dakar, School of Medicine, *c/o Centre Hospitalier De Fann, Dakar, Senegal* (D-IARC-78-421)

Analysis of hospital statistics, including neurosurgical and necropsy material, among the Black Senegalese.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2508,

CANCER INCIDENCE AND EXPOSURE TO NATURAL IRRADIATION

L.M. Masse, Ecole Nationale de la Sante Publique, Dept. of Statistique, *Ave. du Prof. Leon Bernard, 35043 Rennes Cedex, France* (D-IARC-79-192)

Incidence of cancer by village according to the level of natural irradiation.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2509,

ANALYSIS OF CLINICAL, ANATOMICAL AND ENVIRONMENTAL DATA FOR BURKITT'S DISEASE AND PRIMARY LIVER CANCER

R. Loubiere, Universite dAbidjan, Faculte de Medecine, Danatomie Pathologigue Lab, *B.P.V. 166, Abidjan, Ivory Coast* (D-IARC-79-339)

Collection of clinical, anatomical, biological, biochemical, immunological, geographical, etc. data on Burkitt's disease and primary liver cancer.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2510,

AETIOLOGY OF BREAST CANCER AMONG ISHAN WOMEN

C.G. Okojie, Zuma Memorial Hospital, *Irrua, Bendel State, Nigeria* (D-IARC-79-437)

Previous work has shown that breast cancer is relatively rare among Ishan women with their prolonged breast feeding, multiparity, early marriage, etc. Are these factors of any aetiological significance?

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2.2511,

CASE-CONTROL STUDY ON THE ASSOCIATION OF HERPESVIRUS WITH CERVICAL CANCER IN HUNGARY

A.S. Pacsa, Pecsi Orvostudomanyi Egyetem, Microbiology Inst., Virus Laboratory, *Szigeti Utca 12, 7643 Pecs, Hungary* (D-IARC-79-252)

The project aims to establish herpes simplex virus-specific and cytomegalovirus-specific antigen positivity in cervical cells of women with and without cervical dysplasia. Selected antigen negative and positive cases will be followed up for years registering incidence of dysplasias and tumours in both groups. By this prospective study it is intended to identify whether anaplastic changes of the cervix uteri originate

from antigen-carrying cells or not. Cervical imprints and biopsy samples are taken and coded at the Department of Oncology before sending them to the Virus Laboratory for detection of viral antigens by indirect immunofluorescence technique. It is estimated that a total of 1,000 women will be followed up.
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2512,

LIVER TUMORS IN CHILDREN AND ADULTS

L.M. Pollice, Universita degli Studi di Bari, Fac. di Medicina, Pathological Anatomy Institute, *70124 Bari, Italy* (D-IARC-79-316)

Following a study on primary hepatic tumors in infancy and childhood, a general study on hepatic tumors is under way.
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2.2513,

EPIDEMIOLOGICAL AND CLINICAL ASPECTS OF STOMACH CANCER

T. Popiela, Akademia Medyczna W Krakowie, Surgical Clinic, Dept. of Gastroenterology, *Ul. Pradnicka 37, 31202 Cracow, Poland* (D-IARC-79-455)

The aim of the studies is to set up the criteria for the early detection of stomach cancer, to evaluate the effectiveness of different treatment methods, to learn the natural history of the disease in the population. The project will cover epidemiological as well as clinical aspects. An epidemiological study will be made in an industrial population of about 10,000 workers. On the basis of a screening questionnaire and endoscopy the risk-group will be followed-up by a yearly health examination. In addition a case-control study will be conducted on hospital patients. A mortality study on stomach cancer in different subgroups of a population in the Kracow region has begun.
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2.2514,

DISEASES ASSOCIATED WITH HIGH CONSUMPTION OF STOUT

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A suggested association between the high consumption of beer and an increase in diseases such as cancer of the colon and rectum was investigated among blue-collar workers in a Dublin brewery, who consumed more than an average amount of beer, usually in the form of stout. A study on worker mortality between 1954 and 1973 showed that they had as good an expectation of life as all Dublin males with no increased risk of disease from cancer of the oesophagus, pharynx, liver or of cirrhosis of the liver, accident or suicide, conditions normally associated with the high consumption of alcohol. The workers had a significantly increased risk of death from cancer of the rectum and also from diabetes mellitus. Further studies will be undertaken to find out if those who develop cancer of the rectum or cancer of the colon have consumed more beer during their lifetime than controls who will be men admitted to hospital in the same age-group as the cancer patients. This study will be undertaken in Dublin and in London.
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2515,

REGIONAL DIFFERENCES OF AND TIME TRENDS IN CANCER MORTALITY IN POLAND

J. Staszewski, Inst. of Oncology, Cancer Epidemiology Unit, *Armii Czerwonej 15, 44100 Gliwice, Poland* (D-IARC-79-451)

The aim of the study is to uncover and describe patterns in the geography and dynamics of cancer in Poland. This is necessary for studies of the suspected aetiologic factors, as well as for monitoring the changes in cancer frequency. Cancer mortality data by primary site, age, sex, and residence are being collected, starting with calendar year 1970. Age-specific and age-adjusted rates have been computed and analyzed for the total country, for urban and rural areas, and for each of the 22 districts for the period 1970-1974.
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2516,

EPIDEMIOLOGY OF LEUKEMIA AND APLASTIC ANEMIA

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Japanese immigrants to Hawaii and their descendants have experienced a much higher mortality rate from leukemia and lower mortality from aplastic anemia than indigenous Japanese, reaching a mortality level similar to the Caucasians. There is no statistically significant difference in the sum of the age-adjusted mortality from all bone marrow diseases (ICD 280-289, ICD 205-209) except for lymphatic leukemia between Japanese Americans and indigenous Japanese. Genetico-epidemiological study has shown that consanguinity among aplastic anemia cases and leukemia cases was significantly more frequent than in the general population. The above data suggest that not only environmental factors but also host factors affect the incidence of these diseases.
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2517,

CASE-CONTROL STUDY OF ETIOLOGICAL FACTORS IN CANCER AND OTHER TUMORS OF THE BREAST

J. Staszewski, Inst. of Oncology, Cancer Epidemiology Unit, *Armii Czerwonej 15, 44100 Gliwice, Poland* (D-IARC-79-450)

This is a study of the environmental and host factors in the development of breast cancer and also of benign breast tumors, such as chronic cystic disease and fibroadenoma in a population in which the frequency of breast cancer is lower than in other western countries but appears to be increasing substantially. Both cases and controls consist of the inpatients of the Oncological Institute in Gliwice, residents of Silesia, interviewed since late 1965. Some of the results have been published. They relate to age at menarche (JNCI 47:935-40, 1971), childbearing and breast feeding (Pol. Tyg. Lek. 29: 1329-32, 1974), past and co-existent diseases (Nowotwory 26:201-4, 1976), and body build (Prev. Med. 6:410-15, 1977).
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2.2518,

CANCER MORTALITY IN UNITED STATES CARBON BLACK WORKERS

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The cancer mortality experience of employees of four companies engaged in the production and distribution of carbon black in the United States was examined in this retrospective cohort study. All male employees with 12 or more months of service between 1935 and 1974 were study participants. The study group consisted of employees exposed to carbon black, i.e., employed on-site at a carbon black plant; the comparison group was composed of men employed in company operations other than carbon black production. The companies supplied mortality data on active and retired employees from their life insurance files. They also supplied annual employee censuses by age and years of service from which man-years at risk were calculated in 5-year age groups for quinquennial periods from the beginning of the study to employee withdrawal or termination of the study. Assuming an underlying poison distribution, the cancer mortality of the exposed (carbon black) group and the unexposed (comparison) group was compared with the expected mortality based on the sex-, age-specific cancer mortality rates of the male populations of the States in which the carbon black plants were located. Mortality due to all malignant neoplasms (I.C.D. 140-209) was lower than expectation in exposed workers but not significantly so. In unexposed workers, observed deaths due to all malignant neoplasms were significantly lower than expected (P less than 0.05). Deaths due to malignant neoplasms of the digestive organs (I.C.D. 150-159) and of the respiratory system (I.C.D. 160-163) did not exceed expectation in either group. No trend of increased mortality with increasing years of service (exposure) was evident in exposed workers (chi-square equals 0.66, d.f. equals 1; 0.25 less than p less than 0.50). The results of this study do not support an increased risk of death due to malignant neoplasms in carbon black workers. Analysis continues.
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2519,

MALIGNANT NEOPLASMS AND PREVIOUS DISEASES

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Clinical studies available show that patients with malignant neoplasms had fewer diseases in their history than other patients. All these studies are based only on the statements of the patients themselves. The study conducted is based on official insurance data going back up to ten years and more. The study group is composed of patients, all members of the German Health Insurance referred to a special medical service (Vertrauensaerzte). For each case with a malignant neoplasm, irrespective of site and type, two controls are selected. They must have the same sex, the same age (plus or minus two years), the same insurance (that will mean in general the same socio-economic structure), and no malignancy reported. Both types of anamnestic data are used, those given from the patient's memory and those taken from the insurance records. It was intended to have 400 cases and 2 times 400 controls. For external reasons the study had to be finished having collected 352 cases, each with two controls. The final analysis is under progress.
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2.2520,

CANCER IN THE SINDHI-SPEAKING POPULATION

D.J. Jussawalla, Tata Memorial Hospital, Dept. of Surgery & Chemotherapy, *Dr. Ernest Borges Marg, Parel, Bombay 400012, Maharashtra, India* (D-IARC-79-266)

Greater Bombay, population 5.97 million (1971 census), has various groups whose mother tongues and places of origin are different. One such group are the Sindhis, identified on the basis of their mother tongue, who migrated en masse after the creation of Pakistan from the province of Sindh. The 1961 census of India enumerated approximately 95,000 Sindhi-speaking people in Bombay city. Sindhis are a comparatively fair-complexioned, hard-working, business-oriented people who differ widely in their habits and social customs from other groups in Bombay. The specific aim of this investigation is to study cancer frequency in this Sindhi-speaking population. Efforts are being made to compare the Sindhi-speaking groups with the other Marathi- and Gujarati-speaking peoples.
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2521,

EPIDEMIOLOGICAL STUDY OF ACUTE LEUKEMIA IN ADULTS AND CHILDREN (ABBREV)

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In a retrospective study, an association between cases of acute leukemia in some adults and between other cases of leukemia in childhood or in other adults, has come to light within the suburban community of North and West Vancouver, there being a variable and sometimes long latent period between cases. A prospective questionnaire study of all newly diagnosed cases of acute leukemia within the above suburban community is being carried out, attempting to define a relationship between cases as to time, place and person. This is considered under the following headings: date of diagnosis, age, sex, duration of symptomatology, family history of malignancy, contact with other cases of lymphoreticular malignancy in family or friends, addresses and change of address (domestic and employment) within the above community, exposure to domestic animals. It is proposed to compare these findings with age matched controls in non-leukemic cases admitted to Lions Gate Hospital.
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2522,

CARCINOEMBRYONIC ANTIGEN IN AN UNSELECTED POPULATION

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The adult population of Busselton, which is relatively closed and stable, has since 1966 been the subject of ongoing surveys, marked by accession rates in the order of 90 percent. The surveys entail health questionnaires, medical examinations and numerous biochemical and other health indices such as electrocardiograms. In particular, the occurrence of cancer and changes in smoking habits are under close scrutiny. The immunochemical method for detection of carcinoembryonic antigen (CEA) in serum is a microradioimmunoassay, appropriate for this study, in that it requires only 0.25 ml of whole serum. The 'cut-off' level for positivity was five ng per ml. The first phase consisted of CEA estimations on the 1969 sample. The total tested was 2,372. There were 73 positive tests, about 3 percent of the population, and cancer has occurred in nine (12 percent) of these 73 subjects. Cigarette smoking was found to be strongly associated with CEA in blood, and could have accounted for raised CEA levels in about one half of those with CEA but no demonstrable cancer. The population was bled again in 1975, the total tested being 3,120 adults, and is being resurveyed for the prevalence of CEA. Under new assay conditions, the 'cut-off' level for a raised CEA in the present assay was taken as 15 ng per ml for comparability with data from the 1969 survey. The data are still under analysis, but two negative aspects in regard to population screening for CEA are already evident: (1) there is a very low correlation among subjects between raised levels of CEA in 1969 and raised levels in 1975, and (2) there is little if any association of raised CEA levels with subsequent development of cancer.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2523,

THE EPIDEMIOLOGY OF LEUKEMIA IN GREATER BOMBAY

D.J. Jussawalla, Tata Memorial Hospital, Surgery & Chemotherapy, *Dr. Ernest Borges Marg, Parel, Bombay 400012, Maharashtra, India* (D-IARC-78-253)

Nothing is known regarding the epidemiology of various forms of leukemia, particularly in children and adolescents, in India. In the Bombay registry, between 1964 and 1972, 1,064 cases of leukemia were registered. 204 (ICD, 8th revision) Lymphatic Leukemia 310 cases; 205 Myeloid Leukemia 469 cases; 206 Monocytic Leukemia 23 cases; 207 Other and Unspecified Leukemia 262 cases; Total 1,064 cases. The aim of this study is to determine: 1. Incidence, age, and sex distribution of various types of leukemias by religion and geographic area at the city ward level; 2. Statistics of mortality will be examined in the light of reported variations in incidence and demographic variables; 3. The address of each leukemia patient as recorded in detail will be plotted on an area map of the city for a study of time-space clustering.

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2.2524,

THE EPIDEMIOLOGY OF LUNG CANCER (A RETROSPECTIVE STUDY)

D.J. Jussawalla, Tata Memorial Hospital, Dept. of Surgery & Chemotherapy, *Dr. Ernest Borges Marg, Parel, Bombay 400012, Maharashtra, India* (D-IARC-79-265)

In India, tobacco is widely used for chewing and smoking, and the incidence rates of lung cancer, both in men and women in Bombay, are lower than in Western countries in spite of the fact that smoking of the bidi and cigarette is steadily increasing. However, in a retrospective study, Notani and Sanghvi (1974) observed that the incidence of lung cancer is higher among bidi smokers than among cigarette smokers. One thousand nine hundred eight cases of cancer involving the trachea, bronchus and lung have been recorded at the Bombay Cancer Registry between 1964 and 1972. All the available patients will be interviewed to obtain detailed information on their smoking habits, and data on education and socioeconomic status will be collected on a detailed proforma. These cases will be closely matched with the healthy resident population of Greater Bombay. The matching parameters will be age, sex, religion and socioeconomic status. Appropriate relative risks in tobacco users and non-users, in relation to the disease pattern, will be worked out by the statistical techniques as suggested by Cornfield (1951), and Mantel and Haenszel (1959). The mortality of lung cancer in the Greater Bombay population will be examined in the light of reported variation in incidence, for demographic variables such as age, sex, etc. For this purpose, mortality statistics have been obtained from the Section on Vital Statistics of the Municipal Corporation of Bombay.

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2.2525,

CANCER MORBIDITY TRENDS, GREATER BOMBAY 1964-72, TIME FACTORS

D.J. Jussawalla, Tata Memorial Hospital, Dept. of Surgery & Chemotherapy, *Dr. Ernest Borges Marg, Parel, Bombay 400012, Maharashtra, India* (D-IARC-79-262)

Cancer morbidity data adequate to measure changes in disease frequency over a period of several years or decades have to date been limited to certain geographic areas, such as Connecticut, New York and Denmark. 1. The specific aim of this investigation is to determine age-and sex-specific incidence of various forms of cancer from 1964 to 1972; 2. Trend by sex and religion; 3. Comparison of trends in incidence rates with those reported from other cancer registries.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2526,

EPIDEMIOLOGIC STUDY OF BREAST CANCER

D.J. Jussawalla, Tata Memorial Hospital, Surgery and Chemotherapy, *Dr. Ernest Borges Marg, Parel, Bombay 400012, Maharashtra, India* (D-IARC-78-249)

The incidence rate of breast cancer is low in India, but certain social groups (religious communities) are observed to be high risk groups for breast cancer. In this study, attempt is made to analyze the incidence rate of breast cancer in certain communities like Parsis, Hindus from Sind and others. By analyzing both case-control (hospital) differences and comparing them with population rates, the role of high risk factors like familial history and menstrual-marital-pregnancy history would be studied. Intercommunity comparison of these risk factors would be attempted. Detailed information on about 1,500 breast cancer cases has been obtained so far in this study. Appropriate controls are chosen from among the hospital patients and include those women coming to the hospital who have no evidence of any disease and also those with minor inflammatory diseases, except in the breast. Long-term follow-up studies have been set up for selected benign lesions of the breast to understand the malignant potential of such lesions.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2527,

EPIDEMIOLOGICAL STUDY OF INCIDENCE, MORBIDITY & NATURAL HISTORY OF SOME TYPES OF CANCER, BY RELIGIOUS GROUP, IN THE BOMBAY AREA POPULATION

D.J. Jussawalla, Tata Memorial Hospital, Dept. of Surgery & Chemotherapy, *Dr. Ernest Borges Marg, Parel, Bombay 400012, Maharashtra, India* (D-IARC-79-263)

A study carried out by Jussawalla and others (1970) examined the differences observed in the site incidence of cancer between the Parsi community and the total population of Greater Bombay. This investigation revealed disease differences of appreciable epidemiologic interest. Thus, cancers of the buccal cavity, pharynx, larynx, oesophagus and cervix uteri were less common in the Parsis. On the other hand, the Parsi rates were higher at sites such as the female breast, body of uterus, ovary, prostate and skin and for all leukemias. The purpose of this study is to determine the incidence of various types of cancer by religion. The numerical distribution of religions in Bombay is the following: Hindus 4,110,746 (68.85%), Muslims 843,358 (14.13%), Christians 375,265 (6.29%), Parsis 64,667 (1.08%), Jains 244,721 (4.10%), Buddhists 284,303 (4.76%), and Sikhs 42,862 (0.71%) out of a total population of 6 million persons. Statistical analysis of the recorded data on cancer will be carried out as follows: (1) Crude and age-specific rates by sex, year and primary sites in various religious groups; (2) Age-adjusted rates, as suggested by Doll and others, by sex and primary sites; (3) Comparison of incidence rates for religious groups in Greater Bombay with that of other races in the United States and other countries.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2528,

PROSPECTIVE STUDIES ON CANCER EPIDEMIOLOGY BASED ON CENSUS POPULATION IN JAPAN

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To study the health consequences of selected risk factors including cigarette smoking, alcohol drinking, diet (rice, fish, meat, milk, green-yellow vegetables, soybean paste soup, pickles, hot tea), occupation, marital status, number of children, age at first marriage, length of breast feeding, etc., a prospective population study has been in progress in 29 Health Center Districts in 6 prefectures in Japan since the autumn of 1965. A total of 265,118 adults, 122,261 males and 142,857 females aged 40 years and above, 91-99 percent of the census population, were interviewed and followed by establishing a record linkage system between the risk factor records, a current residence list obtained by special annual census, and death certificates. The extent of change in each risk factor was checked in 1971 and 1976. For 35,345 deaths, including 9,324 deaths from cancer, which occurred during twelve years of follow-up, crude age-adjusted and age-specific rates (for both age at enrollment and attained age) for each cause of death were calculated according to the risk factors listed above. In addition, matched pair and matched group analysis was conducted. A multifactor-multidisease risk matrix was completed and high and low risk groups for cancer were identified. For instance, the risk enhancing effect of cigarette smoking and risk lowering effect of daily intake of green-yellow vegetables was observed for lung cancer. Study is still in progress (currently in 14th year of follow-up).

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

2.2529,

EPIDEMIOLOGY OF MALE GENITAL TRACT CANCER

D.J. Jussawalla, Tata Memorial Hospital, Dept. of Surgery & Chemotherapy, *Dr. Ernest Borges Marg, Parel, Bombay 400012, Maharashtra, India* (D-IARC-79-264)

A series of 1,003 male genital cancers (prostate 514, testis 182, penis 307) were recorded in Greater Bombay during 1964-72. The specific aims of the investigation are: 1. To study the natural history and epidemiology of these tumors; 2. to determine the morbidity and mortality from such tumors; 3. to study the practice of circumcision in relation to penile cancer in different religious groups; and 4. to determine whether any reasons can be ascertained for the low incidence of male genital cancer in Greater Bombay.

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2.2530,

ETIOLOGY OF CANCER

R. Doll, University of Oxford, Dept. of the Regius Professor of Medicine, *S. Parks Rd., Oxford OX2 6HE, England, United Kingdom* (D-IARC-79-671)

Environmental and hereditary causes of cancers of different organs; effects of smoking, ionizing radiations, diet, drugs, cosmetics, infections, immunological defects, and occupation.

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2.2531,

INCREASING RISK FOR BREAST CANCER - ASSOCIATION WITH FAMILIAL, GENETIC AND REPRODUCTIVE FACTORS

N.E. Day, Centre International de Recherche sur le Cancer, Epidemiology & Biostatistics Unit, *150 Cours Albert Thomas, 69372 Lyon Cedex 2, France* (D-IARC-79-173)

OBJECTIVE: To determine whether there are hereditary characteristics which might be of use in the identification of women having a high risk of developing breast cancer. The unique facilities available in

Iceland for the study will be utilized. These include (1) a nationwide cancer registry functioning since 1954 (about 800 cases); all cases of breast cancer diagnosed between 1910 and the start of the cancer registry are on file, (2) a computer-based National Roster since 1952, (3) a family linkage file linking every individual alive after 1910 to his parents and children, and (4) a cervical screening clinic which has seen more than 80% of the female population in Iceland born between 1905 and 1945. Information is collected on reproductive history and age at menarche, to be used as control data. If an excess risk is found, an effort will be made to (1) correlate familial risk with recognized epidemiological risk factors for breast cancer, (2) quantify the risk attached to different types of relationships, and (3) for each class of relative, examine the association, if any, between the degree of risk and the age of the proband case and age of appearance of cancer among these relatives.

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2.2532,

COMPARISON OF THE EFFECTS OF PLAIN AND FILTER CIGARETTE SMOKING UPON THE INCIDENCE OF LUNG CANCER

J. Rimington, North Western Regional Health Authority, Greater Manchester Mobile Chest X Ray Service, *Shaw Heath, c/o St. Thomas Hosp., Stockport SK3 8BL, England, United Kingdom* (D-IARC-79-685)

OBJECTIVES: To: (1) determine smoking habits in relation to the amount and type of cigarettes smoked (filter or plain); (2) ascertain the lung cancer incidence over a period of at least four of five years; and (3) relate lung cancer incidence to type of cigarette smoked.

METHODS: Large numbers of male mass radiography volunteers, at least 40 years of age, have been questioned and answers recorded on special forms. Subsequent X-ray examinations have excluded men with existing lung cancers. Yearly follow-up will be accomplished by comparing notifications of lung cancer cases of the Manchester Regional Cancer Registration Bureau with these special forms. Most deaths from lung cancer are registered even if the cases have not been registered before death. Information on smoking habits has been computer processed.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

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Ziskind, D. 2.0122
Ziskind, M.M. 2.0795*
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Zizkind, R.A. 2.2248*
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Zuckerman, B. 2.0283
Zumoff, B. 2.0099*
Zumwalde, R. 2.0349
Zung, W.W. 2.1414*
Zurhausen, H. 2.2386
ZuRhein, G.M. 2.1195
Zyngier, S.B. 2.1564

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PERFORMING ORGANIZATION INDEX

Aarhus Universitet, Aarhus, Denmark
2.2401

Abcor Inc., Wilmington, Massachusetts
2.0120

Academia de Stiinte Medicale, Bucharest, Romania
2.1982, 2.1983, 2.1987

Academia Nacional de Medicina, Buenos Aires, Argentina
2.2483

Agricultural School, Husi, Romania
2.1979

Ahmadu Bello University, Zaria, Nigeria
2.1999, 2.2433

Aichi Cancer Center Research Inst., Nagoya, Japan
2.1631, 2.1633, 2.2015, 2.2016, 2.2017, 2.2018

Akademia Medyczna, Poznan, Poland
2.1475, 2.1990

Akademia Medyczna W Krakowie, Cracow, Poland
2.0411, 2.2357, 2.2437, 2.2513

Akademia Medyczna w Warszawie, Warsaw, Poland
2.1652

Akademia Medyczna W Warszawie, Warsaw, Poland
2.2449

Albright & Wilson Ltd., Oldbury, England, United Kingdom
2.1540

All India Inst. of Medical Sciences, New Delhi, India
2.0437, 2.1910

American Academy of Pediatrics, Evanston, Illinois
2.0539

American Cancer Society Inc., New York, New York
2.2070, 2.2115, 2.2272

American Health Foundation Inc., New York, New York
2.0002, 2.0537, 2.0558, 2.0612, 2.0730, 2.0765, 2.0767, 2.0768, 2.1783, 2.1784, 2.2294, 2.2296, 2.2297

American Health Foundation Inc., Valhalla, New York
2.0584, 2.2188, 2.2227, 2.2295, 2.2299

American Inst. of Nutrition, Washington, District of Columbia
2.1347

American Petroleum Inst., Washington, District of Columbia
2.2211, 2.2212

American University of Beirut, Beirut, Lebanon
2.2379

Andhra Medical College, Visakhapatnam, India
2.1904

Ankara Oncology Hospital, Ankara, Turkey
2.1495, 2.2443, 2.2453, 2.2496

Anti Cancer Council of Victoria, East Melbourne, Australia
2.0014, 2.1555, 2.1842

Anzon Ltd., Wallsend, England, United Kingdom
2.1706

Argonne National Lab., Argonne, Illinois
2.1712, 2.2056, 2.2113, 2.2124

Arignar Anna Memorial Cancer Inst., Kanchipuram, India
2.1610, 2.1911

Arizona State University, Tempe, Arizona
2.2326

Armand Frappier Institut, Laval des Rapides, Quebec, Canada
2.0058, 2.1843, 2.1886

Arthur D. Little Inc., Cambridge, Massachusetts
2.0117, 2.1333, 2.1334

Assessorato San. Reg. Lombardy, Milan, Italy
2.2482

Auckland University, Auckland, New Zealand
2.1450, 2.2001

Aurora Research Corp., Washington, District of Columbia
2.0294

Australian Dept. of Veterans Affairs, Adelaide, Australia
2.2345

Badische Analin & Soda Fabrik Ag, Ludwigshafen, Federal Republic of Germany
2.1547, 2.1880, 2.1881, 2.2504, 2.2505, 2.2506

Bangladesh Cancer Epidemiology Research Program, Dacca, Bangladesh
2.0016, 2.0017, 2.0018, 2.1818, 2.1819, 2.1820, 2.1821, 2.2361

Bangur Inst. of Neurology, Calcutta, India
2.0439

Battelle Memorial Inst., Richland, Washington
2.1111

Baylor College of Medicine, Houston, Texas
2.0577, 2.0632, 2.0821, 2.1027, 2.2105, 2.2151, 2.2216, 2.2218

Belfast City Hospital, Belfast, Northern Ireland, United Kingdom
2.1682, 2.2467

Beth Israel Hospital, Boston, Massachusetts
2.0493, 2.1212

Beth Israel Medical Center, New York, New York
2.1782

Boliden Aktiebolag, Helsingborg, Sweden
2.1522

Boston City Hospital, Boston, Massachusetts
2.0283

Boston University, Boston, Massachusetts
2.0064, 2.0422, 2.0579, 2.0720, 2.0777, 2.0800, 2.0828, 2.0855, 2.1135, 2.1147, 2.2192

Bridgend General Hospital, Bridgend, Wales, United Kingdom
2.2424

Brigham Young University, Provo, Utah
2.0917

British Aircraft Corp., Bristol, England, United Kingdom
2.1684

Brookhaven National Lab., Upton, New York
2.2298

Bursa University, Bursa, Turkey
2.1925

C.R. Drew Postgraduate Medical School, Los Angeles, California
2.0868

Cairo University, Cairo, Egypt
2.2405

Calgary Cancer Clinic, Calgary, Alberta, Canada
2.1822

California Inst. of Technology, Pasadena, California
2.1247

Canadian Dept. of National Health & Welfare, Edmonton, Alberta, Canada
2.1565

Canadian Dept. of National Health & Welfare, Ottawa, Ontario, Canada
2.1568, 2.1846, 2.1853, 2.2371, 2.2372, 2.2426

Cancer Control Agency of British Columbia, Vancouver, British Columbia, Canada
2.1571

Cancer Council of Western Australia, Perth, Australia
2.2471, 2.2473

Cancer Hospital, Indore, India
2.1609

Cancer Inst. Hospital, Tokyo, Japan
2.1951

Cancer Research Inst., Bombay, India
2.1607, 2.2446, 2.2466

Cardiothoracic Inst., London, England, United Kingdom
2.1525

Case Western Reserve University, Cleveland, Ohio
2.0284, 2.0452, 2.0467, 2.0475, 2.0484, 2.0522, 2.2306

Cedars Sinai Medical Center, Los Angeles, California
2.0689

Center for Adult Diseases, Osaka, Japan
2.1635, 2.1637, 2.2020, 2.2021

Central Cancer Registry, Sydney, Australia
2.1802

Central County Hospital Vest Agder, Kristiansand, Norway
2.1998

Central Middlesex Hospital, London, England, United Kingdom
2.1971

Central Public Health Lab., London, England, United Kingdom
2.0022, 2.2417

Centre Anticancereux du Marocco, Casablanca, Morocco
2.1643

Centre Claudius Regaud, Toulouse, France
2.2397

Centre Hospitalier Intercommunal de Creteil, Creteil, France
2.1855

Centre Hospitalo Universitaire Mustapha, Algiers, Algeria
2.1552

Centre Hospitalo Universitaire, Caen, France
2.1856

Centre International de Recherche sur le Cancer, Lyon, France
2.0621, 2.0723, 2.0746, 2.1584, 2.1585, 2.1590, 2.1591, 2.1867, 2.1869, 2.1870, 2.1871, 2.1872, 2.1874, 2.2338, 2.2531

Centre National de la Recherche Scientifique, Paris, France
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Centre Regional Francois Baclesse, Caen, France
2.1857

Chaim Sheba Medical Center, Ramat Gan, Israel
2.0726, 2.1931, 2.1932, 2.1936

Charing Cross Hospital, London, England, United Kingdom
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Charity Hospital of Louisiana, New Orleans, Louisiana
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Chiang Mai University, Chiang Mai, Thailand
2.1524, 2.2493

Chiba Cancer Center Research Inst., Chiba, Japan
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Childrens Hospital, Columbus, Ohio
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Childrens Hospital Medical Center, Boston, Massachusetts
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Childrens Hospital of Philadelphia, Philadelphia, Pennsylvania
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Childrens Hospital of Pittsburgh, Pittsburgh, Pennsylvania
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Childrens Orthopedic Hospital & Medical Center, Seattle, Washington
2.0544, 2.0614

Chittaranjan National Cancer Research Centre, Calcutta, India
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Christ Hospital, Cincinnati, Ohio
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Christchurch Hospital, Christchurch, New Zealand
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Christian Albrechts Universitat, Lubeck, Federal Republic of Germany
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Christie Hospital & Holt Radium Inst., Manchester, England, United Kingdom
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Chulalongkorn University, Bangkok, Thailand
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City of Hope Medical Center, Duarte, California
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George Washington University, Bethesda, Maryland
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Georgetown University, Washington, District of Columbia
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Gesellschaft fuer Strahlen und Umweltforschung mbH Munchen, Neuherberg, Federal Republic of Germany
2.1885

Gila River Indian Community Council, Sacaton, Arizona
2.0954

Gorgas Memorial Inst. of Tropical & Preventive Medicine Inc., Washington, District of Columbia
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Gorgas Memorial Lab. of Tropical & Preventive Medicine, Balboa Heights, Canal Zone
2.1995, 2.1996

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Goteborgs Universitet, Goteborg, Sweden
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Government Medical College, Ajni, India
2.2415

Greater Glasgow Area Health Board, Glasgow, Scotland, United Kingdom
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Grupo Argentino Cooperativo de Estudios Epid. en Hematologia, Buenos Aires, Argentina
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Gujarat Cancer & Research Inst., Ahmedabad, India
2.0033, 2.1603, 2.1604, 2.1605

Guntur Medical College, Guntur, India
2.2333, 2.2358

Hacettepe Universitesi, Ankara, Turkey
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Hadassah Medical Org., Jerusalem, Israel
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Hahnemann Medical College & Hospital, Philadelphia, Pennsylvania
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Hanford Environmental Health Foundation Inc., Richland, Washington
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Harvard University, Boston, Massachusetts
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Harvard University, Cambridge, Massachusetts
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Haskola Islands, Reykjavik, Iceland
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Haynes Medical Lab., Manchester, Connecticut
2.1774

Health & Safety Center, London, England, United Kingdom
2.1933, 2.2420

Health Insurance Plan of Greater New York, New York, New York
2.0871, 2.2065, 2.2290

Hebrew University of Jerusalem, Jerusalem, Israel
2.0629, 2.0959, 2.1263, 2.1317, 2.1452, 2.2428, 2.2454

Hebrew University of Jerusalem, Rehovot, Israel
2.2332

Helsingin Yliopisto, Helsinki, Finland
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Henry Ford Hospital, Detroit, Michigan
2.1760

Hiroshima University, Hiroshima, Japan
2.1626

Hokkaido University, Sapporo, Japan
2.1639

Holmes & Narver Inc., Los Angeles, California
2.0221

Hopital Charles Foix, Ivry sur Seine, France
2.2393

Hopital Edouard Herriot, Lyon, France
2.1868

Hospital de Clinicas Gaffree e Guinle - FEFIERJ, Rio de Janeiro, Brazil
2.2349

Hospital de Ninos de Buenos Aires, Buenos Aires, Argentina
2.1550

Hospital de S. Joao, Porto, Portugal
2.1986

Hospital Jose Joaquin Aguirre, Santiago, Chile
2.2050

Hospital Nacional Enrique Cabrera, Havana, Cuba
2.2390

Hospital of the University of Pennsylvania, Philadelphia, Pennsylvania
2.2102

Houghton Poultry Research Station, Huntingdon, England, United Kingdom
2.1811

Howard University, Washington, District of Columbia
2.0526, 2.0557, 2.0694, 2.2128, 2.2208

Huddinge Sjukhus, Huddinge, Sweden
2.1897, 2.1968

Iceland Genetical Committee, Reykjavik, Iceland
2.0214

Illiana Aviation Sciences Ltd., Champaign, Illinois
2.1345

Illinois Cancer Council, Chicago, Illinois
2.0669, 2.0684

Imperial Cancer Research Fund, London, England, United Kingdom
2.0034, 2.0035, 2.0036, 2.0037, 2.0038, 2.0039, 2.0040, 2.0041, 2.1531, 2.1976

Imperial Cancer Research Fund, Oxford, England, United Kingdom
2.1967

Imperial Chemical Industries Ltd., Wilmslow, England, United Kingdom
2.1707

Indian Council of Medical Research, New Delhi, India
2.0443

Information Sciences Research Inst., Silver Spring, Maryland
2.0432

Inst. de Medicina si Farmacie, Iasi, Romania
2.2414

Inst. de Seguridad Social, Medellin, Colombia
2.2494

Inst. for Cancer Research, Philadelphia, Pennsylvania
2.0657, 2.0662, 2.0721, 2.0758, 2.0972, 2.2103

Inst. for Medical Research, Kuala Lumpur, Malaysia
2.0111, 2.1453

Inst. for Medical Research, Camden, New Jersey
2.0303

Inst. for Medical Research & Occupational Health, Zagreb, Yugoslavia
2.0339

Inst. for Postgraduate Medical Education, Bratislava, Czechoslovakia
2.1574

Inst. for Postgraduate Medical Education, Budapest, Hungary
2.1812

Inst. Ksenofon Sahovic, Belgrade, Yugoslavia
2.1543

Inst. Nacional de la Sante et de la Recherche Medicale, Le Vesinet, France
2.2395, 2.2399

Inst. Nacional de la Sante et de la Recherche Medicale, Paris, France
2.2479

Inst. Nacional de la Sante et de la Recherche Medicale, St. Cloud, France
2.1877

Inst. Nacional de Recherche et de Securite, Nancy, France
2.1586

Inst. Nacional Regional de Oncologia, Santa Fe, Argentina
2.1831

Inst. of Cancer Research, London, England, United Kingdom
2.1977

Inst. of Cancer Research, Sutton, England, United Kingdom
2.1484, 2.1485, 2.1486, 2.1487, 2.1488, 2.1489, 2.1490, 2.1491, 2.1960, 2.1961, 2.1962, 2.2336, 2.2440

Inst. of Chronic Diseases & Gerontology, Belgrade, Yugoslavia
2.0440, 2.1546

Inst. of Hygiene & Social Medicine, Sarajevo, Yugoslavia
2.0421

Inst. of Mineral Raw Materials, Kutna Hora, Czechoslovakia
2.1576

Inst. of Occupational Health, Helsinki, Finland
2.1579, 2.1580, 2.1582, 2.1583, 2.1866

Inst. of Occupational Medicine in the Textile & Chemical Ind, Lodz, Poland
2.0340

Inst. of Occupational Medicine, Edinburgh, Scotland, United Kingdom
2.2439

Inst. of Oncology, Gliwice, Poland
2.1991, 2.2515, 2.2517

Inst. of Pediatric Research, Brno, Czechoslovakia
2.2404

Inst. of Postgraduate Medical Education & Research, Chandigarh, India
2.0042

Inst. of Public Health of the Socialist Republic of Serbia, Belgrade, Yugoslavia
2.1526

Inst. of Public Health of the Socialist Republic of Croatia, Zagreb, Yugoslavia
2.0502

Inst. of Sera & Vaccines, Prague, Czechoslovakia
2.2484

Inst. of Social Medicine, Huddinge, Sweden
2.1663

Inst. of Social Oncology, Rotterdam, Netherlands
2.2006, 2.2007

Institut dOphthalmologie, Tunis, Tunisia
2.0441

Institut Gustave Roussy, Paris, France
2.2394

Institut Gustave Roussy, Villejulf, France
2.1876

Instituto Brasileira de Cont. Cancer, Sao Paulo, Brazil
2.1564

Instituto de Oncologia y Radiobiologia, Havana, Cuba
2.1573

Instituto Evandro Chagas, Belem, Brazil
2.0129

Instituto Mexicano del Seguro Social, Guadalajara, Mexico
2.1642

Instituto Nacional de Cancerologia y Epidemiologia, Bogota, Colombia
2.2478

Institutul Oncologic Cluj-Napoca, Cluj-Napoca, Romania
2.1980

Instytut Onkologii im Marii Sklodowskiej Curie, Warsaw, Poland
2.1653, 2.1654

Israel Center for Registration of Cancer & Allied Diseases, Jerusalem, Israel
2.0631, 2.1481, 2.1616, 2.1618, 2.1934, 2.2352

Israel Inst. for Biological Research, Ness Ziona, Israel
2.1806

Istanbul Universitesi, Istanbul, Turkey
2.1483, 2.1679

Istituto Regina Elena per lo Studio e la Cura dei Tumori, Rome, Italy
2.1623

Japanese Inst. of Pathology, Osaka, Japan
2.1636

Jarvis Breast Screening, Surrey, England, United Kingdom
2.1937

Jefferson County Health Dept., Lakewood, Colorado
2.0516

Jichi Medical School, Tochigi, Japan
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Johannes Gutenberg Universitat Mainz, Mainz, Federal Republic of Germany
2.1918

Johns Hopkins University, Baltimore, Maryland
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Peter MacCallum Hospital, Melbourne, Australia
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Philadelphia Child Guidance Clinic, Philadelphia, Pennsylvania
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Queen Elizabeth Hospital, Gateshead, England, United Kingdom
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Queens University of Belfast, Belfast, Northern Ireland, United Kingdom
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Regional Lung Diseases Control Centre, Poznan, Poland
2.1989

Regional Oncology Centre, Zaragoza, Spain
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2.1675

Registro Nacional de Patologia Tumoral, Asuncion, Paraguay
2.1992, 2.1993, 2.1994

Research Triangle Inst., Research Triangle Park, North Carolina
2.1184

Rhode Island Hospital, Providence, Rhode Island
2.0592

Rijksuniversiteit te Gent, Ghent, Belgium
2.2488

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Royal College of General Practitioners, Manchester, England, United Kingdom
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Seoul National University, Seoul, Republic of Korea
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Environmental & Life Science Div., Dugway, Utah
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Defense Nuclear Agency
Armed Forces Radiobiology Research Inst., Bethesda, Maryland
2.0142

Navy
Naval Aerospace Medical Research Lab., Pensacola, Florida
2.0157
Naval Dental Research Inst.
Clinical Investigation Dept., Great Lakes, Illinois
2.0159
Naval Health Research Center
Environmental & Social Medicine Div., San Diego, California
2.0144, 2.0147, 2.0150, 2.0160
Naval Medical Research Inst.
Div. of Rickettsial Diseases, Bethesda, Maryland
2.0155
Naval Medical Research Unit #2, San Francisco, California
2.0152, 2.0153, 2.0154, 2.0156, 2.0161, 2.0163, 2.0164
Epidemiology & Clinical Investigation Dept., San Francisco, California
2.0145
Medical Ecology Dept., San Francisco, California
2.0143, 2.0158, 2.0165
Virology Dept., San Francisco, California
2.0162
Naval Medical Research Unit #3
Clinical Tropical Medicine Dept., New York, New York
2.0166, 2.0167
Immunology & Parasitology Dept., New York, New York
2.0149
Medical Zoology Dept., New York, New York
2.0151
Veterinary Medicine Dept., New York, New York
2.0168
Naval Submarine Medical Research Lab., Groton, Connecticut
2.0148
Operational Medicine Dept., Groton, Connecticut
2.0146
Personnel Psychology Dept., Groton, Connecticut
2.0169

Uniformed Services University of the Health Sciences
Dept. of Preventive Medicine & Biometrics, Bethesda, Maryland
2.0174, 2.0175

U.S. Dept. of Energy
Argonne National Lab., Argonne, Illinois
2.0196

Battelle Pacific Northwest Lab., Richland, Washington
2.0209, 2.0219, 2.0220

Brookhaven National Lab., Upton, New York
2.0177, 2.0197, 2.0205, 2.0208, 2.0227

Div. of Biological & Medical Research, Argonne, Illinois
2.0185, 2.0193
Chicago, Illinois
2.0191

Laramie Energy Technology Center, Laramie, Wyoming
2.0218

Los Alamos Scientific Lab., Los Alamos, New Mexico
2.0183, 2.0184, 2.0204
Health Div., Los Alamos, New Mexico
2.0211

Oak Ridge National Lab., Oak Ridge, Tennessee
2.0207
Central Management Office, Oak Ridge, Tennessee
2.0179
Health Physics Div., Oak Ridge, Tennessee
2.0180

Office of Health & Environmental Research
Environmental Measurements Lab., New York, New York
2.0199, 2.0203

U.S. Dept. of Health & Human Services
Public Health Service
Alcohol Drug Abuse & Mental Health Admin.
National Inst. of Mental Health, Bethesda, Maryland

2.0230, 2.0231, 2.0233, 2.0234, 2.0235
Center for Disease Control, Atlanta, Georgia
2.0314, 2.0316, 2.0317, 2.2089, 2.2149, 2.2159, 2.2237, 2.2239
Bureau of Epidemiology, Anchorage, Alaska
2.2153
Bureau of Lab., Atlanta, Georgia
2.0319, 2.0320, 2.0321, 2.0322
National Inst. for Occupational Safety & Health, Rockville, Maryland
2.0397, 2.0398
Cincinnati, Ohio
2.0323, 2.0324, 2.0325, 2.0326, 2.0327, 2.0328, 2.0329, 2.0330, 2.0331, 2.0332, 2.0333, 2.0334, 2.0335, 2.0336, 2.0337, 2.0341, 2.0342, 2.0343, 2.0349, 2.0350, 2.0351, 2.0352, 2.0353, 2.0354, 2.0355, 2.0369, 2.0370, 2.0371, 2.0372, 2.0373, 2.0374, 2.0375, 2.0390, 2.0391, 2.0392, 2.0393, 2.0394, 2.0395, 2.0396, 2.0399, 2.0400, 2.0401, 2.0402, 2.0403, 2.0404, 2.0405, 2.0409, 2.0410, 2.0412, 2.0413, 2.0414, 2.0415, 2.0416, 2.0735, 2.0764, 2.1738, 2.1739, 2.1740, 2.1742, 2.1745, 2.1746, 2.1747, 2.1748, 2.1749, 2.1750, 2.1751, 2.1752, 2.1753, 2.1754, 2.1755, 2.1756, 2.1757, 2.2063, 2.2104, 2.2133, 2.2137, 2.2144, 2.2191, 2.2305
Morgantown, West Virginia
2.0344, 2.0345, 2.0346, 2.0347, 2.0348, 2.0356, 2.0357, 2.0358, 2.0359, 2.0360, 2.0361, 2.0362, 2.0363, 2.0406, 2.0407, 2.0408
Food & Drug Admin., Washington, District of Columbia
2.0423
Bureau of Foods, Washington, District of Columbia
2.0424, 2.0425, 2.0426, 2.0427, 2.0428, 2.0429
Bureau of Radiological Health, Rockville, Maryland
2.2257
National Inst. of Health, Accra
2.1600, 2.1919
Clinical Center, Bethesda, Maryland
2.0445, 2.0446, 2.0447, 2.0448
Div. of Computer Research & Technology, Bethesda, Maryland
2.0449
National Cancer Inst., Baltimore, Maryland
2.0699, 2.0703
Bethesda, Maryland
2.0418, 2.0588, 2.0671, 2.0672, 2.0673, 2.0674, 2.0675, 2.0676, 2.0677, 2.0678, 2.0679, 2.0680, 2.0700, 2.0701, 2.0702, 2.0704, 2.0705, 2.0706, 2.0707, 2.0708, 2.0709, 2.0710, 2.0711, 2.0712, 2.1719, 2.1720, 2.1721, 2.1722, 2.2075, 2.2085, 2.2125, 2.2134, 2.2214, 2.2258, 2.2264, 2.2265, 2.2266, 2.2267, 2.2318
Boston, Massachusetts
2.1726, 2.2082
National Heart Lung & Blood Inst., Bethesda, Maryland
2.0826, 2.2053
National Inst. of Allergy & Infectious Diseases, Bethesda, Maryland
2.0892, 2.0893, 2.0894
Hamilton, Montana
2.0891, 2.0895, 2.0896
National Inst. of Arthritis Metabolism & Digestive Diseases, Phoenix, Arizona
2.0947, 2.0950, 2.0951, 2.0952, 2.0953
Bethesda, Maryland
2.0946, 2.0948, 2.0949
National Inst. of Child Health & Human Development, Bethesda, Maryland
2.1000, 2.1001, 2.1002, 2.1003, 2.1004, 2.1005, 2.1006
National Inst. of Dental Research, Bethesda, Maryland
2.1041
National Inst. of Environmental Health Sciences, Research Triangle Park, North Carolina
2.1068, 2.1069, 2.1070, 2.1071, 2.1072, 2.1073, 2.1074, 2.1075, 2.1083, 2.1086
National Inst. of Neurological & Communicative Dis. & Stroke, Bethesda, Maryland
2.1180, 2.1181, 2.1182, 2.1183, 2.1196, 2.1197, 2.1198, 2.1199, 2.1200, 2.1201, 2.1202, 2.1203, 2.2320
National Inst. on Aging, Baltimore, Maryland
2.1211, 2.1213, 2.1214
Bethesda, Maryland
2.1209, 2.1210
Office of Health Research Statistics & Technology
National Center for Health Statistics, Hyattsville, Maryland
2.1243, 2.1301

U.S. Dept. of the Interior
Geological Survey
Geologic Div., Reston, Virginia
2.1234

U.S. Environmental Protection Agency, Cincinnati, Ohio
2.1302
Office of Research & Development
Environmental Monitoring & Systems Lab., Las Vegas, Nevada
2.1248, 2.1249, 2.1250
Research Triangle Park, North Carolina
2.1252
Health Effects Research Lab., Research Triangle Park, North Carolina
2.1289
Cincinnati, Ohio
2.1268, 2.1269, 2.1270, 2.1271, 2.1272, 2.1273, 2.1274, 2.1275, 2.1276, 2.1277, 2.1287, 2.1288, 2.1290, 2.1291, 2.1292, 2.1294, 2.1295, 2.1296, 2.1303, 2.1304, 2.1306, 2.1307, 2.1309, 2.1310, 2.1321, 2.1325, 2.1741, 2.1743, 2.1744
Field Studies Div., Cincinnati, Ohio
2.1293, 2.1305, 2.1311, 2.1322, 2.1323, 2.1326, 2.1327
Marine Field Station, West Kingston, Rhode Island
2.1308
Population Studies Div., Research Triangle Park, North Carolina
2.2302
Municipal Environmental Research Lab.
Water Supply Research Div., Cincinnati, Ohio
2.1312

Statistics & Data Management Office, Research Triangle Park, North Carolina
2.1286

U.S. Veterans Admin.
Dept. of Medicine & Surgery
Medical Center, Little Rock, Arkansas
2.1372
Fresno, California
2.1380
Los Angeles, California
2.1361, 2.1362, 2.1369, 2.1375, 2.1432
Palo Alto, California
2.1410
San Diego, California
2.1368
Wilmington, Delaware
2.1403
Washington, District of Columbia
2.1365, 2.1397, 2.1398, 2.1402, 2.1412, 2.1415, 2.1419, 2.1422, 2.1423, 2.1428, 2.1429, 2.1440, 2.2210
Bay Pines, Florida
2.1388, 2.1404
Gainesville, Florida
2.1364
Miami, Florida
2.1378, 2.1379
Tampa, Florida
2.1355, 2.1360
Augusta, Georgia
2.1435
Chicago, Illinois
2.1356, 2.1395, 2.1436, 2.1438
Indianapolis, Indiana
2.1358
Lexington, Kentucky
2.1363
Louisville, Kentucky
2.1433
Shreveport, Louisiana
2.1386, 2.1394
Togus, Maine
2.1366, 2.1373, 2.1407
Baltimore, Maryland
2.1382, 2.1385, 2.1405, 2.1406
Bedford, Massachusetts
2.1395
Biloxi, Mississippi
2.1357, 2.1409
Kansas City, Missouri
2.1425, 2.1426
Omaha, Nebraska
2.1391
East Orange, New Jersey
2.1370, 2.1374, 2.1389, 2.1390, 2.1393, 2.1416, 2.1417, 2.1420, 2.1430, 2.1431, 2.1439, 2.2215, 2.2276, 2.2277
Buffalo, New York
2.1392
New York, New York
2.1400
Northport, New York
2.1376, 2.1408, 2.1437
Durham, North Carolina
2.1414, 2.1421
Providence, Rhode Island
2.1434
Charleston, South Carolina
2.1371
Sioux Falls, South Dakota
2.1381
Dallas, Texas
2.1367, 2.1424
Salem, Virginia
2.1411
Seattle, Washington
2.1377, 2.1383
Martinsburg, West Virginia
2.1396, 2.1427
Madison, Wisconsin
2.1387
Wood, Wisconsin
2.1401
Outpatient Clinic, Boston, Massachusetts
2.1359, 2.1384, 2.1413, 2.1418
Regional Office, Washington, District of Columbia
2.2209, 2.2241, 2.2242, 2.2243

Uganda Cancer Inst., Kampala, Uganda
2.1506

Umea University, Umea, Sweden
2.0076, 2.1894, 2.2458

Union University, Albany, New York
2.0240

Universidad de Barcelona, Barcelona, Spain
2.1515

Universidad de Chile, Santiago, Chile
2.1449, 2.1864

Universidad del Valle, Cali, Colombia
2.1572, 2.2460

Universidad Nacional de Rosario, Rosario, Argentina
2.2351

Universidad Nacional Mayor de San Marcos, Lima, Peru
2.2385

Universidade de Lisboa, Lisbon, Portugal
2.1655

Universidade de Sao Paulo, Sao Paulo, Brazil
2.2369, 2.2425

Universidade Federal do Rio Grande do Sul, Porto Alegre, Brazil
2.2402

Universita degli Studi di Bari, Bari, Italy
2.2512

Universita degli Studi di Camerino, Camerino, Italy
2.1624

Universita degli Studi di Genova, Genoa, Italy
2.1456, 2.1457, 2.1922, 2.2030, 2.2031

Universita degli Studi di Milano, Milan, Italy
2.2032

Universita degli Studi di Perugia, Perugia, Italy
2.2499

Universita degli Studi di Roma, Rome, Italy
2.1467

Universita degli Studi di Sassari, Sassari, Italy
2.2035, 2.2036, 2.2038, 2.2039, 2.2040

Universita degli Studi di Torino, Turin, Italy
2.1622, 2.2037, 2.2480

Universita degli Studi di Trieste, Trieste, Italy
2.2033

Universitaet Basel, St. Gallen, Switzerland
2.1892

Universitaet des Saarlandes, Homburg, Federal Republic of Germany
2.2392

Universitaets Frauenklinik, Homburg, Federal Republic of Germany
2.1883

Universitas Airlangga, Surabaya, Indonesia
2.1611, 2.1906, 2.1907, 2.1908

Universitat Frauenklinik, Graz, Austria
2.2387

Universitat Hamburg, Hamburg, Federal Republic of Germany
2.2362

Universitat Hospital of Urology, Bonn, Federal Republic of Germany
2.1598

Universitat Karlova, Prague, Czechoslovakia
2.2377

Universitat Wien, Vienna, Austria
2.1562, 2.1563

Universitat zu Koln, Cologne, Federal Republic of Germany
2.1878, 2.1879

Universite dAbidjan, Abidjan, Ivory Coast
2.2509

Universite dAix Marseille, Marseille, France
2.2398

Universite de Dakar, Dakar, Senegal
2.2507

Universite de Dijon, Dijon, France
2.2366, 2.2411

Universite de Lausanne, Lausanne, Switzerland
2.1674

Universite de Picardy, Amiens, France
2.1516

Universite de Sherbrooke, Sherbrooke, Quebec, Canada
2.1854

Universite Laval, Ste. Foy, Quebec, Canada
2.1849, 2.1850, 2.1851, 2.1852

Universite Libre de Bruxelles, Brussels, Belgium
2.2472

Universite Paul Sabatier, Toulouse, France
2.2391

Universiteit van Amsterdam, Amsterdam, Netherlands
2.2008

Universitet i Bergen, Bergen, Norway
2.0749, 2.2000

Universitetet i Tromso, Tromso, Norway
2.2342, 2.2448

Universitetet i Trondheim, Trondheim, Norway
2.1016, 2.1463

Universitti Malaya, Kuala Lumpur, Malaysia
2.1646

University College Hospital, Ibadan, Nigeria
2.1650, 2.1651

University Hospital, Copenhagen, Denmark
2.1578

University Hospital, Uppsala, Sweden
2.0717, 2.0737, 2.1523, 2.1895

University Hospital Inc., Boston, Massachusetts
2.0367

University Hospital of Lund, Lund, Sweden
2.1664, 2.1896

University Hospital of Umea, Umea, Sweden
2.0080

University of Aberdeen, Aberdeen, Scotland, United Kingdom
2.1514, 2.2429

University of Akron, Akron, Ohio
2.1341

University of Alabama in Birmingham, Birmingham, Alabama
2.0582, 2.0695, 2.0780, 2.0986, 2.1020, 2.1030

University of Alberta, Edmonton, Alberta, Canada
2.1824, 2.1829, 2.2365

University of Arizona, Tucson, Arizona
2.0798, 2.0832, 2.0836, 2.2190

University of Athens, Athens, Greece
2.1472, 2.1473, 2.1474, 2.1482, 2.1914, 2.1915

University of Baghdad, Baghdad, Iraq
2.1903

University of Belgrade, Belgrade, Yugoslavia
2.1801, 2.2046

University of Bern, Bern, Switzerland
2.1667, 2.2412

University of Birmingham, Birmingham, England, United Kingdom
2.0051, 2.1683

University of Botswana Lesotho & Swaziland, Kwaluseni, Swaziland
2.2028

University of British Columbia, Vancouver, British Columbia, Canada
2.1863, 2.2406

University of California, Berkeley, California
2.0025, 2.0206, 2.0222, 2.0291, 2.0488, 2.0637, 2.0859, 2.1718, 2.2087, 2.2176, 2.2177, 2.2178, 2.2245, 2.2321, 2.2322

University of California, Davis, California
2.0085, 2.0086, 2.0212, 2.1099

University of California, Irvine, California
2.0008, 2.0272, 2.1207

University of California, La Jolla, California
2.0264, 2.0803, 2.0814, 2.1767, 2.2187

University of California, Livermore, California
2.0186, 2.0187

University of California, Los Angeles, California
2.0003, 2.0202, 2.0259, 2.0261, 2.0273, 2.0276, 2.0311, 2.0506, 2.0546, 2.0640, 2.0652, 2.0718, 2.0968, 2.0975, 2.0982, 2.1012, 2.1015, 2.1022, 2.1026, 2.1039, 2.1040, 2.1100, 2.1194, 2.2135, 2.2196, 2.2254, 2.2259, 2.2260

University of California, San Francisco, California
2.0006, 2.0253, 2.0280, 2.0535, 2.0742, 2.0770, 2.0771, 2.0815, 2.0844, 2.0915, 2.1010, 2.1108, 2.1352, 2.2193, 2.2205, 2.2226

University of California, Torrance, California
2.0533, 2.0926, 2.0945

University of California, Los Alamos, New Mexico
2.2221

University of Chicago, Chicago, Illinois
2.0229, 2.0255, 2.0301, 2.0309, 2.0554, 2.0687, 2.0904, 2.1017, 2.2054, 2.2158, 2.2171, 2.2329

University of Cincinnati, Cincinnati, Ohio
2.0377, 2.0457, 2.0500, 2.1050, 2.1063, 2.1076, 2.1089, 2.1103, 2.1298, 2.1299, 2.1319, 2.1443, 2.2140, 2.2303, 2.2304

University of Colorado, Denver, Colorado
2.0065, 2.0459, 2.0501, 2.1033, 2.1245

University of Connecticut, Farmington, Connecticut
2.0290, 2.0928

University of Connecticut, Storrs, Connecticut
2.0552

University of Dar es Salaam, Dar es Salaam, Tanzania
2.1497, 2.1671

University of Denver, Denver, Colorado
2.0198

University of Dublin Trinity College, Dublin, Ireland
2.1612, 2.1613

University of Dundee, Dundee, Scotland, United Kingdom
2.1952

University of Durban Westville, Durban, South Africa
2.1517

University of Ghana, Accra, Ghana
2.0043, 2.0748

University of Glasgow, Glasgow, Scotland, United Kingdom
2.0021, 2.1939

University of Hawaii System, Honolulu, Hawaii
2.0010, 2.0461, 2.0490, 2.0518, 2.0519, 2.0548, 2.0597, 2.0619, 2.0744, 2.0762, 2.0880, 2.0984, 2.1009, 2.1024, 2.1144, 2.1150, 2.1343, 2.1764, 2.2064, 2.2086, 2.2154, 2.2234, 2.2235, 2.2236, 2.2324

University of Health Sciences - Chicago Medical School, Chicago, Illinois
2.0001, 2.2084

University of Ibadan, Jos, Nigeria
2.1462

University of Illinois, Chicago, Illinois
2.0851, 2.1047, 2.1090, 2.1266, 2.1331, 2.1734, 2.2183, 2.2232, 2.2323

University of Illinois, Peoria, Illinois
2.0887

University of Iowa, Iowa City, Iowa
2.0274, 2.0293, 2.0307, 2.0517, 2.0551, 2.0610, 2.0625, 2.0741, 2.0817, 2.0838, 2.1284, 2.2219, 2.2325

University of Iowa, Oakdale, Iowa
2.2220

University of Isfahan, Isfahan, Iran
2.2359

University of Kansas, Kansas City, Kansas
2.0297

University of Kentucky, Lexington, Kentucky
2.0819

University of Khartoum, Khartoum, Sudan
2.2029

University of Linkoping, Linkoping, Sweden
2.1898, 2.1899, 2.1900, 2.1901, 2.1902

University of London, London, England, United Kingdom
2.0049, 2.1498, 2.1513, 2.1520, 2.1521, 2.1691, 2.1692, 2.1693, 2.1695, 2.1696, 2.1697, 2.1698, 2.1700, 2.1701, 2.1935, 2.1942, 2.1943, 2.1950, 2.1978, 2.2047, 2.2334, 2.2442

University of Louisville, Louisville, Kentucky
2.0015, 2.0933, 2.2096, 2.2141

University of Maine, Orono, Maine
2.1236

University of Manchester, Manchester, England, United Kingdom
2.1704, 2.1956

University of Maryland, Baltimore, Maryland
2.0171, 2.0593, 2.0601, 2.0602, 2.0785, 2.2080, 2.2109, 2.2111

University of Maryland, College Park, Maryland
2.0089, 2.0922

University of Massachusetts, Amherst, Massachusetts
2.1262

University of Massachusetts, Worcester, Massachusetts
2.0275, 2.0653, 2.1264, 2.2288

University of Melbourne, Melbourne, Australia
2.1838

University of Miami, Coral Gables, Florida
2.0236, 2.0727, 2.0820, 2.0869, 2.0994, 2.1775

University of Michigan, Ann Arbor, Michigan
2.0011, 2.0031, 2.0032, 2.0054, 2.0237, 2.0279, 2.0385, 2.0388, 2.0849, 2.0862, 2.0875, 2.0876, 2.0911, 2.0916, 2.0944, 2.0963, 2.1254, 2.1255, 2.1711

University of Minnesota, Duluth, Minnesota
2.1067, 2.1253

University of Minnesota, Minneapolis, Minnesota
2.0460, 2.0477, 2.0555, 2.0599, 2.0618, 2.0752, 2.0766, 2.0773, 2.0812, 2.0854, 2.0867, 2.0898, 2.0966, 2.0981, 2.1154, 2.2150

University of Minnesota, Rochester, Minnesota
2.1140

University of Minnesota, St. Paul, Minnesota
2.0083

University of Mississippi, Jackson, Mississippi
2.0858

University of Missouri, Columbia, Missouri
2.1267, 2.1348, 2.1758, 2.2185

University of Missouri, Rolla, Missouri
2.1257

University of Montana, Missoula, Montana
2.1235

University of Nairobi, Nairobi, Kenya
2.1451, 2.2003

University of Nebraska, Lincoln, Nebraska
2.0092

University of Nebraska, Omaha, Nebraska
2.1107, 2.1786, 2.1787, 2.1788, 2.2057, 2.2283, 2.2330

University of Nevada, Reno, Nevada
2.1282

University of New Mexico, Albuquerque, New Mexico
2.0630, 2.1223, 2.1710, 2.2142, 2.2213

University of Newcastle Upon Tyne, Newcastle Upon Tyne, England, United Kingdom
2.1681, 2.1946, 2.1959, 2.2502

University of Nigeria, Enugu, Nigeria
2.1649

University of North Carolina, Chapel Hill, North Carolina
2.0435, 2.0853, 2.0912, 2.1046, 2.1051, 2.1064, 2.1093, 2.1109, 2.1143, 2.1731, 2.1732, 2.1733, 2.2301

University of North Carolina, Charlotte, North Carolina
2.0882

University of North Carolina, Raleigh, North Carolina
2.1088

University of Occupational & Environmental Health, Kitakyushu, Japan
2.1630

University of Oklahoma, Norman, Oklahoma
2.1330

University of Oklahoma, Oklahoma City, Oklahoma
2.0809, 2.0970

University of Otago, Christchurch, New Zealand
2.1478

University of Ottawa, Ottawa, Ontario, Canada
2.1567

University of Oxford, Oxford, England, United Kingdom
2.0052, 2.1528, 2.1534, 2.1535, 2.1536, 2.1538, 2.1539, 2.1545, 2.1964, 2.1965, 2.1966, 2.1973, 2.1974, 2.1975, 2.2530

University of Pennsylvania, Philadelphia, Pennsylvania
2.0479, 2.0494, 2.0581, 2.0654, 2.0747, 2.0962, 2.1018, 2.1045, 2.1192, 2.1216, 2.1220, 2.1260, 2.1339, 2.1789, 2.2067, 2.2156, 2.2167

University of Pittsburgh, Pittsburgh, Pennsylvania
2.0188, 2.0254, 2.0270, 2.0382, 2.0606, 2.0696, 2.0782, 2.0783, 2.0825, 2.0969, 2.1102, 2.1241, 2.1278, 2.2068, 2.2122, 2.2202, 2.2307, 2.2308

University of Poona, Poona, India
2.2348

University of Puerto Rico, Rio Piedras, Puerto Rico
2.0856

University of Queensland, Herston, Australia
2.1841

University of Rochester, Rochester, New York
2.0024, 2.0232, 2.0241, 2.0419, 2.0430, 2.0543, 2.0563, 2.0688, 2.0755, 2.0872, 2.0927, 2.1053, 2.1096, 2.1097, 2.1353, 2.2157

University of Singapore, Singapore, Singapore
2.1658, 2.2423

University of South Carolina, Columbia, South Carolina
2.0366

University of Southern California, Los Angeles, California
2.0515, 2.0531, 2.0534, 2.0561, 2.0566, 2.0569, 2.0586, 2.0594, 2.0595, 2.0633, 2.0713, 2.0779, 2.0846, 2.0918, 2.0938, 2.0999, 2.1768, 2.1769, 2.1770, 2.1771, 2.1772, 2.2060, 2.2061, 2.2126, 2.2127, 2.2170, 2.2172, 2.2251, 2.2252, 2.2253, 2.2255, 2.2256, 2.2261, 2.2262

University of Stellenbosch, Tygerberg, South Africa
2.1527

University of Sydney, St. Leonards, Australia
2.1836

University of Sydney, Sydney, Australia
2.1837

University of Tasmania, Hobart, Australia
2.2363, 2.2501

University of Tehran, Tehran, Iran
2.1544

University of Tennessee, Memphis, Tennessee
2.0805, 2.0960

University of Texas, Austin, Texas
2.1340, 2.1444, 2.2327

University of Texas, Dallas, Texas
2.0305, 2.0847, 2.1019, 2.1441

University of Texas, Galveston, Texas
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EPIDEMIOLOGY RESEARCH PROJECTS DIRECTORY

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DESCRIPTION OF RESEARCH PROJECTS

3.0001,

THE RELATIONSHIP BETWEEN CARCINOGENESIS AND DNA REPAIR IN XERODERMA PIGMENTOSUM HETEROZYGOTES

M.A. Ritter, University of Pennsylvania, School of Medicine, Dept. of Radiation Therapy, *36th & Hamilton Walk, Philadelphia, Pennsylvania* 19174 (CD-49)

Ultraviolet light-induced DNA repair rates will be measured in a number of fibroblast lines that are obligate heterozygotes for xeroderma pigmentosum (XP). XP is a skin-cancer-prone, autosomally recessive human disease. Homozygotes for XP are defective in repairing UV-induced DNA damage.

Our preliminary results, obtained using an M. luteus endonuclease assay for DNA repair, indicate reduced repair, relative to normals, in all 8 obligate XP heterozygote lines that we have tested. In addition, a reduced repair rate was found in one unaffected sibling of an XP family. These heterozygotes include representatives of complementation groups A through D, as well as several unclassified lines.

We will extend our study to 15-20 additional heterozygote lines. We will measure: excision resynthesis with BND-cellulose chromatography, removal of endonuclease-sensitive sites, repair of N-acetoxy-2-acetyl-aminofluorene (AAAF) induced DNA damage and, in obligate heterozygote parents of XP 'variants', we will measure levels of post-replication repair.

Our goals are to: 1) further document the existence of DNA repair deficiencies in XP heterozygotes. 2) Compare repair rates in heterozygotes with skin cancer frequencies in blood relatives. This skin cancer data is now available from studies by Dr. M. Swift of skin cancer frequencies in XP families. 3) Investigate aspects of the genetic complexity of XP through analysis of intrafamilial variations in repair. Our results may promote a clearer understanding of the role of DNA repair genes in human carcinogenesis.

SUPPORTED BY American Cancer Society Inc. $43,916

3.0002,

ETIOLOGICAL STUDIES OF HUMAN BREAST CANCER

D.H. Moore, Hahnemann Medical College & Hospital, Medical College, Dept. of Microbiology & Immunology, *235 N. 15th St., Philadelphia, Pennsylvania* 19102 (RDP-34B)

OBJECTIVE: To obtain demographic data, personal data (body build, reproduction physiology, sex life, drug use) living conditions, diet, personal attitudes, and response styles of three different populations in South Africa: (1) rural Zulu women with zero incidence of breast cancer; (2) urban Zulu women with an appreciable incidence; and (3) urban white women with a high incidence of breast cancer.

APPROACH: Three to four hundred women of each group will be interviewed at length to gain answers to a standard questionnaire which will be analyzed by computer. Breasts will be examined for dysplasia and fluids extracted from as many as possible. Nipple fluids from women of each group will be collected on dry ice and tested for mutagens/carcingens by the Ames method. Some of the fluids will be tested for prostaglandins and other hormones.

PRESENT PROGRESS: More than 1,100 interviews have been made and fluids have been taken from more than 100 women. The results look interesting and significant but have not yet been analyzed.

CURRENT PLANS: To analyze data in detail and test the specimens

SUPPORTED BY American Cancer Society Inc. $3,500

3.0003,

HERPESVIRUS TYPE-2-SPECIFIC ANTIBODIES IN CERVICAL CANCER CASE-CONTROL STUDIES

G.R. Dreesman, Baylor College of Medicine, School of Medicine, Dept. of Virology & Epidemiology, *1200 Moursund Ave., Houston, Texas* 77025 (IM-272)

It has been more than 10 years since herpes simplex virus type 2 (HSV2) was first associated with human cervical carcinoma by seroepidemiological studies. However, the methodology available for these studies produced equivocal results because of the major antigenic cross-reaction expressed between HSV1 and HSV2. Recently, our laboratory developed a micro solid phase radioimmunometric assay (micro-SPRIA) which allows for testing of human sera for type-specific HSV antibody utilizing purified HSV type-specific glycoproteins. We propose to utilize this assay to screen a well-documented case-control bank of sera available in this laboratory. More than 4000 sera are available in the serum bank. The representative antibody status of each patient, as determined by the micro-SPRIA test, will be analyzed to ascertain whether patients with past HSV2 infections have a greater risk of developing cervical cancer than matched controls. Sera from different geographical areas will be studied to determine if HSV2 is the prevalent agent in conjunction with cervical cancer in different populations. Lastly, purified glycoproteins from different HSV2 strains isolated will be studied to determine if possible serological variations between study groups are associated with the origin of the strains.

SUPPORTED BY American Cancer Society Inc. $53,125

3.0004,

IA-LIKE ALLOANTIGENS ON HUMAN T CELLS

W.C. DeWolf, Sidney Farber Cancer Center Inc., Dept. of Immunogenetics, *44 Binney St., Boston, Massachusetts* 02115 (IM-235)

The objective of this proposal is to confirm and characterize the presence of Ia-like alloantigens on human T cells by two distinct approaches that are operational within this laboratory. The first approach utilizes HLA alloantisera and p29,34 heteroantiserum to identify Ia-like determinants which we have shown and described to exist on activated T cells. The second approach will identify T cell Ia-like alloantigens that stimulate in MLC. The determinants identified by each of these two approaches will be defined in terms of genetic characteristics, functional analysis, and disease modification. Genetic characterization will include studies to determine HLA-linkage as well as large population analysis to determine allotype specificity. Assays to determine 'Ia-like' antigen associated functions will include various in vitro cell mediated immune functions including MLC, cell mediated lympholysis (CML), primed lymphocyte typing (PLT), antibody dependent cell mediated lymphocytotoxicity (ADCC), natural killing (NK), third party suppression in MLC, lymphocyte mitogenic factor production (LMF), and macrophage dependent T lymphocyte activation. Studies to examine disease modification of newly defined antigens will involve the identification of antigens and antigen frequency with selected patient populations including testicular cancer, lymphomas and leukemias.

Preliminary experiments on T cell stimulation within a single 6-member recombinant family have identified the existence of a non-HLA MLC stimulation locus which requires HLA-B,D identity between responder and stimulator to occur (similar to Mls locus in the mouse).

We expect that amplification of our preliminary findings will lead to the characterization of new Ia-like determinants on human T cells and that the identification of such determinants may provide the proper information to allow submapping of the HLA-D region.

SUPPORTED BY American Cancer Society Inc. $57,744

3.0005,

MINERAL FIBERS AND LUNG CANCER

A.M. Churg, University of California, San Francisco Campus, School of Medicine, Dept. of Pathology, *551 Parnassus Ave., San Francisco, California* 94122 (PDT-146)

Epidemiologic studies of lung cancer indicate that there are marked incidence variations which cannot be accounted for by cigarette smoking patterns, but do appear to relate to variables such as race, socioeconomic status, and geographic location. Air pollution is another factor which has sometimes been implicated in lung carcinogenesis, primarily on the basis of urban vs. rural cancer rates. Mineral fibers constitute a portion of the particulate fraction of urban air pollution, and it has been shown in animal studies that, under appropriate conditions, many particulates and especially mineral fibers may be carcinogenic or co-carcinogenic. Mineral fibers are known to be present in large numbers in the lungs of urban dwellers. This research involves an investigation to determine if there is an association between lung burden of fibrous minerals and bronchogenic carcinoma in a general urban population in a geographically high lung cancer area. Numbers of mineral fibers will be quantitated at the light and electron microscopic level by dissolving autopsy and surgical lungs and collecting appropriate samples. Whole lung slices will be used to minimize topographic variation in numbers of fibers. Fibers will be further identified by electron diffraction and electron microprobe to determine mineral species, and will also be enumerated by lengths and diameters; the latter properties appear to be important in carcinogenesis. An attempt will be made to correlate total fibers, fiber specific mineral type, and/or fibers of various size classes with the presence or absence of bronchogenic carcinoma.

SUPPORTED BY American Cancer Society Inc. $24,660

3.0006,

TRANSFORMATION OF LYMPHOCYTES BY EPSTEIN-BARR VIRUS

E. Kieff, University of Chicago, Pritzker School of Medicine, Dept. of Medicine, *5801 S. Ellis Ave., Chicago, Illinois* 60637 (FRA-206)

The objective of this program is to understand the mechanisms by which Epstein-Barr virus transforms human lymphocytes. Related objectives include an analysis of viral functions in human Burkitt's tumor tissue and studies of the molecular epidemiology of Epstein-Barr virus. Proposed projects include: (1) Studies of the structure of viral DNA, (2) analysis of whether viral DNA is integrated into cellular DNA in transformed cells, (3) mapping of proteins encoded by viral DNA in transformed cells, (4) studies of the synthesis and processing of viral RNA in transformed cells and Burkitt's tumor tissue, (5) determination of whether there are specific binding site(s) in EBV DNA for EBNA, and (6) analyses of viral protein in transformed cells.

SUPPORTED BY American Cancer Society Inc. $26,939

3.0007,

FACULTY RESEARCH AWARD (APPLICATION)

A.S. Morrison, Harvard University, Boston Campus, School of Public Health, Dept. of Epidemiology, *55 Shattuck St., Boston, Massachusetts* 02115 (FRA-208)

This is a proposal for a five-year program of research in cancer epidemiology. Projects are planned in three areas: etiology, screening, and natural history. In the area of etiology, studies will be made of cancer of the breast and cancer of the urinary bladder. Studies of breast cancer will focus on a) the relationship of breast parenchymal pattern to both breast cancer risk factors and incidence, and b) the hormonal correlates of parenchymal pattern. For bladder cancer, a detailed analysis will be made of the relationship of incidence to occupational hazards. The work on screening will involve development of basic methods in the areas of program evaluation (especially of late outcomes), cost-efficiency, and characteristics of screen-detected cancer. The last topic includes measurement of lead time, length bias, and the timing of metastasis formation in relation to the time of diagnosis by screening. The studies of natural history involve two approaches. The first will be a 'descriptive' evaluation of rates of metastasis formation for several common cancers. The second approach will be the analysis of the development of metastases in relation to incidence risk factors, for primary cancers of the breast and bladder.

SUPPORTED BY American Cancer Society Inc. $31,000

3.0008,

MORBIDITY AND MORTALITY AMONG PHOSPHATE MINERS

G.M. Matanoski, Johns Hopkins University, School of Hygiene & Public Health, Dept. of Epidemiology, *615 N. Wolfe St., Baltimore, Maryland* 21205 (JHU 33434)

The purpose of this study is to determine whether there is an excess all-cause and cancer morbidity and mortality among employees of central Florida phosphate mining company. If such an excess is found, further objective is to attempt to determine a job site or job title which may be associated with the excess. A primary hypothesis is that such an excess may exist due to worker radiation exposure from uranium and daughter products found in phosphate rock.

The approach is nonconcurrent prospective, in which all employees since 1950 are identified, and their outcomes determined. Mortality is ascertained by means of Social Security Administration records and death certificates. Morbidity is ascertained by means of questionnaries and medical record searches. Additional information will be sought from the employees regarding such factors as smoking history, diet, and exposures to other potentially carcinogenic agents or jobs.

An additional aspect of the study involves whole-body radiation counting on a small number of current long-term employees, to determine whether there is evidence of a body burden of radioactive materials.

SUPPORTED BY American Cyanamid Co. funds n.a.

3.0009,

LIPOPROTEINS AND BLOOD PRESSURE IN CONTRASTING POPULATIONS

G.E. Fraser, Loma Linda University, School of Health, Dept. of Biostatistics & Epidemiology, *Loma Linda, California* 92354 (80 826)

This study will compare lipoprotein levels and blood pressures on 150 Seventh-day Adventists and 150 nonAdventist neighborhood controls. These will be males ages 35-55 years. A questionnaire will also document a simple dietary history, cigarette smoking, alcohol consumption, and leisure time physical activity.

The effect of the Adventist lifestyle on lipids and blood pressure will then be evaluated. As Adventists have a largely vegetarian diet, and do not smoke or drink alcohol, some differences are anticipated. Simple tests and regression techniques will be used in analysis.

Over the last few decades, interest has grown regarding the potential for preventing coronary heart disease by lifestyle change. The Adventist population has considerable potential for providing useful data concerning the important components of lifestyle, as they have a documented low risk of cardiac death. Presumably, this is related to their lifestyle.

SUPPORTED BY American Heart Assn. Inc. $27,940

3.0010,

CHRONIC CARRIERS OF SALMONELLA TYPHI IN PATIENTS WITH CARCINOMA OF THE GALLBLADDER

J.L. Rios Dalenz, Caja Nacional de Seguridad Social, *Casilla de Correos 697, c/o Hospital No. 1, La Paz, Bolivia*

There is epidemiological evidence of increased mortality due to hepatobiliary cancer in chronic carriers of Salmonella typhi in the general population. In La Paz there is a high incidence shown in the La Paz Cancer Registry of gallbladder carcinoma; also typhoid fever is considered to be endemic in this area.

The presence of Salmonella typhi will be determined by cultures of bile and feces in all patients with unresected gallbladder carcinoma.

There will also be a control group. The project is expected to run two years, depending on the number of patients that are found with gallbladder carcinoma. (Translated)

SUPPORTED BY Caja Nacional de Seguridad Social funds n.a.

3.0011,

EPIDEMIOLOGICAL STUDIES OF CERVICAL CARCINOMA IN INDIA AND STUDIES OF CHEMOTHERAPY IN GYNECOLOGICAL CANCER

B.N. Banerji, Cancer Centre & Welfare Home, *Thakurpukur, Calcutta 700063, India*

PROJECT I: Edidemiological Studies of Carcinoma of the Cervix in India: (a) race - ethnic group, (b) religion, (c) age, (d) parity, (e) previous infections.

PROJECT II: Studies of Chemotherapy in Gynecological Cancer: (a) ovarian cancer, (b) malignant trophoblastic tumors, (c) endometrial cancer, (d) pelvic sarcomas, (e) epidermoid carcinoma of the lower genital tract, (f)adenocarcinoma of the fallopian tube.

SUPPORTED BY Cancer Centre & Welfare Home funds n.a.

3.0012,

TUMORS OF CHILDHOOD IN EGYPTIAN CHILDREN - EPIDEMIOLOGICAL AND STATISTICAL STUDIES

S.G. Boutros, Cancer Registry for the Metropolitan Cairo Area, *Tharwat St., P.O.B. 1017, c/o Cairo University, Dokki, Cairo, Egypt*

OBJECTIVE: Assess statistically as far as possible the magnitude of childhood cancer in Egyptians below the age of 20.

APPROACH: (a) 670 cancer cases below the age of 20, reported to the Cancer Registry for the Metropolitan Cairo area during the period 1973-1975, were studied. (b) Reported deaths among those under 20 years of age in the period 1933-1972 were analyzed.

PROGRESS AND RESULTS: a. Cancer in the age period 0-19 constituted 7.94% of the total cancer in all age groups, with male preponderance, M:F ratio 1.8. b. The five most prevalent tumor sites in childhood are: malignant tumors of lymph nodes (29.1%); malignant tumors of bone and joints (20.0%); hematopoietic and reticuloendothelial system (12.8%); malignant tumors of the eye and the central nervous system (11.3%); and malignant tumors of connective and soft tissue (6.0%). c. The order of the frequency of histological typing is as follows: lympho-hematopoietic tissue ranks first (36.72%), followed by sarcoma (33.13%), carcinoma (13.17%) and nervous tissue tumors (9.85%). d. Childhood cancer death rate rose from 0.17 per 100,000 population in 1930 to 3.37 in 1970.

The main concern of the study is some of the most common forms of cancer in Egyptian children, such as Hodgkin's disease, malignant tumors of the bones, leukemias, and tumors of the central nervous system.

SUPPORTED BY Cancer Registry for the Metropolitan Cairo Area funds n.a.

3.0013,

BACTERIA AND THE ETIOLOGY OF CANCER

R.R. Williams, Central Public Health Lab., B M R Laboratory, *Colindale Ave., London NW9 5DX, England, United Kingdom* (SP 1386)

OBJECTIVE: To determine the role of bacterial metabolites in the causation of human cancer, particularly of the large bowel.

APPROACH: Having completed a case-control study, we are now carrying out prospective studies of the value of fecal bile acid concentration and the presence of certain clostridia in characterizing persons at high risk of developing colorectal cancer. The study groups include a group of 8,000 normal healthy persons aged 45-75, and various high risk patient groups.

A team of chemists is examining the factors controlling production of unsaturated bile acids and is isolating and characterizing minor fecal bile acids.

The effect of diet on fecal analysis and the composition of ileostomy fluid are being studied; from these two sets of data (which give an indication of what enters the colon and what metabolites are produced from it during bowel transit) we hope to obtain a better understanding of the bacterial reactions taking place in the colon.

PROGRESS: In the prospective study of 'normal' persons, the population has been assembled and the first cases are currently being analyzed.

SUPPORTED BY Cancer Research Campaign funds n.a.

3.0014,

GENETICALLY DETERMINED OXIDATION STATUS AND THE OCCURRENCE OF CARCINOMA AMONG NIGERIANS AND U.K. CAUCASIANS

J.R. Idle, University of London, St. Marys Hospital Medical School, Dept. of Pharmacology, *Norfolk Pl., London W2 1PG, England, United Kingdom* (SI 2016/PHARMACOL 1)

OBJECTIVE: To determine whether or not a defined inherited metabolic oxidative factor influences susceptibility to carcinoma associated with chemical carcinogens.

APPROACH: An individual may be phenotyped for his/her ability to effect the metabolic oxidation of a number of drugs. Two major phenotypes exist in the human population, the so-called extensive metabolizer (EM) and poor metabolizer (PM) phenotypes. In U.K. caucasians, the frequency of these two traits is approximately 90 and 10 percent respectively. By phenotyping populations of patients with various primary tumours, using simple urine analysis, it should be possible to evaluate, with respect to controls, the role of this single gene in the epidemiology of these tumours. Since chemical carcinogenesis frequently involves a step within the tissues to create the ultimate carcinogens, the hypothesis demands that the most rapid oxidizers appear more frequently in cancer patient samples compared to control populations.

PROGRESS: For progress see Hetzel, et al., (1980) Thorax; 35: 709. and Idle, et al. (1980) Cancer Letters, in press.

SUPPORTED BY Cancer Research Campaign funds n.a.

3.0015,

BLADDER CANCER AND THE PRINTING INDUSTRY - AN HISTORICAL PROSPECTIVE MORTALITY STUDY OF THE PRINTING INDUSTRY

D. Leon, University of London, London School of Hygiene & Tropical Medicine, Dept. of Epidemiology, *Keppel St., London WC1E 7HT, England, United Kingdom* (SP 1572)

OBJECTIVE: To investigate whether print workers have an increased risk of dying from cancer of various sites, especially bladder cancer, compared to members of the general population.

APPROACH: The study is of a prospective kind. Approximately 7-9000 print workers who were employed in the industry in a variety of occupations between 1949 and 1963 are being identified from the membership records of two printing trade unions. It will then be ascertained, with the assistance of the Office of Population Censuses and Surveys, whether any of them have since died and if so their cause and date of death.

Sex, date of birth, details of occupation on entry into the union, major occupation changes subsequent to entry while remaining in the union, duration and period of union and branch membership, firm on entry into branch and other relevant information is also being collected from union records. On the basis of this information the risks of dying from various causes within the different occupational groups will be examined and compared. Duration of 'exposure', measured in terms of length of full membership, will also be examined in relation to risk, to see if any dose-response type relationships can be established.

If a significantly increased risk is found for cancer of the bladder, or any other site, the analysis of the deaths from that cause may be extended by carrying out a case-control study. This would allow a more detailed examination of the relationship between type and duration of exposure to risk.

SUPPORTED BY Cancer Research Campaign funds n.a.

3.0016,

A STUDY OF THE PATHOLOGY OF RADIOLOGICALLY PROMINENT DUCTS AND THEIR SIGNIFICANCE IN PREDICTING FUTURE BREAST CANCER RISK

R.E. Mansel, University of Wales, Welsh National School of Medicine, University Hospital, Dept. of Surgery, *Heath Park, Cardiff CF1 1XP, Wales, United Kingdom* (SP 1337/3)

OBJECTIVE: To determine the pathological basis for the mammographic appearance known as the prominent duct (Wolfe) pattern and to test the hypothesis that this pattern is a predictor of future breast cancer risk.

APPROACH: Mastectomy specimens containing ducts are radiographed after removal and sliced into sections 400 microns thick mounted on paper for macroscopic study. Areas showing density on radiography are taken for microradiography and histological study. Microradiography is performed on the Softex CMR X-ray unit and the microradiograph is examined under an optical microscope. Areas of microdensity are stained with collagen and elastic stains for histological study.

Secondly, the mammograms of all patients seen in the Cardiff Breast Clinic are prospectively classified according to the Wolfe hypothesis (Wolfe J.N., Cancer 37: 2486, 1976). The classification and data on known risk factors for breast cancer are entered into a computer program which will be updated yearly by postal follow-up. After 5 years, all patients will be recalled for a clinical and mammographic

review to determine the predictive accuracy of the prominent duct pattern for breast cancer.

PROGRESS: A pilot study has shown that several pathological entities can give rise to densities described as the prominent duct pattern with no clear-cut division between radiological sub-groups (R.E. Mansel, I.H. Gravelle and L.E. Hughes, Brit. J. Surg. 66:701, 1979).

SUPPORTED BY Cancer Research Campaign funds n.a.

3.0017,

A NATIONAL PROSPECTIVE STUDY OF SOCIO-DEMOGRAPHIC DIFFERENCES IN CANCER INCIDENCE AND SURVIVAL

A.J. Fox, City University, Dept. of Mathematics, *St. John St., London EC1V 4PB, England, United Kingdom* (SP 1602)

The study will use data derived from the Office of Population Censuses and Surveys Longitudinal Study, which covers approximately one percent of the population of England and Wales, to analyze and describe the relationships between socio-demographic characteristics of the population and cancer incidence in 1971-75 (and subsequently in 1976-80). In addition, it would consider, for those cases registered as having cancer in 1971-75, the relationships between survival after cancer registration and socio-demographic characterization in 1971 (the starting point of the longitudinal study).

SUPPORTED BY Cancer Research Campaign funds n.a.

3.0018,

EVALUATION AND ANALYSIS OF CIRCULATING IMMUNE COMPLEXES IN NEOPLASTIC PATIENTS

P. Casali, Universita degli Studi di Genova, Dept. of Immunology, *Viale Benedetto XV, 10, 16132 Genoa, Italy*

Circulating immune complexes (CIC) are found in high concentration in the serum of patients with collagen, kidney and liver diseases. Several reports have shown that also in several tumor and leukemia patients CIC levels are abnormally elevated. The present project tackles the question in a broad manner, in its methodological, epidemiological and analytical aspects. First, our methodological approach is based on the observation that no single available method for the detection of CIC can assess all complexes because each method sees different aspect of the complex and complexes are qualitatively different in different pathological situations. In consequence, we have developed a new method where several recognition units can be utilized. An enzyme-anti-enzyme complex (probe) competes with the CIC for binding sites in the recognition unit (conglutinin, C1q or rheumatoid factor) and the end-point is a reading of bound enzyme activity. This method is presently being used on a medium scale and its results are being critically evaluated. Second, a certain number of homogeneous groups of patients are selected and CIC determinations are performed (together with the monitoring of a number of immunological parameters such as serum complement levels, lymphocyte stimulability by mitogens, efficiency of NK cells) in close cooperation with clinical teams in the Genoa and Pisa area. The selected groups are: a) lung carcinoma (a follow-up of operated patients with randomized treatments has been set up); b) intestinal tumors; c) lymphomas (Hodgkin's and non-Hodgkin's); d) leukemias; e) African nasopharyngeal carcinoma positive for Epstein-Barr virus (EBV).

Third, the analysis of CIC will be done after isolation from large batches of high titered serum. The antibody and antigen will be studied separately; the latter will be tested for the presence of MHC products and for tumor specific viral antigens or virus-determined cellular antigens (as in the typical case of nasopharyngeal carcinoma complexes). Eventually both isolated ab and antigen moieties may be utilized as specific reagents.

SUPPORTED BY Consiglio Nazionale delle Ricerche funds n.a.

3.0019,

GLOBAL EVALUATION OF 'OFF THERAPY' LEUKEMIC CHILDREN

G. Masera, Universita degli Studi di Milano, Clinica Pediatrica, *Via Commenda 9, 20122 Milan, Italy* (80.01585.96)

OBJECTIVE: A prospective study of the clinical conditions of leukemic children who are off therapy. The project is composed of several segments: neuropsychological evaluation, including CAT, EEG, IQ, and behavioral evaluation; endocrinological evaluation; study of testis histomorphology, histoenzymology and ultrastructure; histological, biochemical and immunological evaluation of liver function.

During the first phase of the study (in progress) more than 70 children followed up at the Clinica Pediatrica of Milan will be examined. Later, several other Italian centers will be included in the project.

A national epidemiological study of 'off-therapy' children affected with several types of tumors is in progress.

SUPPORTED BY Consiglio Nazionale delle Ricerche funds n.a.

3.0020,

THE ROLE OF CARCINOGENIC CHEMICALS IN INDUCING PRIMITIVE BRAIN NEOPLASMS - A CASE-CONTROL STUDY

G. Morello, C. Besta Neurological Inst., *Via Celoria n.11, 20133 Milan, Italy* (80.02303.96)

The aim of the study is to estimate the relationship between the occupational exposure to carcinogenic chemicals and brain neoplasms. The research is an analytic epidemiological case-control study. All patients with histologically or radiologically confirmed brain neoplasms and all controls are interviewed about occupational history, amounts of tobacco smoked and alcohol consumed. Hospital control patients for each case are matched by sex, age and residence.

From preliminary data, obtained on 51 cases of glioma and their matched controls, we have shown an increased Relative Risk (RR) for gliomas among farmers. The RR is doubled (RR equals 8 (95 percent confidence limits: 1.4-45.9)) for farmers working after 1960; this fact suggests some relationship with pesticides and/or fertilizers which have been heavily used in Italy only in the last 20 years.

Based on this hypothesis, we have begun from Novermber 1980 to use a questionnaire more focused on the chemicals used in farming, trying to transform occupational data in exposure histories.

SUPPORTED BY Consiglio Nazionale delle Ricerche funds n.a.

3.0021,

EVALUATION OF THE CASE-CONTROL APPROACH FOR THE MONITORING OF OCCUPATIONAL CANCER RISKS

F. Berrino, Istituto Nazionale per lo Studio e la Cura dei Tumori, *1 Via G Venezian, 20133 Milan, Italy*

OBJECTIVE: The objective of the study is to reexamine a number of case-control studies which have aready been conducted on respiratory cancers and to analyze with a case-control type methodology the occupational data routinely collected by the Varese province cancer registry and by other health information systems in order to verify if the case-control approach may be of value for the identification of occupational carcinogens and for the evaluation of the proportion of disease caused by occupational exposure.

APPROACH: In occupational epidemiology the prospective approach (cohort studies) has been much more extensively used than the retrospective (case-control) one. The main disadvantage of the latter is the rarity of many occupations one might be interested in, so that the size of the study has to be very large to detect meaningful differences. On the other hand the results of a prospective study conducted on a single cohort of workers cannot be easily extrapolated to other working conditions; in particular population attributable risks cannot easily be estimated. In case-control studies the obstacle of the rarity of occupations may be overcome by grouping together all those who are exposed to the same risk factor(s); if both certain and possible exposures are grouped, the relative risk will be underestimated but, if the sensitivity of the categorization of the exposure is sufficiently high, a reliable estimate of the attributable risk is still possible even if the specificity is low. In the computation of the attributable risk, in fact, the underestimation of the relative risk may be satisfactorily balanced by the contemporary overestimation of the prevalence of the exposure in the population.

SUPPORTED BY Consiglio Nazionale delle Ricerche funds n.a.

3.0022,

IDENTIFYING AND TESTING MODELS FOR THE ANALYSIS OF TUMOR DEATH DATA

C. Cislaghi, Istituto di Biometria, *Via Venezian 1, 20133 Milan, Italy*

OBJECTIVE: The purpose of this study project is to identify those methods of analysis most appropriate for using official mortality data (a) in assessing priorities for preventive action and (b) in recommending lines along which further research may be profitably pursued.

APPROACH: The inquiry is to develop both on a national and a local (i.e., regional, provincial, by area) level, and will attempt to examine possible geographic and time-related key factors with a view to selecting the most accurate and revealing means of determining differing levels of general and/or specific environmental cancerogenesis.

SUPPORTED BY Consiglio Nazionale delle Ricerche funds n.a.

3.0023,

MONOOXYGENASE LEVELS AND URINARY MUTAGENESIS IN CHEMICAL WORKERS

G. Maltoni, Centro per lo studio e la prevenzione oncologica, *Viale Alessandro Volta 171, 50131 Florence, Italy* (800228796)

OBJECTIVES: Define to what extent the exposure to foreign chemicals varies the metabolism and the activation of environmental carcinogens. Determine the presence of potentially carcinogenic chemicals in the body fluids of workers exposed to mutagenic chemicals in the work place.

APPROACH: Parameters of monooxygenase activity in men will be measured with indirect methods (antipyrine half life, glucaric acid excretion, ratio between 6-beta-hydroxycortisol/17 hydroxycorticosteroids), and urinary mutagens will be monitored with the Salmonella-microsome assay.

PROGRESS: Preliminary observation indicates that chemical workers show an increase of glucaric acid excretion, whereas N-demethylase activity is often reduced. Smokers have a higher concentration of urinary mutagens than non-smokers. Chemical workers have mutagens in their urine even when they do not smoke.

SUPPORTED BY Consiglio Nazionale delle Ricerche funds n.a.

3.0024,

EPIDEMIOLOGICAL MODELS FOR THE STUDY OF ENVIRONMENTAL CARCINOGENESIS

E. Terracini, Universita degli Studi di Torino, Dept. of Epidemiologia dei Tumori, *Via Santena 7, 10126 Turin, Italy* (80.02312.96)

OBJECTIVES: 1) To estimate the population attributable risk determined by several etiological factors for cancer of the urinary tract and other sites; 2) to study the mechanisms of interactions between different etiological agents in carcinogenesis.

APPROACH: The design is that of case-control studies. Cases of cancer of the urinary tract are male residents in the Province of Torino. They are contacted and interviewed in the three main hospital urological wards of the Province. Each case is sex- and age-matched with a hospital control from the same urological ward (excluding cancer at any site, cystitis and haematurias of unknown origin). Information is collected on smoking habits, coffee consumption, use of analgesics and artificial sweeteners and occupational history throughout life. A further control group is represented by a random sample of residents in the city of Torino. During 1980, 92 such controls were interviewed. Other sites to be investigated in a similar way are cancer of the larynx and cancer of the mouth.

PROGRESS: Data regarding occupational and smoking histories of the first 225 pairs (bladder cancer case-hospital control) have been analyzed. Age-standardized relative risks associated with tobacco smoke were 4.8 for all smokers and 2.5, 6.1 and 7.1 respectively for smokers of 1-9, 10-19 and 20 plus cigarettes/day. The relative risk associated with occupations known to have an etiological role in cancer of the urinary tract (lasting at least 6 months in any life period) was 1.8. Relative risks determined by cigarette smoke were also estimated separately in persons occupationally exposed and non-occupationally exposed. The comparison suggests a multiplicative effect.

SUPPORTED BY Consiglio Nazionale delle Ricerche funds n.a.

3.0025,

PULMONARY FUNCTION TESTS IN ADOLESCENTS AND THEIR PARENTS - AN EPIDEMIOLOGIC APPROACH

B.J. van den Berg, University of California, Berkeley Campus, School of Public Health, Dept. of Biomedical & Environmental Health Sciences, *Berkeley, California* 94720 (1171R2)

This is a continuation of an epidemiologic study, whose research aims for this year are: (1) Evaluation of the effect of parents' smoking habits on health and morbidity of infants and young children. (2) Evaluation of the effect of parents' smoking on physical and cognitive development at the age of 5 years, 10 years, and 15 years. (3) Evaluation of interrelationship of morbidity, especially of the respiratory system, in childhood to subsequently established smoking habits and to the functional capacity of the lungs in adolescence. (4) Evaluation of the relationship between cigarette smoking and lung function test, blood pressure, and physique. (5) Identification of biosocial and behavioral factors that influence the decision to start smoking, to maintain the smoking habit and to quit smoking among a large cohort of parents and their children.

SUPPORTED BY Council for Tobacco Research U.S.A. Inc. $111,207

3.0026,

RELATIONSHIP OF LOWER RESPIRATORY TRACT DISEASE IN INFANCY TO THE DEVELOPMENT OF CHRONIC LUNG DISEASE IN ADULTS

C.B. Hall, University of Rochester, School of Medicine & Dentistry, Dept. of Pediatrics/Medicine, *601 Elmwood Ave., P.O. Box 607, Rochester, New York* 14642 (1164R2)

OBJECTIVE: To prospectively determine the long-term effect of lower respiratory tract disease from respiratory syncytial virus (RSV) during infancy and its relation to the possible development of chronic lung abnormalities.

APPROACH: Infants admitted to the hospital with proven RSV lower respiratory tract disease in 1975 and 1976 who were prospectively evaluated have been recalled at ages 2-4 years for examination to determine their clinical and pulmonary status. An allergic predisposition is also being evaluated by history, IgE, and RAST testing. Infants admitted with lower respiratory tract disease in the winter of 1978-79 were also examined daily with oximetry, during hospitalization. These infants are now similarly being followed periodically to determine extent of recovery or development of new pulmonary abnormalities. During the coming 1980 RSV epidemic, infants with proven RSV from an ambulatory setting will be identified and enrolled in the study to compare the effects of less serious RSV on the development of subsequent pulmonary abnormalities.

SUPPORTED BY Council for Tobacco Research U.S.A. Inc. $60,000

3.0027,

TO STUDY RELATIONSHIP OF WATER CONTACT AND PREVALENCE AND INCIDENCE OF S.

Unknown, U.S. Dept. of Defense, Navy, Naval Medical Research Unit #3, *FPO, New York, New York* 09527

No summary has been provided to the Smithsonian Science Information Exchange.

SUPPORTED BY Edna McConnell Clark Foundation Inc. $25,500

3.0028,

TO STUDY RELATIONSHIP OF HUMAN BEHAVIOR (WATER CONTACT AND DEFECATION) TO TRANSMISSION OF S. MANSONI

Unknown, National Public Health Lab. Service, *Nairobi, Kenya*

No summary has been provided to the Smithsonian Science Information Exchange.

SUPPORTED BY Edna McConnell Clark Foundation Inc. $38,329

3.0029,

ETIOLOGIC FACTORS INVOLVED IN THE INCREASED INCIDENCE OF ORAL CANCER IN GOA REGION

F. Dias, G.M. Hospital & Research Inst., Laboratories of Biochemistry & Immunology, *E. Borges Rd., Dona Paula, Ilhas, Goa 403004, India* (GCS/R/3)

Incidence of cancer of the oral cavity is observed to be higher than that of any other cancer type in this region. A study will be made to determine etiological factors for the increased incidence of oral cancer in the Goa region. Data on nutritional status, dietary history, occupation, and economic status will be collected. In addition, saliva and serum will be analyzed for nitrites, nitrosamines and antibodies to viral antigens to establish if there is any dietary or viral association with oral cancer in this region.

SUPPORTED BY Goa Cancer Society funds n.a.

3.0030,

BIOCHEMICAL, IMMUNOLOGICAL AND EPIDEMIOLOGIC STUDY OF LEUKOPLAKIA CASES AND THEIR TEN-YEAR FOLLOW-UP

S.G. Vaidya, G.M. Hospital & Research Inst., Laboratories of Biochemistry & Immunology, *E. Borges Rd., Dona Paula, Ilhas, Goa 403004, India* (GCS/R/2)

In the health camps organized by the Goa Cancer Society, about 10% of the examinees have leukoplakia. About 100 such cases will be followed up for the next ten years for development of malignancy, if any. Serum and saliva will be analyzed for certain biochemical (amylase, etc.) and immunological (CEA, etc.) markers at yearly intervals and sera will be stored for further follow-up.

SUPPORTED BY Goa Cancer Society funds n.a.

3.0031,

LUNG CANCER MORTALITY TRENDS IN PHILADELPHIA, PA, USA

W. Weiss, Hahnemann Medical College & Hospital, Medical College, Dept. of Medicine, *235 N. 15th St., Philadelphia, Pennsylvania* 19102

OBJECTIVE: To follow the trends in lung cancer mortality in Philadelphia from 1955.

APPROACH: The Philadelphia Department of Public Health publishes an annual statistical report which includes tables giving population and resident deaths by selected causes, age, race, and sex. These data are available, either in published form or in unpublished records, since 1954 as coded by the 7th revision of the ICD for most of the period before 1968 and by the 8th revision from 1968. The trends by age, race, and sex are being continually monitored and the race-sex data are being age-adjusted to the 1960 Philadelphia population.

PROGRESS: Contrary to the trends in the USA as a whole, the figures for Philadelphia have shown a marked diminution in the rate of increase in age-adjusted lung cancer mortality among both white and non-white males in the late 1960s and in the 1970s the rates have almost plateaued. In white females the slope has remained unchanged essentially since 1955. The number of cases in non-white females is too small to obtain reliable rates. Further observation and analysis continue.

SUPPORTED BY Hahnemann Medical College & Hospital funds n.a.

3.0032,

DIET CHANGE AND NUTRITIONAL EPIDEMIOLOGY

I.J. Lichton, University of Hawaii System, Manoa Campus, Agricultural Experiment Station, Dept. of Food & Nutritional Sciences, *Gilmore Hall, Room 102, Honolulu, Hawaii* 96822 (0081828)

OBJECTIVE: Study the effects of diet on the risk of colon and breast cancer in Pacific women in relation to effects of diet on estrogen metabolism; effect of cessation of ovarian function; parallel effects of enzymes on the gut flora; relationship between shifts in hormone metabolism and enzyme activities to ability of microflora to convert specific hormones to carcinogens or promoter substances. Provide information concerning nutritional patterns as they relate to the etiology of non-infectious diseases among peoples of industrial societies and those living in developing tropical countries.

APPROACH: Literature will be surveyed for studies of the relationship between diet and risk of cancer and studies of people living in Hawaii related to dietary intakes, nutritional status, mortality and disease incidence, with particular attention to ethnic subgroups. A population group consuming diets low in protein but high in fat and an appropriate control group will be identified. Seventy-two hour female dietary records and fecal and urine samples will be obtained. Analyses will be done on estrogens, androgens, cholesterol and fecal mutagens.

SUPPORTED BY Hawaii State Government funds n.a.

3.0033,

FIBROUS CARCINOGENS IN TURKESTAN FLOUR

C.H. O'Neill, Imperial Cancer Research Fund, Anchorage Dependence Laboratory, *Lincolns Inn Fields, London WC2A 3PX, England, United Kingdom* (161)

Esophageal cancer is a major cause of death in parts of Turkestan. The local distribution of the disease in this region, and its occurrence in certain other remote and parts of the world, point to an environmental cause.

We have now been able to identify a sharply pointed silica fiber, about two hundred microns in length and three in diameter, as a common contaminant of the flour from this region. It is not present in European flour, or in flour from various villages in Turkey and Syria. It originates from the surface of the seed of a species of grass, Phalaris genus, which can readily be identified in the wheat because of its characteristic morphology. X-ray scattering distinguishes it from fibers of mineral origin such as asbestos and shows it to be pure silica. While we do not know how fibrous carcinogens act, we have in the past shown that they can stimulate the growth of cultured fibroblasts. Tissue culture experiments have now shown that Phalaris fibrils similarly cause conspicuous and immediate stimulation of the proliferation of 3T3 cells in soft gel suspensions, ultimately resulting in the production of large colonies.

During the course of the last year investigations in Iran have shown that 80 percent of the people in the affected areas suffer from esophageal dysplasia (leucoplakia). We have therefore instituted animal experiments to determine whether Phalaris fibers can cause similar dysplasia in mice, and whether they can promote the appearance of tumors initiated by chemicals. It is hoped that this work may eventually stimulate epidemiological testing of this hypothesis either in Iran or in the other affected regions (the Transkei and the area around Lin-Hsien in China).

SUPPORTED BY Imperial Cancer Research Fund funds n.a.

3.0034,

EARLY BREAST CANCER - PATHOLOGY AND PROGNOSIS OF BREAST CANCER DEVELOPING IN PATIENTS TAKING ORAL CONTRACEPTIVES

J.L. Hayward, Imperial Cancer Research Fund, Breast Cancer Unit, *Lincolns Inn Fields, London WC2A 3PX, England, United Kingdom* (319)

An analysis has been carried out on all patients with breast cancer who have taken oral contraceptives at any time in the past. Clinical and histological features and prognosis have been compared with those in matched controls. A significantly higher number of the control patients had larger tumors and more extensive axillary node involvement than was found in the study group. Furthermore, a significantly greater number of patients in the study group had close relatives (mother or sister) who had had breast cancer than in the control group but the difference was not significant. These findings tended to reinforce those which had been reported in an earlier study on patients who had been taking the contraceptive pill during the year prior to diagnosis.

SUPPORTED BY Imperial Cancer Research Fund funds n.a.

3.0035,

THE ANGLO-JAPANESE TRIAL - PATHOLOGY OF BREAST TUMORS IN GREAT BRITIAN AND JAPAN

J.L. Hayward, Imperial Cancer Research Fund, Breast Cancer Unit, *Lincolns Inn Fields, London WC2A 3PX, England, United Kingdom* (304)

It was noted (ICRF Scientific Report 1976 - Report 264) that Japanese patients with early breast cancer have a much higher incidence of sinus histiocytosis in uninvolved axillary lymph nodes than similar patients in Britain.

An attempt is now being made to compare urine and blood endocrine levels with sinus histiocytosis, in British and Japanese patients with breast cancer. Histological sections from the primary tumor and axillary lymph nodes are being obtained from those patients from whom urine and blood specimens were

collected for the original endocrine comparison between the two races. These sections have all been mounted and stained identically in the Breast Cancer Unit, and sent to St. Vincent Hospital, Massachusetts where they are being reviewed independently by three pathologists.

SUPPORTED BY Imperial Cancer Research Fund funds n.a.

3.0036,

PATHOLOGY OF NORMAL AXILLARY LYMPH NODES FROM WOMEN IN GREAT BRITAIN AND JAPAN WHO DIED FROM CAUSES OTHER THAN BREAST CANCER (ABBREV)

J.L. Hayward, Imperial Cancer Research Fund, Breast Cancer Unit, *Lincolns Inn Fields, London WC2A 3PX, England, United Kingdom* (306)

Comparative studies of the pathology of breast tumors and axillary lymph nodes from patients in Great Britain and Japan have shown that Japanese patients with early breast cancer have a higher incidence of sinus histiocytosis in the uninvolved axillary lymph nodes than patients in Great Britain. The incidence of sinus histiocytosis in axillary lymph nodes from British and Japanese women without breast cancer is now being investigated. In Great Britain lymph nodes obtained from coroner's post mortems performed on women who die suddenly without evidence of any malignant disease are being collected so that the degree of sinus histiocytosis can be assessed in histological sections. Similar nodes are being collected in Japan.

SUPPORTED BY Imperial Cancer Research Fund funds n.a.

3.0037,

COMPARATIVE STUDY OF CASES WITH CERVICAL DYSPLASIA AND A CONTROL GROUP - SOCIOFCONOMIC PROFILE, ESTROGEN STATUS (ABBREV)

U.B. Saraiya, Assn. of Medical Women in India, Cytology Clinic, *Mahapalika Marg, Bombay 400001, India*

OBJECTIVE: To study a group of women with dysplasia and another group of normal women from the same community. a) To outline the variables involved in epidemiology of cervix cancer. b) To assess the probable relationship of high estrogen status to precancerous and malignant lesions.

APPROACH: a) Multidimensional analysis of variables involved in epidemiology of cervical cancer. b) Assessment of estrogen status by vaginal cytology and endometrial aspiration in the patients with precancerous and malignant lesions of the cervix.

PROGRESS: About 500 cases are under surveillance and participate in a longitudinal study. a) A scoring system has been evolved to understand the profile of a woman who is at an increased hazard of cervical cancer. Three groups of cases have had their individual scores compared. The data is statistically significant. The majority of normal women have low scores while women with cancer show a higher score than those with dysplasia. b) Current methods used have not given satisfactory results. Serum or urinary estrogen assays will provide more reliable data.

SUPPORTED BY Indian Council of Medical Research funds n.a.

3.0038,

INTRACANALICULAR PAPILLOMA OF THE BREAST - FREQUENCY IN OUR AREA AND ITS POSSIBLE RELATIONSHIP TO BREAST CARCINOMA

N. Gallo, Instituto Nacional de Cancerologia, Seccion de Cirugia, *Apartado Aereo #17.158, Bogota, DE, Colombia* (01-017)

OBJECTIVE: To clarify the possible relationship between intracanalicular papillomatosis and cancer of the mammary gland.

MATERIAL: Clinical histories of patients with confirmed diagnosis of intracanalicular papilloma alone or papillomatosis and breast carcinoma seen at our Institute between January 1958 and December 1975.

METHOD: Analytical retrospective study of these clinical histories. (Translated)

SUPPORTED BY Instituto Nacional de Cancerologia funds n.a.

3.0039,

OSTEOSARCOMA IN UNUSUAL LOCATIONS AND AGE GROUPS

G. Barbosa, Instituto Nacional de Cancerologia, Seccion de Patologia, *Apartado Aereo #17.158, Bogota, DE, Colombia* (01-061)

OBJECTIVE: To determine the anatomopathological and clinical characteristics of osteosarcoma found at uncommon sites and/or in uncommon age groups.

METHOD: Clinical histories of patients with confirmed diagnosis of osteosarcoma in unusual locations, or of an age that is not epidemiologically common, will be studied by retrospective analysis. (Translated)

SUPPORTED BY Instituto Nacional de Cancerologia funds n.a.

3.0040,

HEALTH EFFECTS DUE TO AN ACCIDENTAL EXPOSURE TO DIMETHOATE

E.L. Matos, Instituto Oncologia Angel H. Roffo, Departamento de Investigaciones, *Av. San Martin 5481, 1417 Buenos Aires, Argentina* (135)

OBJECTIVE: In May, 1979, an exothermic reaction occurred in the production of dimethoate (RN 60-51-5). The resulting escape of gases lasted 4 hours and ceased only upon consumption of all the existing product. Two persons died, and 30 exhibited symptoms of poisoning. Results of the testing of dimethoate for carcinogenicity in rats have been contradictory. On the other hand, this pesticide has been found to be mutagenic in S. cerevisiae and E. coli. The population that was most exposed (the firemen and security personnel who remained on duty during the entire fire) was studied and will be followed up as far as future incidence of tumors is concerned.

METHOD: Individuals were personally interviewed as to information referring to immediate, 2-, 8- or 12-month post-accident symptoms, closeness to cistern, seniority and position, poisoning antecedents, smoking and drinking habits. Blood samples were also taken in order to observe sister chromatid exchange (SCE) in peripheral lymphocyte chromosomes.

PROGRESS: One year after the accident the exposed group did not show any health problems. Chromosomal study revealed a significant SCE increase with respect to controls. Our first results have been submitted for peripheral publication.

SUPPORTED BY Instituto Oncologia Angel H. Roffo funds n.a.

3.0041,

SURVEY AND PROPHYLAXES OF ENDEMIC GOITER IN THE PROVINCE OF NORTH FRONTIER OF PAKISTAN

S.H. Khan, Pakistan Atomic Energy Commission, Inst. of Radiotherapy & Nuclear Medicine, Dept. of Nuclear Medicine, *c/o Peshawar University Campus, Peshawar, Pakistan*

The aim is to set up radioimmunoassay procedures for the measurement of T.S.H., T3 and T4 for areas where endemic goiter is prevalent. Problems related to collection, storage and transportation of blood samples will be investigated and will be tried to be solved by using special paper strips.

Survey of certain areas has already been done. This will be followed by collection of samples (blood, foodstuffs, water and soil) for chemical analysis. Bacteriological study of the drinking water (deep and superficial) will also be undertaken.

SUPPORTED BY International Atomic Energy Agency $12,900

3.0042,

MEASUREMENT OF TRACE ELEMENTS IN HUMAN HEAD HAIR, TOBACCO ARTICLES AND FOOD GRAINS OF PAKISTAN

I.H. Qureshi, Pakistan Atomic Energy Commission, Nuclear Chemistry Div., *P.O. Nilore, Rawalpindi, Pakistan*

Increased use of chemicals in agriculture and industry is adversely affecting the quality of our environment. These chemicals enter the human body through atmosphere and food chain and affect human health. Therefore the measurement of toxic elements in food, water and atmosphere will provide useful information regarding their affect on human health.

Trace element analysis of human head hair and other body tissues is a favoured techniques for monitoring contamination of human body. Such studies may help in establishing co-relation between internal contamination and environmental factors and in assessing the safety of human diet.

In Pakistan, studies are being made on the measurement of toxic and other trace elements in human head hair using Instrumental Neutron Activation Analysis Technique. Samples of hair from male, female and children in different social and occupational groups are being analyzed to determine the prevailing concentration level of 14 trace elements. Studies are also being made on the measurement of 15 elements in cigarette tobacco and wrapping paper. Cigarette filter and the ash are being analyzed to determine the absorption of toxic elements and there transference in smoke. Food grain will also be analyzed to determine the concentration of various trace elements.

SUPPORTED BY International Atomic Energy Agency funds n.a.

3.0043,

COMPARATIVE STUDY OF CANCER RISKS FROM EXPOSURE TO EFFLUENTS FROM FOSSIL FUELLED AND NUCLEAR POWER STATIONS

K.G. Vohra, Bhabha Atomic Research Centre, Div. of Radiological Protection, *Trombay 400085, Bombay, India*

The future large scale production of nuclear power would involve radiation exposure of larger groups of occupational workers, individuals and groups in the population, and the population at large. In view of the concern about the risks of nuclear power often expressed by uninformed public, it is necessary that the risks associated with alternative energy sources such as those based on fossil fuels are compared with similar risks associated with nuclear energy production.

The risks of cancer mortality from ionizing radiations have been studied by two important international Committees, viz. the United Nations Scientific Committee on the Effects of Atomic Radiations and the US Advisory Committee on the Biological Effects of Ionizing Radiations (BEIR Committee). Extensive epidemiological data on the incidence of cancer is also available for several industrial cities, compiled by a number of research institutes. However there has been very little effort in collecting the data of both types at one institution and comparing the two in terms of quantitative risk evaluation.

The proposed program is concerned with the risks of cancer induction associated with the above two energy sources. The risks of specific cancers, for example, lung cancer, would be compared, based on extensive environmental measurements data and epidemiological data.

Risk analysis for radiation induced cancers will be based on the extensive data available on human exposure and animal experiments. The risk associated with fossil fuelled power stations will be assessed on the basis of available data on selected chemical carcinogens and the epidemiological data for urban areas affected by continuous operation of fossil fuelled power stations. The project will also include some measurements of chemical carcinogens in selected areas for direct comparison with epidemiological data.

SUPPORTED BY International Atomic Energy Agency $4,250

3.0044,

LEUKEMIAS AMONG ATOMIC BOMB SURVIVORS - A SERIAL HEMATOLOGIC AND CYTOGENETIC STUDY

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OBJECTIVE: Chromosome aberrations seem to be one of the most conspicuous residual abnormalities recognizable in radiation-exposed persons for many years after exposure. Knowledge of the biological significance of these abnormalities seems to be necessary for an understanding of the effects of radiation on humans, especially in relation to possible leukemia development. Our study focuses on leukemogenesis in atomic bomb survivors.

APPROACH: Cytologic and cytogenetic studies are performed on the bone marrow cells of atomic bomb-exposed patients who had prolonged periods of blood disorders which terminated in acute leukemia (Group I) and disorders which did not terminate in acute leukemia (Group II), and survivors who were in apparent good health (Group III).

PROGRESS: 1) Preleukemic states were observed in some leukemia patients. 2) Cytogenetically abnormal clones were observed in survivors who were exposed within 1,000 meters. 3) Two proximally exposed survivors found to have abnormal clones for

12 years developed chronic myelocytic leukemia and breast carcinoma respectively.
SUPPORTED BY Japanese Ministry of Education Science & Culture funds n.a.

3.0045,
INFANT MORTALITY IN KANSAS: DIFFERENTIALS AND CAUSE-PERIOD PATTERNS

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OBJECTIVE: The first objective is to measure the association between infant mortality and its components (neonatal and postneonatal mortality) and several income measures in order to ascertain the nature and extent of this traditional inverse relationship. This relationship will be examined longitudinally (1947-49, 1957-59, 1967-69, 1977-79) for the 105 counties of Kansas. The second objective is to analyze cause of death. Specifically, the second objective will examine the following: (a) calculate and describe the percentages of infant deaths in the neonatal and postneonatal periods for each of the four time periods; (b) investigate to determine if postneonatal cause of death are contributing to neonatal mortality and vise versa, which has been called the 'cause-period cross-over effect', (c) is a and b above occurring due to advances in medicine or socioeconomic changes (as measured by income). That is, are worsening socioeconomic conditions increasing the percentage of infant deaths in the postneonatal period or are medical advances prolonging the infants life into the second and subsequent months.

APPROACH: See objectives.

PROGRESS: The primary objective of this project was to measure the association between infant mortality and its components (neonatal and postneonatal) and socioeconomic and demographic characteristics in Kansas counties for the time period centering around 1975 in order to ascertain the nature of this traditional inverse relationship. Kansas' lower infant mortality rate compared to the U.S. rate was documented: 14.7 infant deaths per 1,000 live births in Kansas and 16.0 for the U.S. Highest infant mortality rates occurred in the state's agricultural areas, while the lowest rates were in non-metropolitan manufacturing counties. Service center and metropolitan counties were intermediate. Socioeconomic variables were found to be inversely related with infant mortality and its components. Education, income, the ratio of doctors to the population and the density of housing were sensitive and inverse indicators to the infant mortality rate. There were 21% more infant deaths in the 24 Kansas counties with the lowest educational levels than in the 32 Kansas counties with the highest educational levels. Two population change indicators were found to be related to infant mortality--net migration and total growth. Counties losing population had higher infant death rates than c (Text Truncated - Exceeds Capacity)

SUPPORTED BY Kansas State Government funds n.a.

3.0046,
PILOT PROJECT FOR DETECTION OF UTERINE CANCER AND STUDY OF EPIDEMIOLOGICAL FACTORS

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OBJECTIVES: 1) To detect pre-cancerous and early cancerous lesions of the uterine cervix by Pap Smear. 2) To investigate, treat and follow up these cases. 3) To ultimately reduce the incidence of carcinoma cervix in the screened population. 4) To study the epidemiological factors of the disease.

APPROACH: Information and Health education regarding the program were provided to the public by house-to-house visits and by other means like radio, press, cinema, etc. All married women above the age of 20 underwent a Pap Smear. The smears were collected by trained A.N.M.S. under the supervision of a doctor, screened by cytotechnicians and cytotechnologists and abnormal slides were interpreted by a cytopathologist. Cases of severe dysplasia, carcinoma in situ and invasive carcinoma were further investigated and confirmed by biopsy and appropriate treatment given and followed up. A protocol is filled for study of epidemiological factors.

PROGRESS: We have two such projects, one in a village and another in a city. The first project in the village was started in September 1978. We have screened about 20,000 women. The project is progressing well.

The second project in the city area was started in July 1980 and only 2500 women were screened to date. It is also progressing satisfactorily.

SUPPORTED BY Kerala State Government funds n.a.

3.0047,
THE INCIDENCE OF STOMACH CANCER FOLLOWING FORMER ULCER OPERATION

C. Toftgaard, University Hospital of Aarhus, Dept. of Surgery, *Norrebrogade 44, DK8000 Aarhus C, Denmark* (28/79)

OBJECTIVE: The incidence of cancer of the stomach following former ulcer operation is discussed; it is believed to be up to six times higher than stomach cancer incidence overall.

APPROACH: A population of patients operated on for duodenal and stomach ulcers 20 to 25 years ago is established. The patients are identified through the Danish Cancer Registry and cancer incidence is calculated. The aim is to establish a population of at least 4000 operated on persons.

PROGRESS: The population is now being established and is going to be registered in EDB.

SUPPORTED BY Landsforeningen til Kraeftens Bekaempelse funds n.a.

3.0048,
A CASE-CONTROL STUDY OF ETIOLOGICAL FACTORS IN URINARY BLADDER CANCER IN A RURAL PART OF DENMARK

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Epidemiological data are collected in 210 consecutive, newly diagnosed patients with bladder cancer. The patients are interviewed about exposure to chemical materials; alcohol, tobacco, medication and coffee consumption; use of artificial sweeteners; history of illnesses particularly of the urinary system and delay. Controls are selected randomly from the general population, matched to cases by sex, age and residence on a one-to-one basis for the males and on a one-to-two basis for the females. The possible interrelationship of the variables with other epidemiological variables is studied. These include socioeconomic factors, urban factors and occupational exposure. The data are coded for statistical analysis. In addition, the N-acetyltransferase phenotype is studied in patients and controls, smokers and nonsmokers in a rural population and the results are compared with results for an urban population.

SUPPORTED BY Landsforeningen til Kraeftens Bekaempelse funds n.a.

3.0049,
RELATIVE FREQUENCIES OF PRIMARY CANCERS OF ALL SITES IN RAMATHIBODI HOSPITAL, 1974-1978

W. Isarangkul Na Ayuthya, Mahidol University, Ramathibodi Hospital, Dept. of Pathology, *Rama 6 Rd., Bangkok 4, Thailand* (C32/1979)

OBJECTIVES: 1. To study the relative frequencies of histologically diagnosed primary cancers of all sites in Ramathibodi Hospital from 1974 to 1978. 2. To test the computerized processing system for utilizing, on a large scale, data on surgical pathology.

APPROACH: Data for 1974-1978 were retrieved from the master file and those on primary malignancies were selected. The data were then automatically tabulated by anatomical sites, histological type, sex, age and ethnic group. The reports were checked and corrected for errors in disease classification (SNOP) codes, modified and the data were sometimes retabulated manually. Comparison of the frequencies with those of some Asian countries was also attempted.

PROGRESS: Sofar all the tabulations and statistical analyses have been completed. Interpretation and comparison are being done and final report is expected to be completed by August 1980.

SUPPORTED BY Mahidol University funds n.a.

3.0050,
NATIONAL SURVEY OF ADULT DENTAL HEALTH 1978

P.M. James, University of Birmingham, *P.O. Box 363, Birmingham, England, United Kingdom*

No summary has been provided to the Smithsonian Science Information Exchange.

SUPPORTED BY Medical Research Council funds n.a.

3.0051,
EPIDEMIOLOGICAL STUDY COMPARING WOMEN WITH SYMPTOMATIC BREAST DISEASE AND A SCREENED NORMAL POPULATION

M.M. Roberts, University of Edinburgh, Dept. of Clinical Surgery, *Mayfield Rd., Edinburgh EH9 3JR, Scotland, United Kingdom* (G979/337)

OBJECTIVE: The objective of this study is to compare the clinical history and examination findings in women with symptoms related to the breast whom we have treated over the past ten years, with those in a normal asymptomatic population of women who underwent screening for breast disease. The aim of the comparison is to determine whether a group of women who are at high risk of breast cancer can be delineated, with obvious implications for future screening programs.

APPROACH: Computerized information, collected prospectively, is available on 9,500 women: 1,000 from Cardiff and 4,500 from Edinburgh Diagnostic Clinics; and 4,000 asymptomatic women from the Edinburgh Breast Screening Clinic. A total of 824 women were diagnosed as having breast cancer. The information includes data on menstrual status, parity and reproductive history, family history, previous breast disease, other diseases, drug history, clinical and mammographic examination. A multivariate and discriminant analysis will be performed to compare symptomatic women (with or without cancer) with a normal screened population; and secondly to define factors which will delineate a group of women at increased risk of breast cancer.

SUPPORTED BY Medical Research Council funds n.a.

3.0052,
ORAL CONDITIONS IN RELATION TO TRACE ELEMENTS IN HUMAN TISSUE AND THE ENVIRONMENT

P.M. James, University of Birmingham, Dept. of Dental Health, *P.O. Box 363, Birmingham, England, United Kingdom*

No summary has been provided to the Smithsonian Science Information Exchange.

SUPPORTED BY Medical Research Council funds n.a.

3.0053,
THE PSYCHOSOCIAL SETTING OF POLYCYTHEMIA VERA

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OBJECTIVE: Polycythemia vera (p.v.) is a rare myeloproliferative disease with unknown etiology and epidemiology. Accidental clinical observation suggest that the disease might be precipitated by psychosocial stress. An interdisciplinary controlled study has been begun in order to ascertain the possible role of psychosocial stress in the clinical manifestation and clinical course of the disease, and to determine how this is possibly correlated with hematologic and immunologic parameters.

APPROACH: Consecutive p.v. patients and their matched-pair controls (patients with polyglobulias) are studied by a structured interview schedule and a series of psychological tests, including Family Attitudes Questionnaire, Habits of Nervous Tension Scale, Defense Scale, Rorschach and TAT cards. Included in study is also the assessment of the patients' coping behavior, as well as aspects of guidance.

PROGRESS: So far, 23 patients have been studied. 21/23 pts. manifested their illness while unsuccessfully coping with major life stresses such as loss of a prominent family member, marital discord and occupational troubles. Moreover, poor adjustment with regard to marital, sexual and interpersonal relationships was found. Family Attitudes Questionnaires revealed a significant lack of emotional closeness to parents. The Habits of Nervous Tension Scale demonstrates an abnormal release of emotion prior to and during the course of the disease.

SUPPORTED BY Medizinische Hochschule Hannover funds n.a.

3.0054,

MANAGEMENT OF MAN-BITING INSECT PROBLEMS IN MICHIGAN

H.D. Newson, Michigan State University, School of Natural Sciences, Dept. of Entomology, *243 Natural Resources Bldg., East Lansing, Michigan* 48824 (0061171)

OBJECTIVE: Study biology, geographical distribution and seasonal incidence of haematophagous arthropods; determine incidence and distribution of arthropod-borne diseases, their significance to humans and animals and the vectors and reservoirs in sylvan transmissions; develop recommendations for biting arthropod control.

APPROACH: Survey and/or study selected areas to determine indigenous species of biting arthropods, their hosts and ecological relationships. Use information from State Health Department and State Wildlife Disease Pathologist to locate areas of arthropod-borne disease activity and study relationships of biting arthropods and their feral and human hosts. Develop a biting insect control program for use in the state park system, emphasizing management practices with minimal pesticide usage.

PROGRESS: Work was continued on the distribution and biology of Michigan mosquitoes. A manuscript, 'An annotated list of mosquitoes reported from Michigan, ' was completed and submitted for publication. This is the first compilation of this type for Michigan and will be a useful reference for future workers. The cooperative arbovirus surveillance program was continued with the Michigan State Department of Public Health. This consisted, in part, of studies on the biting habits, host preferences and seasonal distribution of Culex pipiens and C. restuans (the two most likely vectors of St. Louis encephalitis virus in Michigan) in areas of the state where virus transmissions were occurring (as determined by positive serology tests in bird blood samples). This is designed as an early warning system to detect impending outbreaks of arbovirus infections in humans. Virus transmission in Michigan during 1979 was low with only two reported human cases of St. Louis encephalitis (SLE) and six immature birds with antibody levels indicating prior SLE infections in 1979.

SUPPORTED BY Michigan State Government funds n.a.

3.0055,

EPIDEMIOLOGICAL STUDY ON THE GEOGRAPHICAL VARIATION OF CANCER INCIDENCE AND MORTALITY

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OBJECTIVE: Chiba prefecture in Japan has been rapidly industrialized in the last two decades; virtually one half of it has become urbanized and the remaining half has been left rural. Comparison of cancer incidence in both districts is now being studied.

APPROACH: We are now analyzing the geographic distribution of site-specific cancer rates within the prefecture. This will provide valuable information regarding the effect of variation in epidemiologic factors which has thus been brought about.

PROGRESS: Data accumulation and analysis are ongoing.

SUPPORTED BY Ministry of Health & Welfare funds n.a.

3.0056,

EPIDEMIOLOGICAL AND CLINICOPATHOLOGICAL STUDY OF T CELL MALIGNANT LYMPHOMA IN NAGASAKI DISTRICT

M. Ichimaru, Nagasaki University, School of Medicine, Dept. of Hematology, *12-4 Sakamoto-Machi, Nagasaki, Nagasaki, Japan*

OBJECTIVE: Clarify the distribution of T cell and B cell non-Hodgkin's lymphoma in Nagasaki and study the specific clinicopathological features of T cell leukemic malignant lymphoma in this district.

APPROACH: Study the surface markers of tumor cells of non-Hodgkin's lymphoma by using tumor cells in peripheral blood or cells of biopsied lymph nodes of all cases of non-Hodgkin's lymphoma experienced. Pathological findings of lymph nodes, morphological features of tumor cells, clinical features and effects of chemotherapy and epidemiological differences are also studied.

PROGRESS: Tumor cells of 106 patients with non-Hodgkin's lymphoma in the Nagasaki district (Japan) were examined for the presence of T-cell or B-cell markers. Seventy-nine (74.5 percent) of the 106 non-Hodgkin's lymphomas were of T-cell origin, and 49 (62.0 percent) of these T-cell lymphomas were leukemic. The incidence of T-cell lymphoma was higher than in other districts (except Kagoshima) in Japan and in Western countries. PDLL, mixed type and large lymphoid by Rappaport's classification were common in these T cell lymphomas, according to histological findings of lymph nodes. Clinicohematological features of these T cell lymphomas have been studied. These lymphomas were characterized by nucleic pleomorphism of leukemic cells, high percentage of skin rash, hypercalcemia and specific infections, etc.

SUPPORTED BY Ministry of Health & Welfare funds n.a.

3.0057,

EPIDEMIOLOGICAL STUDY ON THE HOST-ENVIRONMENT INTERACTION IN HUMAN CARCINOGENESIS

S. Fukuma, Chiba Cancer Center Research Inst., Division of Epidemiology, *666-2, Nitona-Cho, Chiba 280, Chiba, Japan*

OBJECTIVE: It is generally accepted that human cancers are mainly caused by the carcinogenic effect of environmental materials, e.g., tobacco and food additives. Some occupations may also be included among such environmental factors, but they have not yet been adequately studied in many countries. Furthermore, it is also hypothesized that hereditary factors for cancer liability interact with environmental ones and intensify their hazardous effect, but at present there are few demonstrable examples of the host-environment interaction in epidemiological studies. The object of our study is, first, to identify any occupations with suspected high risk of cancer and, second, to examine whether any synergistic effects of familial cancer history and occupational factors can be found.

APPROACH: Data are available in the hospital records of Chiba Cancer Center Hospital and the population-based Cancer Registration Center of Chiba prefecture.

PROGRESS: Data accumulation and analysis are ongoing.

SUPPORTED BY Ministry of Health & Welfare funds n.a.

3.0058,

EVALUATION OF POTENTIAL CANCER HAZARDS OF OCCUPATIONAL EXPOSURES BY SHORT-TERM MUTAGENIC ASSAYS

G. Scassellati Sforzolini, Universita degli Studi di Perugia, Facolta di Farmacia, Cattedra di Igiene, *Via del Giochetto, 06100 Perugia, Italy*

Whereas several laboratories have begun using mutagenic screening techniques to test mutagenic activity of single agent, our interest has been primarily concentrated on a study of the mutagenicity of multiple environmental agents, actually encountered in occupational exposure.

For our research program we have chosen to study the work environment of one industry of an industrialized zone of Central Italy which utilizes potentially carcinogenic products such as carbon and petroleum pitches.

Mutagenicity short-term tests by microbial systems are performed either in samples of these products or in air samples collected from working environment (in toto and fractionated), in order to study the feasibility of utilizing these rapid tests to evaluate the mutagenic (and potential carcinogenic) risk of industrial processes. The examined samples are analyzed also for the presence of polycyclic aromatic hydrocarbons.

Besides, epidemiological surveys on exposed workers are carried out and their urine is analyzed to test mutagenic activity using the same microbial short-term tests.

SUPPORTED BY Ministry of Public Education funds n.a.

3.0059,

INVESTIGATION OF SELECTED VEHICLE ACCIDENTS

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Objective: To establish the mechanisms of trauma in motor vehicle collisions through intensive study of the relationship of occupant injuries to vehicle components, crash severity, and restraint system effectiveness. Significance: The emphasis of this continuing program is on establishing precisely how and why the injuries occurred and how they can be prevented or reduced. Methods: Approximately 130 collisions per year are selected from Washtenaw County crashes for detailed investigation. Only crashes with the following characteristics are selected: The crash has resulted in an injury; the vehicle (a late-model passenger car, pickup truck, van, recreational vehicle, or large truck) was manufactured by an MVMA-member company; the vehicle was towed away from the accident scene; and the vehicles involved can be examined within 48 hours of the collision. Results: Each clinical case is documented with the Collision Performance and Injury Report long form; detailed medical report; 35 mm color slides of the accident scene, vehicles, impacted object, exterior and interior damage; and reporting on other pertinent factors (alcohol, drugs, extrication complications, etc.).

Document provided to S.S.I.E. by the H.R.I.S.

SUPPORTED BY Motor Vehicle Manufacturers Assn. of the U.S. Inc. funds n.a.

3.0060,

STUDY OF A POPULATION EXPOSED TO HIGH LEVELS OF CHROMIUM IN WATER

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Several studies have shown an increased incidence of cancer in workers involved in the manufacturing of chromates, and in vitro studies have shown an increase in chromosomal observations and sister chromatid interchange in cells treated with hexavalent chromium. The maximum acceptable level of hexavalent chromium in drinking water is 50 micrograms/kg, according to the WHO. In the San Martin municipality of the province of Buenos Aires a high level of chromium contamination has been found in water used by inhabitants adjacent to a plating factory. Levels of hexavalent chromium detected in wells used as water sources were on the order of 5 mg/kg. At that time various pathologic conditions of the skin and respiratory, digestive and urinary systems of the local inhabitants were evident.

OBJECTIVE: The 208 affected individuals will be followed up to determine whether they develop a higher incidence of cancer than that of the general public.

METHOD: The exposed population has been questioned regarding personal data; residence and water supply over the last 10 years; occupation; social habits; and in particular, regarding their ingestion of liquids during the period of contamination. Clinical symptoms observed have also been recorded. This information is being processed. A yearly follow-up for at least 10 years is planned. (Translated).

SUPPORTED BY Municipalidad de San Martin funds n.a.

3.0061,

MULTIDISCIPLINARY STUDY OF A FAMILIAL AGGREGATE OF HODGKIN'S DISEASE, OTHER LYMPHATIC MALIGNANCY AND IMMUNODEFICIENCY CASES

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A familial aggregate of cases of Hodgkin's disease, other lymphatic malignancies, embryonal tumors and immunodeficiency has occurred in a genetically isolated Newfoundland population.

OBJECTIVE: To attempt to a) define a genotype that is susceptible to development of Hodgkin's disease and other disorders; b) see if a particular immunological phenotype may confer susceptibility; c) discover if infection with E.B. virus or other members of the herpes group is associated with the aggregate; d) integrate all the above data to construct an epidemiologic picture of what may have happened in this community.

APPROACH: To study the whole community so that observations are internally controlled. A data bank of pedigree data, genetic markers, immunological profiles and anti-viral antibody titres has been compiled. Analyses are proceeding.

PROGRESS: The aggregate has been described (Clin. Invest. Med. 1980, two papers); associations with Rhesus negative state (Vox Sang, 1979), with elevated IgD and IgM (Int. Arch. Allergy and Appli. Immunol. 1980), with HLA-B18 (Int. J. Cancer 1977) are all published. The latest pedigree analytic work is in press (Thompson, E., Heredity, 1980 or 81). A

recessive susceptibility gene predisposing to both HD and ID now seems likely.

SUPPORTED BY National Cancer Inst. of Canada funds n.a.

3.0062,

THE USE OF IN VIVO CYTOGENETIC TESTS FOR ASSESSING POPULATION CANCER RISKS

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OBJECTIVES: There are many physical and chemical agents in the human environment which are capable of causing genetic damage. The present hypotheses are: one, that genetic damage can lead to the development of cancer many years after exposure, and two, that chromosome damage is an indicator of such genetic damage. The major objective of this proposal is to assess the usefulness of in vivo cytogenetic tests for monitoring populations exposed to mutagenic or carcinogenic agents. A second objective is to compare cytogenetic tests with another genetic assay: urine mutagenicity using microbial test for mutation, both with and without mammalian metabolic activation. Long-term objectives are: one, to establish a reliable protocol for monitoring the exposure of human populations to environmental health hazards, and two, to relate genetic damage in an individual to subsequent health risks.

APPROACH: Three cytogenetic endpoints, chromosome aberration, sister chromatid exchange (SCE) and formation of micronuclei will be evaluated for their reproducibility, sensitivity and usefulness as indicators of exposure to mutagens and increased cancer risk. Recent studies have identified a defined population of steel foundry workers who are exposed to high levels of mutagenic air particulate and who have a high mortality rate due to lung cancer. It is proposed to compare the frequencies of chromosome abnormalities, SCE and micronuclei in three groups: the high-risk population of foundry workers, a low-risk group of workers in the same foundry who are not exposed to the high levels of mutagenic particulate and a group of office workers at the same plant. Care will be taken to match exposed subjects with their two controls for sex, age, medications, medical status, and smoking habits. Simultaneous studies of these individuals are being carried out by Dr. D.R. McCalla, Department of Biochemistry, McMaster University, using a urine bioassay for mutagenicity in microbial mutation tests with and without metabolic activation.

SUPPORTED BY National Cancer Inst. of Canada funds n.a.

3.0063,

EPIDEMIOLOGY OF LUNG CANCER IN WOMEN

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OBJECTIVES: 1. To determine the extent to which lung cancer in women is attributable to cigarette smoking. 2. To assess in women, in comparison with an age-matched series of men, the risk of smoking different types of cigarettes. 3) To assess in women and in an age-matched series of men with lung cancer, the possible protective effect of vitamin A-containing foods. 4. To attempt to assess in women the contribution of other suspect risk factors in the etiology of lung cancer including occupation, passive smoking and exposure to other known environmental factors.

APPROACH: Over a two-year period, all newly diagnosed cases of lung cancer in women will be identified in Metropolitan Toronto. Three comparison series will be also identified: an age-matched series of men with lung cancer from the same institution as the index case, and two population control series derived from municipal enumeration lists matched by age and sex with the two series of cases of lung cancer. Each case and each control will be interviewed in their homes and a questionnaire obtaining information on smoking, occupation, consumption of vitamin A-containing foods, exposure to smoke from others at home and at work, family history and other suspect risk factors will be obtained. It is anticipated that 380 index cases will be interviewed during a two-year period of study, the third year to be devoted to analysis preparation and report.

SUPPORTED BY National Cancer Inst. of Canada funds n.a.

3.0064,

ROLE AND SIGNIFICANCE OF HUMAN PAPILLOMA VIRUS INFECTION IN THE GENESIS OF CERVICAL NEOPLASIA

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OBJECTIVE: We intend to determine whether human papilloma virus (HPV) infection of the cervix (flat condylomata), a sexually transmitted disease, is morphologically similar to mild and moderate dysplasia, but regresses without any direct relationship to the latter; or whether flat condylomata are really identical to mild and moderate dysplasia, which would indicate that HPV may play a role in the development of cervical neoplasia.

APPROACH: There are precise criteria for differential diagnosis of condylomata of the cervix, based on clinical, cytologic, colposcopic and histopathologic studies. With these criteria it was found that condylomata of the cervix are much more frequent than was formerly suspected. We now intend to specify the differential diagnostic criteria of condylomata using immuno-peroxidase (Pap test), immunofluorescence and immune electron microscopy, using an anti-HPV. Ultrastructural histomorphology of condylomata and mild and moderate dysplasia will be reviewed. We hope to find ultrastructural criteria of differential diagnosis and possibly some evidence on which to base predictions as to which of the intraepithelial lesions are more likely to progress towards invasive neoplasia.

Finally, regression, persistance or progression of condylomata will be studied on an epidemiological basis using our computer files which contain data on more than 250,000 patients of which more than 3,600 exhibit some evidence of intraepithelial lesions of the cervix. When we reviewed these intraepithelial lesions using the new differential diagnostic criteria, it was found that over 70% could be considered condylomata on light microscopic examination. Our epidemiological studies should reveal the evolution of these condylomatous lesions.

It is hoped that this work will help to clarify the significance of human papilloma virus infection as related to cervical neoplasia.

SUPPORTED BY National Cancer Inst. of Canada funds n.a.

3.0065,

THE PREVENTION AND MANAGEMENT OF INFECTION IN GRANULOCYTOPENIC PATIENTS

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OBJECTIVES: 1. To study 'colonization resistance' in patients on selective suppression of aerobic gastrointestinal flora. 2. To determine if co-trimazole can prevent colonizaton and infection with C. albicans and compare it to nystatin. 3. To develop serologic techniques to identify Candida and Asperigillus infections by antigenic recognition. 4. To further study an animal model of neutropenia and spontaneous bacteremia in order to determine the efficacy of antimicrobial regimens in the prevention of bacteremia and the maintenance of 'colonization resistance'. 5. To study cytotoxin producing clostridia as intestinal pathogens in neutropenic patients.

APPROACH: Patients during their nuetropenic episode will be randomized to two different prophylactic regimens: trimethoprim/sulfamethoxazole or nalidixic acid/polymixin. Prospective surveillance will be carried out throughout their neutropenic episode with microbiologic and serologic studies to determine the etiology of febrile episodes and the epidemiology of pathogens which colonize these patients. These patients will also be randomized to cotrimazole or nystatin.

PROGRESS: During the past year we have demonstrated the epidemiology of multiply resistant coagulase negative staphylococci in patients on chemoprophylaxis with trimethoprim/sulfamethoxazole. We have also further developed the animal model so that neutropenia, spontaneous bacteremia, and subsequent septic death can be quantitatively predicted. The introduction of various organisms and antimicrobial regimens into this model is currently underway.

These studies will facilitate a more rational approach to neutropenic patients to insure their survival through the episode of neutropenia with the ultimate goal of increased remissions and potential cure of neoplastic disease.

SUPPORTED BY National Cancer Inst. of Canada funds n.a.

3.0066,

HAZARDS TO PHARMACISTS AND CLINICAL ONCOLOGY NURSES ACCIDENTALLY EXPOSED TO CANCER CHEMOTHERAPY AGENTS (ABBREV)

G.J. Laroye, Ontario Cancer Inst., Dept. of Pathology, *500 Sherbourne St., Toronto, Ontario, Canada* M4X 1K9

OBJECTIVE: To delineate the magnitude of long-term occupational health hazards to hospital personnel involved in the preparation of cancer chemotherapeutic drugs for patients's use.

APPROACH: Test the urines of exposed personnel with the Ames' mutagenicity assay, and compare with urine of patients receiving these drugs and with unexposed normal control individuals.

SUPPORTED BY National Cancer Inst. of Canada funds n.a.

3.0067,

PULMONARY MINERAL FIBERS AND LUNG CANCER

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This project attempts to determine if the particulate component of air pollution, specficially the fibrous mineral component, can be correlated with the presence of lung cancer. The project utilizes a case/control method. Mineral fibers are extracted from lungs of lung cancer patients and matched (age, sex, smoking, occupational group) controls. Fibers are counted, measured, and identified using electron optical techniques. Statistical correlations are attempted for a variety of fiber parameters (number, mineral type, size, aspect ratio) and combinations of parameters and the test and control groups compared.

SUPPORTED BY National Cancer Inst. of Canada funds n.a.

3.0068,

STUDIES ON THE CARIOGENIC MICROORGANISM, STREPTOCOCCUS MUTANS

A.H. Rogers, University of Adelaide, School of Dentistry, Dept. of Oral Biology, *Adelaide, S. Australia 5000, Australia*

The main objectives of the project are (1) to monitor the inter-personal transfer of S. mutans to determine whether dental caries is a transmissible disease in humans, (2) to isolate, purify and characterize some S. mutans bacteriocins and (3) to investigate microbial interactions in dental plaque with particular reference to the role of bacteria production in such phenomena.

Examination of a number of family groups suggests that intrafamilial transfer of S. mutans does occur and these studies are continuing.

Joint studies with Dr. J.S. Van der Hoven of the University of Nijmegen the Netherlands, using both germ-free and specific pathogen-free rats suggests that bacteriocin-producing strains of S. mutans establish with greater facility than do non-producing strains; and also that the stability of the indigenous plaque flora is also an important factor in determining whether or not S. mutans colonies plaque.

SUPPORTED BY National Health & Medical Research Council $3,700

3.0069,

A MULTIPLE SCLEROSIS CASE-CONTROL STUDY IN OLMSTED AND MOWER COUNTIES, MINNESOTA

L.T. Kurland, Mayo Clinic, Dept. of Medical Statistics & Epidemiology, *200 1st St. S.W., Rochester, Minnesota* 55901

In an effort to identify etiologic risk factors operating in the development of MS, a population-based case-control study is proposed to investigate a series of potential etiologic variables, including small pet exposure, utilizing the unique capabilities of the Mayo Clinic record system in Rochester, Minnesota. All cases diagnosed as MS while living in Olmsted and Mower Counties, Minnesota, over the past 40 years will be ascertained. Those currently residing in these counties will serve as index cases. One general Clinic and one neighborhood control, matched by age, sex, urban-rural residence and county, will be identified for each case, as well as sibling controls where available. We anticipate approximately 120 cases and 340 controls.

Cases and controls will be personally interviewed regarding not only pet exposure but also demographic factors (marital status, education, etc.), personal habits (smoking, alcohol use, etc.), previous medical

history (childhood illnesses, etc.), events prior to onset, other environmental exposures (sanitation, unusual chemicals, etc.), diet, and family history (of polio, other neurologic diseases, etc.).
The conduct of an epidemiologic study utilizing the resources of the Mayo Clinic system should serve to clarify further the issue of the relationship of small pet exposure and development of MS, as well as other etiologic leads.
SUPPORTED BY National Multiple Sclerosis Society $13,698

3.0070,
FOR RESEARCH AND PUBLIC AWARENESS EFFORTS RELATING TO HEALTH HAZARDS OF EXPOSURE TO LOW LEVELS OF IONIZING RADIATION

Unknown, Environmental Policy Inst. Inc., *317 Pennsylvania Ave. S.E., Washington, District of Columbia* 20003
No summary has been provided to the Smithsonian Science Information Exchange.
SUPPORTED BY Needmor Fund $10,000

3.0071,
EPIDEMIOLOGY OF ROCKY MOUNTAIN SPOTTED FEVER IN NEW JERSEY

W.J. Crans, Rutgers the State University of New Jersey, New Brunswick Campus, Agricultural Experiment Station, *Old Queens Bldg., New Brunswick, New Jersey* 08903 (0079572)
OBJECTIVE: Determine distribution and relative abundancy of potential tick vectors of Rocky Mountain Spotted Fever in New Jersey. Map infectivity of rickettsiae in New Jersey ticks. Determine preferred hosts of immature stages of potential tick vectors.
APPROACH: Collect adult and immature ticks and examine hemocytes for rickettsiae. Confirm pathogenic rickettsiae by fluorescent antibody technique. Test blood vertabrate hosts for rickettsiae and antibody to rickettsiae.
PROGRESS:
SUPPORTED BY New Jersey State Government funds n.a.

3.0072,
MUTAGENIC ACTIVITY OF UNINVOLVED MUCOSA OF CANCER PATIENTS

D.W. Piper, Royal North Shore Hospital of Sydney, Dept. of Medicine, *Pacific Hwy., St. Leonards, Sydney, N.S.W. 2065, Australia*
The fact is well established that cancer of the colon is associated with excess bile salt excretion. However, bile salts alone are not mutagenic and consequently the aim of the present project was to investigate whether the uninvolved mucosa of cancer patients can convert a non-mutagenic bile salt into a mutagen. The bile salt chosen in this study was 3-methyl cholanthrene and the mutagenic activity was assessed using Ames' technique. It has been demonstrated that the uninvolved mucosa of cancer patients, like the cancer tissue itself, can convert 3-methyl cholanthrene into a mutagenic compound. This activity is possessed equally by the uninvolved mucosa of cancer patients and by the cancer tissue and there is far less activity in the mucosa of the colon of non-cancer patients. In addition in some patients, the S9 fraction of the uninvolved mucosa alone is mutagenic.
These observations fit many of the previous metabolic and epidemiological observations relating to colon cancer.
SUPPORTED BY New South Wales State Cancer Council funds n.a.

3.0073,
EVALUATION OF ALTERNATE STRATEGIES FOR CONTROL OF XEROPHTHALMIA (VITAMIN A DEFICIENCY) IN THE PHILIPPINES

M.C. Latham, Cornell University, Ithaca Campus, Agricultural Experiment Station, *Ithaca, New York* 14850 (0072127)
OBJECTIVE: Determine the extent of the problem of vitamin A deficiency in Cebu in the Philippines and evaluate the feasibility effectiveness and cost of alternate strategies for its control.
APPROACH: Twelve areas in four different ecological zones (two urban and two rural) are being studied. Clinical, biochemical and dietary information indicated the extent of the vitamin A problem. Three intervention strategies are being evaluated each in 4 locations. These include providing a high dose vitamin A capsule every six months to children, fortification of MSG with vitamin A, and a public health and horticulture intervention.
PROGRESS: Xerophthalmia has been found to be an important cause of blindness in the Philippines. An earlier study had investigated its prevalence and epidemiology on the island of Cebu. The research consisted of an evaluation of the relative effectiveness of three different intervention strategies to control vitamin A deficiency in Cebu. These interventions were 1) a public health and horticulture intervention, 2) the provision of 200,000 IU of vitamin A to children every 6 months (the 'capsule intervention'), and 3) the fortification of monosodium glutamate with vitamin A. A total of 12 areas or barangays were included. Each intervention was monitored in four different barangays. Similar examinations were performed before and after the interventions. The monosodium glutamate fortification was the only intervention that resulted both in a significant reduction in clinical signs of xerophthalmia and in a significant rise in serum vitamin A levels. Fortification is now being evaluated in two whole provinces (Nueva Viscaya and Marinduque). Cebu is serving as a control province. This project, if successful, may lead to a national fortification to prevent blindness due to vitamin A deficiency.
SUPPORTED BY New York State Government funds n.a.

3.0074,
THE EPIDEMIOLOGY OF VISCERAL LARVA MIGRANS

R.H. Cypess, Cornell University, Ithaca Campus, New York State College of Veterinary Medicine, *825 Veterinary Research Tower, Ithaca, New York* 14853 (0074936)
OBJECTIVE: Determine the validity and reliability of the ELISA in the diagnosis of acute VLM.
APPROACH: Measure prevalence of antibody in several populations of children by using cross-sectional analysis. These studies should enable us to assess the Public Health implications of environmental contamination with this nematode.
PROGRESS: It has been suggested that epileptic children have a higher rate of positive skin tests with Toxocara canis antigen in comparison to apparently healthy persons. Using an enzyme-linked immunosorbent assay, we tested 84 epileptic children from an outpatient seizure clinic and 108 non-epileptic children from the same hospital for the presence of antibody to T. canis. The geometric mean of the reciprocal titer for the epileptics was significantly higher. However, if migrating nematode larvae can precipitate electrical discharge in the brain, we would expect to find higher Toxocara antibody titers in children with idiopathic epilepsy compared to epileptics of known or suspected etiology. We found no significant difference in titer among these groups. Instead, pica, mental retardation and hyperactivity were frequent findings in the epileptics and it appears that it is these conditions which predispose them to Toxocara infection. There was no evidence to support the hypothesis that larval migration was the cause of epilepsy.
SUPPORTED BY New York State Government funds n.a.

3.0075,
CHROMOSOME ANALYSES OF PERSONS OCCUPATIONALLY EXPOSED TO SUSPECTED MUTAGENS/CARCINOGENS

A. Brogger, Norsk Hydros Inst. for Cancer Research, *Montebello, Oslo 3, Norway*
OBJECTIVE: Chromosome damage (gaps, breaks, exchange) and increased sister chromatid exchange in cultured lymphocytes from peripheral blood indicate that the subject has been exposed to a mutagen, which also may have a carcinogenic effect. Chromosome analyses may be used to monitor workers suspected to have been exposed to environmental mutagens in the work place. Quantitative risk estimates of genetic damage to future generations and of neoplastic disease based on the chromosome data cannot be given. Measureable chromosome damage, however, is generally considered unwanted. The results may therefore be used in the determination of permissible exposure.
APPROACH: Samples of peripheral blood are taken from exposed workers and suitable controls from the same factory. 48-hour lymphocyte cultures are prepared for analysis of chromosome damage, and 72-hour cultures with BrdU are prepared for sister chromatid exchange counting. Preparations are coded and analyzed blindly.
RESULTS: So far two studies have been performed: 1) Workers in nickel refinery were found to have an increased incidence of chromosome gaps. 2) Gaps were also increased in one group of nurses handling cytostatic agents and in another group engaged in radiology. In the first group increased sister chromatid exchange was also found. With the strict use of protective measures (mask, gloves, fume cabinet) sister chromatid exchange frequencies were normalized.
SUPPORTED BY Norsk Hydros Inst. for Cancer Research funds n.a.

3.0076,
BLADDER CANCER - CASE-CONTROL STUDY OF OCCUPATION AND OTHER RISK FACTORS

J.G. Connolly, University of Toronto, Dept. of Urology, *Medical Sciences Bldg., Toronto, Ontario, Canada* M5S 1A8
OBJECTIVE: To study the association between occupation, dietary practices, medical background and personal habits and bladder cancer.
APPROACH: 348 bladder cancer patients (248 male, 100 female) and controls per case matched by sex, age within 5 years and residence were interviewed.
PROGRESS: Univariate results completed for all variables. Multivariate logistic regression analyses performed for occupations, and hypotheses formulated to explain excess of bladder cancer in occupations in high risk category.
SUPPORTED BY Ontario Cancer Treatment & Research Foundation funds n.a.

3.0077,
CULTURAL AND SOCIOECONOMIC STUDY OF CANCER PATIENTS IN LA PAZ, BOLIVIA

A. de Velazco, Registro de Cancer de La Paz, *Casilla 2801, La Paz, Bolivia*
OBJECTIVE: To determine the socioeconomic and cultural factors, most importantly, those related to occupation, monthly income, place of residence, family and level of education, of cancer patients living in La Paz, Bolivia, and also of cancer patients who arrive in this city to obtain diagnosis and treatment. Analysis of these data will provide better knowledge of limiting factors in early diagnosis and the management of cancer in these patients.
APPROACH: Analysis of data obtained in our survey of cancer morbidity in La Paz, which has been operative since 1978, as a function of the Registro de Cancer de La Paz. Personal interviews and visits to place of residence will be performed as needed. (Translated)
SUPPORTED BY Registro de Cancer de La Paz funds n.a.

3.0078,
ESTROGEN TREATMENT AND CANCER OF THE ENDOMETRIUM - A PROSPECTIVE EPIDEMIOLOGICAL STUDY

E.D. Johansson, University Hospital, Dept. of Obstetrics & Gynecology, *S75014 Uppsala 14, Sweden*
The objective of this follow-up study is to further investigate in a prospective manner the demonstrated association between estrogen treatment and endometrial cancer in climacteric women. To obtain a study cohort of estrogen treated women a special organization has been working to collect prescription forms from all pharmacies in a geographical region. Data on identity and drug usage will be extracted from these forms. All new cases occurring in the same region are being collected by means of reports from pathology departments. To demonstrate at least a twofold increase in the incidence it will be necessary to follow approximately 20,000 women. The cohort will be followed for at least five years, but the observation time can easily be prolonged. The incidence in the cohort will be compared to that in the remainder of the population and estimates of relative risks will be calculated. All new cases, exposed and non-exposed, are being continuously examined for certain relevant characteristics such as obesity, hypertension, diabetes, infertility, etc. Comparisons of the distributions of these characteristics will allow for analyses of confounding data. A mailed inquiry will be sent to a large random sample of the cohort to ascertain drug compliance and distribution of patient characteristics among estrogen users.
SUPPORTED BY Riksforeningen Mot Cancer funds n.a.

3.0079,

RISK OF MALIGNANCY IN GASTRIC REMNANT - ENDOSCOPIC STUDY WITH HISTOLOGY, CYTOLOGY, ANALYSIS OF REMNANT CONTENT (ABBREV)

F. Nilsson, University Hospital, *S75014 Uppsala 14, Sweden* (1993)

OBJECTIVE: To measure the frequency of premalignant and malignant changes in the operated stomach and to study macroscopically, histologically and cytologically the type of mucosal changes by time. To analyze the content in the gastric remnant with special regard to alkaline reflux, bile, pancreatic juice, bacteria and fungi. To clinically evaluate symptomatology and chemistry and to develop a method for demonstration of bile reflux with external detection. To be able to obtain information which can be of value in the future treatment of this large group of patients.

APPROACH: Patients treated surgically more than 20 years ago with gastric resection because of benign ulcer disease are investigated. Gastroscopy is performed, multiple biopsies, brush cytology and aspiration of gastric contents. The presence of bile acids an anaerobic and aerobic bacteria is analyzed. A quantitative determination of bile reflux is made by scintigraphic technique and gamma camera registration and these results will be correlated with the endoscopic findings.

SUPPORTED BY Riksforeningen Mot Cancer funds n.a.

3.0080,

EPIDEMIOLOGIC STUDIES ON MALE LUNG CANCER IN NORTHERN SWEDEN

L.G. Larsson, University Hospital of Umea, Centre of Oncology, *S90185 Umea, Sweden*

A demographic study of the age-adjusted incidence rates of different cancer types in the three northernmost counties in Sweden 1959-1971 revealed pronounced differences between the municipalities as regards male lung cancer. Most municipalities in the western part of the region had very low incidence rates compared to the more urban and industrialized municipalities along the Baltic coast and two northern municipalities with mining districts. An almost identical pattern was found when the period 1972-1977 was studied. In order to elucidate possible risk factors, an extensive case-control study is performed comprising about 600 cases from 1972-77 with analysis of smoking habits, employment and specific occupational exposures.

The study will be completed during 1980.

SUPPORTED BY Riksforeningen Mot Cancer funds n.a.

3.0081,

RELATION BETWEEN ENVIRONMENT AND CANCER

R. Rylander, Goteborgs Universitet, Dept. of Environmental Hygiene, *411 Vasaparken, S40010 Goteborg, Sweden* (754-880-03X)

OBJECTIVE: The objective of the research project is to study the relation between different factors in the general and working environment and the presence of cancer in exposed populations. Attempts will be made to relate individual factors as well as environmental exposures to the development of a particular tumor form.

APPROACH: The Swedish National Mortality Registry and the Swedish Cancer Registry are used in the study. With the aid of recorded deaths or registered cases of cancer, the geographical distribution in the country is studied. At sites where accumulations are found, case-related studies are performed to evaluate environmental factors. Studies are also made in specific counties where an increase in the incidence of a particular tumor form has been suspected or in communities where the presence of local industries has been related to the presence of specific tumors, either in the working population or in the general environment.

PROGRESS: An observed increase in the incidence of liver cancer was found to be related to an increase in autopsy frequency. A higher incidence was found in large cities in Sweden, which could be related to alcohol habits, also demonstrating themselves as an increase in the cases of liver cirrhosis.

In a Swedish county a population density gradient was found for lung cancer. As air pollution levels are low, the difference was attributed to differences in smoking habits between rural and urban areas. The cancer increase in one community was related to the handling of asbestos in an industry.

Continued work on the project involves an analysis of the geographical distribution of pancreas and kidney cancer, followed by a study on cancer in children in the age groups up to 10 years.

SUPPORTED BY Riksforeningen Mot Cancer funds n.a.

3.0082,

IMPORTANCE OF MENOPAUSAL ESTROGEN TREATMENT FOR THE RISK OF BREAST CANCER

L. Thoren, University Hospital, Dept. of Surgery, *S75014 Uppsala 14, Sweden*

OBJECTIVE: To test the hypothesis that estrogen treatment of postmenopausal women increases the risk of subsequent breast cancer or stimulates the growth of manifest but subclinical cancer.

APPROACH: Breast cancer incidence will be prospectively studied in a cohort of about 25,000 patients consisting of all women over 45 years of age within a defined geographic area who have estrogens prescribed during a 3 year period. A detailed assessment of estrogen exposure will be made in a sample from the cohort and the distribution of risk factors will also be assessed in an age-matched sample from the general population. A comparison between the observed and the expected breast cancer incidence will be made after 5 years of observation or more.

SUPPORTED BY Riksforeningen Mot Cancer funds n.a.

3.0083,

STUDY OF OVULATORY MENSTRUAL CYCLES AS A RISK FACTOR IN BREAST CANCER

E.E. Hardy, Universidade Estadual de Campinas, Faculdade de Ciencias Medicas, Depto. de Tocoginecologia, *Rua Benjamin Constant 1657, Caixa Postal 1170, Campinas 13100, Brazil*

OBJECTIVE: To study the use of anovulatory contraceptive methods and the total number of ovulatory cycles that a woman experiences during her life, or up to the time of breast diagnosis, as risk factors for breast cancer.

METHOD: Subjects were selected from among women who consulted at the State University of Campinas Hospital, and at the Gynecology and Breast Pathology Institute of Campinas. Cases and controls were matched by age at diagnosis (5 year age groups), site of selection, and date of diagnosis. Subjects were interviewed, using a structured partially pre-coded questionnaire. Information was obtained on: menstrual, pregnancy and nursing histories, use of anovulatory contraceptives and family history of breast cancer.

PROGRESS: Data collection and coding have been completed. Consistency of the information was checked with computer programs. Interviews were held with 174 cancer cases and 325 controls. A method was developed to evaluate each subject's total menstrual history, by reducing the length of reproductive life (age at menopause or at breast diagnosis minus the age at menarche) of each woman by the time she was pregnant, in post-partum amenorrhea, taking anovulatory contraceptives or simply not menstruating.

Preliminary results show that the selection of controls was correct in terms of age distribution and education of subjects.

SUPPORTED BY Rockefeller Foundation funds n.a.

3.0084,

MEAN MARROW DOSE AND 'LEUKEMIA DOSE' OF THE SWISS POPULATION (1978)

G.G. Poretti, Universitat Bern, Radiuminstitut, Dept. of Medical Radiation Physics, *c/o Inselspital, CH3010 Bern, Switzerland* (6.197-0.76)

OBJECTIVE: Calculation of the mean marrow dose and of the 'leukemia dose' of the Swiss population (1978-79).

APPROACH: The 'annual mean marrow dose of a population' can be calculated from the single doses received from each part of active bone marrow irradiated in the course of an X-ray examination and, as in the case of the genetically significant dose, from the demographic data. The annual mean marrow dose (1971) for the Swiss population was tentatively calculated using the values of the mean marrow dose per examination of the UK survey of 1957/58 and amounts to about 121 mrad. Barium meal contributes about 30% of the total; intravenous pyelography, barium enema, lumbar spine and mass miniature radiographies each account for about 10%.

PROGRESS: Experimental measures and calculation of the mean marrow dose of the Swiss population. Low dose radiation burden of a population in connection with the increase of the (myelotic) leukemia cases.

SUPPORTED BY Schweizerischer Nationalfond funds n.a.

3.0085,

A STUDY OF PREMALIGNANT AND MALIGNANT LESIONS OF THE MOUTH

C.W. Van Wyk, University of Stellenbosch, Research Group in Dental Epidemiology, *Private Bag 11, c/o Prof. C.W. van Wyk, Tygerberg 7505, Cape Province, South Africa*

OBJECTIVE: To study the distribution and etiology of premalignant and malignant lesions of the mouth. The study includes epidemiological surveys of various groups of people, with specific attention paid to habits and dietary patterns. Bona fide lesions are biopsied and examined histologically and ultrastructurally. Extensive information with regard to the pattern of oral lesions has been collected.

SUPPORTED BY South African Medical Research Council funds n.a.

3.0086,

CHECKLIST AND TRAINING GUIDELINES FOR AGRICULTURAL WORKER SAFETY

D.L. Roberts, Clemson University, Agricultural Experiment Station, Dept. of Agricultural Engineering, *Long Hall, Clemson, South Carolina* 29631 (0072857)

OBJECTIVE: Develop a usable safety and health inspection checklist having a hazards hierarchy for S.C. Agricultural Branch Experiment Stations and a modified version for the agricultural producer. Establish guidelines for agricultural employee training in high-potential accident job functions.

APPROACH: Define ag worker annual job functions at ag exp stations; index jobs' potential for serious acci; develop hazards hierarchy checklist on basis of indexing to include items based on characteristics of 72-76 worker injury reports, NSC survey statistics of farm acci, OSHA requirements, etc.; compile & establish guidelines for ag employ e training for safe & healthful job performance; test checklist & use training guidelines at ag exp stations & modify for ag producer.

PROGRESS: Six years of injury reports (785) were analyzed for South Carolina Agricultural Experiment Station workers. Partial findings support the statement that nearly all such injuries can be prevented through improved worker training and worker's subscription to correct work procedures and use of personal protective equipment. Preliminary descriptions of agricultural job functions according to their potential for producing serious accidents or health hazards. (Job's Hazards Hierarchy) coupled with characteristics of the 785 accidental injuries and other agricultural accident data indicate areas where improved and increased training would be beneficial. Most agricultural jobs have been rated to have very low potential for serious injury or health hazard. Jobs rated to have slight to high potential for serious injury/health hazard show most potential for beneficial worker training in 'risk assessment of jobs'.

SUPPORTED BY South Carolina State Government funds n.a.

3.0087,

RISK OF CHILDHOOD CANCER FOLLOWING INTRAUTERINE EXPOSURE TO ANTIEPILEPTIC DRUGS

V.K. Hiilesmaa, Helsingin Yliopisto, Dept. of Gynecology/Obstetrics, *Fabianinkatu 33, SF00290 Helsinki, Finland*

OBJECTIVE: The aim of the study is to investigate whether a mother's use of antiepileptic drugs during pregnancy is associated with an increased risk of childhood malignancies in her offspring.

APPROACH: A cohort of about 3000 children born to epileptic mothers in the years 1970-79 is identified through the files of the National Health Insurance and Pension Institution (Kansanelakelaitos) of Finland. Cases of childhood cancer among these children are identified by the standard reporting of new cancer cases to the Finnish Cancer Registry (Syoparekisteri). Incidence of malignancies among the children of epileptic mothers who have been on antiepileptic drugs during pregnancy is compared with the overall incidence of childhood cancer in Finland or with the incidence among a control cohort of children of non-epileptic mothers matched for age, area of residence, social class or other relevant factors.

SUPPORTED BY Suomen Syopayhdistys funds n.a.

3.0088,

ETIOLOGY AND PATHOGENESIS OF MULTIPLE SCLEROSIS

F.S. Lief, University of Pennsylvania, School of Veterinary Medicine, Dept. of Animal Biology, *39th & Pine, Philadelphia, Pennsylvania* 19104 (0075235)

OBJECTIVE: As a subcentractor to the Multiple Sclerosis Research Center at Wistar Institute and the University of Pennsylvania, my part in the objectives are: To try to isolate virus from MS tissues by inoculation into certain cell culture systems, eggs and into non-human primates; test the efficacy of non-human primates as a model for production of MS inoculating them with suspect viruses; conduct sero-epidemiologic studies in human populations with suspected viruses.

APPROACH: The procedures are self-evident. In these procedures, constant surveillance using a variety of techniques are stressed. The seroepidemiologic studies are being performed by a variety of techniques - CF, neutralization and radioimmune assay methods. They are designed to compare distribution of antibodies in high and low risk MS areas and to compare their prevalence in sera and spinal fluids in MS patients as opposed to matched controls.

PROGRESS:

SUPPORTED BY U.S. Dept. of Agriculture funds n.a.

3.0089,

EPIDEMIOLOGICAL EVALUATION OF HUMAN AND ANIMAL HEALTH AS ASSOCIATED WITH CONTAMINATED WELL WATER

A. Robinson, University of Minnesota, St. Paul Campus, School of Veterinary Medicine, Dept. of Large Animal Clinical Sciences, *256 Veterinary Science, St. Paul, Minnesota* 55101 (0077655)

OBJECTIVE: Determine the severity, frequency and magnitude of motality and morbidity in humans and animals consuming well water of various qualities. Estimate the economic impact of mortality and morbidity in humans and animals as a result of consumption of contaminated well water supplies. If needed, provide a description of the cost benefit ratio of implementing available methods to treat contaminated water or provide alternative sources of water, in cases where it has been indicated as the source of human and domestic animal illness.

APPROACH: Analyze the health of humans and domestic animals who obtain their water supply from wells of various construction and depths in the Karst topography of southeastern Minnesota. Approximately 20 farms will be included in the study. Farms presently participating in the School of Public Health Study to identify significant indicators of contamination will be utilized, including cohorts of humans and animals consuming a satisfactory quality of water, and those consuming an unsatisfactory quality of water.

PROGRESS: Fifty DHIA dairies from Fillmore County, MN were divided on the basis of well water samples and geological strata into (a) those with contaminated water and (b) those with uncontaminated water. Although group (a) farms had higher milk and fat production, less mastitis and lower WMT scores, the differences were not statistically significant. Twenty-two swine farms were similarly examined for production differences (litter size and litter percentage weaned) in relation to well water quality. No significant differences were detected. The parents of approximately half (117) of the two-year-old children in Fillmore County were questioned regarding the health of their children. Twenty-two percent of the parents reported that the children had suffered from a severe diarrheal illness. Children drinking water contaminated with either fecal coliforms or nitrates had 2 1/2 times the risk of developing illness than nonexposed children.

SUPPORTED BY U.S. Dept. of Agriculture funds n.a.

3.0090,

NUTRITION, FOOD HABITS, AND OTHER FACTORS IN HEALTH AND PRODUCTIVITY OF SMALL FARM RESIDENTS

M.E. Kassouny, State University System of Florida, Florida State University, School of Home Economics, Dept. of Food & Nutrition, *205 Wildwood Dr., Tallahassee, Florida* 32306 (0033117)

OBJECTIVE: Determine nutritional intake, food acceptance, food acquisition methods and other related practices. Assess nutritional status and identify nutritional, psycho-social, and other health-related factors unique to the rural environment influencing growth, development and productive longevity. Study the feasibilty of increasing the psycho-social contacts between young and old. Determine the needs and feasibility of making available low cost high-nutrient foods, nutrition information, and other health-related services.

APPROACH: Low income farm families and individuals living in Suwanee, Lafayette, Madison, and Hamilton Counties will be studied. Nutritional, demographic, psycho-social, and other health-related information and data will be obtained through Census and Vital Statistics records and through interviews to determine baseline values. Data will be compared to established norms. Based on results, corrective measures will be initiated to provide the target groups with needed and acceptable high-nutrient foods at least cost and other health-related services. The strengths and weaknesses of the corrective measures will be evaluated against pre-determined criteria of well-being and productivity.

PROGRESS:

SUPPORTED BY U.S. Dept. of Agriculture funds n.a.

3.0091,

LEVELS OF POLYCHLORINATED BIPHENYLS IN HUMAN MILK

E.P. Savage, Colorado State University, College of Veterinary Medicine & Biomedical Sciences, Dept. of Microbiology, *Fort Collins, Colorado* 80523 (0076002)

OBJECTIVE: Expedite the Epidemiologic Studies Program within the designated study area to provide further data on the effects of exposure to pesticides on the health of the population.

APPROACH: The Epidemiologic Pesticide Studies Center of the Institute of Rural Environmental Health at Colorado State University will determine on a national basis the magnitude of human exposure to pesticides by monitoring residues and metabolites of pesticide in the general and/or in specific populations. They will conduct epidemiologic studies of various exposed population groups and seek information on the potential effects of these exposures on the induction of disease. The Center will devise better means for recognition, diagnosis, and treatment of pesticide poisoning in man.

PROGRESS:

SUPPORTED BY U.S. Dept. of Agriculture funds n.a.

3.0092,

PILOT EPIDEMIOLOGY STUDIES IN THROMBOSIS

J.M. Iacono, U.S. Dept. of Agriculture, Agricultural Research, Nutrition Inst., Lipid Nutrition Lab., *Bldg. 308, Room 126A, Beltsville, Maryland* 20705 (0046169)

OBJECTIVE: Conduct a pilot dietary intervention study to determine the degree that dietary fats influences tendency for blood clotting, thrombosis, and hypertension in specific population groups.

APPROACH: These pilot dietary intervention studies will be carried out in Italy, Finland and Argentina. Platelet and plasma lipids and prostaglandins will be tested prior to, during and after dietary fat modification of subjects. Functional tests of blood platelets, blood clotting and blood pressure will be made.

PROGRESS:

SUPPORTED BY U.S. Dept. of Agriculture, Agricultural Research funds n.a.

3.0093,

NUTRITIONAL EPIDEMIOLOGICAL STUDIES

S. Gershoff, Tufts University, Medford Campus, School of Arts & Sciences, Nutrition Institute, *Medford, Massachusetts* 02155 (0045742)

OBJECTIVE: Provide information concerning nutritional patterns as they relate to the etiology of non-infectious diseases which are public health problems among people of both industrialized societies and those living in developing tropical countries.

APPROACH: A systematic survey and review of all published data on people living in Hawaii related to dietary intakes, nutritional status, mortality and where available from registries, disease incidence will be undertaken. Particular attention to sub-populations will be given. Data obtained from different ethnic groups in Hawaii will be compared with data from their native countries. Sampling frames for a baseling survey of appropriate subpopulations with reference to nutritional and health status will be established.

PROGRESS:

SUPPORTED BY U.S. Dept. of Agriculture, Agricultural Research funds n.a.

3.0094,

ETIOLOGY AND EPIDEMIOLOGY OF MUSHROOMS COMPOST COMPETITORS

R.A. Calderone, Georgetown University, School of Medicine, Dept. of Microbiology, *3800 Reservoir Rd. N.W., Washington, District of Columbia* 20007 (0044593)

OBJECTIVE: Develop new and essential information about the causes and occurrence of mushroom compost competitors, and identify and evaluate specific fungi and actinomycetes as incitants of hypersensitivity pneumonitis (mushroom worker's lung) and make recommendations for control to mushroom growers.

APPROACH: Conduct a complete mycological investigation of the microbial flora of the mushroom growing media and atmosphere at various stages of crop preparation growth and clean-up to determine which specific organisms are responsible: Identify and culture fungi which cause pneumonitis reactions in mushroom workers. Extract and characterize antigens from these fungi which promote these reactions. Evaluate purified allergens as incitant of pneumonitis reactions using animal models. Elucidate commercial practices which control the condition.

PROGRESS: Actinomycetes and fungi chiefly responsible for the respiratory disease, mushroom worker's lung, were isolated from mushrooms composted at the end of the growing operation (spent compost) using Anderson samplers. Although the results showed large differences in microbial content, approximately 43 species of fungi were isolated. The most abundant form s included: Aspergillus fumigatus, A. flavus, A. clavatus, A. nidulans, A. glaucus, Absidia spp. Oedocaphalum spp. and Penicillium oxalicum. Thermoactinomycetes vulgaris, Streptomyces, spp., and Micropolyspora faeni were the chief actinomycetes isolated. Steaming of the spent compost prior to sampling resulted in 60-70% reduction in the viable microbial population. Sensitizing studies on rabbits with various extracts of the spores of these organisms are in progress. They shall give more detailed information about which organism(s) is responsible for the allergic disease.

SUPPORTED BY U.S. Dept. of Agriculture, Agricultural Research, Beltsville Agricultural Research Center funds n.a.

3.0095,

PARAMETERS OF CARBOHYDRATE SENSITIVITY

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OBJECTIVE: Determine and validate parameters of carbohydrate sensitivity in BHE rats and humans and assess the influence of factors such as age, sex, diet composition and meal spacing on these parameters.

APPROACH: The study will be divided into three phases each contingent upon the phase preceeding it. Completion of the characterization of the carbohydrate sensitive BHE rat. This will include: Determination of the age changes in cortisol as it relates to the age changes in insulin status and the utilization of dietary carbohydrate. Determination of factors which will affect carbohydrate sensitivity such as sex, meal spacing and age of exposure to a high carbohydrate diet. Application of animal findings to humans in an epidemiological study of carbohydrate intake, hyperglycemia and hyperlipemia risk factors and the predictive effectiveness of a) above.

PROGRESS: Male weanling lean Zucker rats were meal-fed or ad libitum-fed diets containing 54% carbohydrate as sucrose, invert sugar, or cooked cornstarch for 4 weeks. At the end of the feeding period, fasting levels of serum glucose, triglyceride, glycerol, free fatty acids, total and high density lipoprotein (HDL) cholesterol were determined. A feeding pattern effect was observed with food intake, body weight gain, serum triglyceride, glycerol, total and HDL cholesterol. With the exception of HDL cholesterol and free fatty acids, blood lipid levels were higher for meal-fed than for ad libitum-fed rats. In ad libitum-fed rats, the sucrose effect (sucrose greater than starch) was observed in serum glucose, total cholesterol and free fatty acid levels; whereas, the disaccharide effect (sucrose greater than invert sugar) was observed in free fatty acid and triglyceride levels. Both a sucrose and disaccharide effect were seen in triglyceride and free fatty acid levels of meal-fed rats. HDL cholesterol and glycerol levels were not significantly affected by diet. The present study demonstrates that under specific conditions feeding sucrose can increase serum glucose, trigly-

ceride and free fatty acid levels to a greater extent than the monosaccharide equivalent (invert sugar).
SUPPORTED BY U.S. Dept. of Agriculture, Agricultural Research, Beltsville Agricultural Research Center funds n.a.

3.0096,

AGRICULTURAL WORKER EXPOSURE TO PESTICIDES

J.C. Maitlen, U.S. Dept. of Agriculture, Agricultural Research, *3706 W. Nob Hill Blvd., Yakima, Washington* 98902 (0045380)

OBJECTIVE: Determine the degree of exposure of agricultural workers to insecticides, herbicides, and fungicides when applied to crop of vegetables, fruits, and forage; determine the effect of pesticide applications on the health and safety of agricultural workers.

APPROACH: Measure the dermal and inhalation exposure of agricultural workers to important pesticides when applied by label directions as affected by formulation, application techniques, application equipment, and other variables in the work environment. Concurrently determine pesticide residues in urine and cholinesterase levels and blood of exposed workers.

PROGRESS:

SUPPORTED BY U.S. Dept. of Agriculture, Agricultural Research, Oregon - Washington Area funds n.a.

3.0097,

ARTHROPODS OF MEDICAL AND VETERINARY IMPORTANCE

R.L. Smith, University of Arizona, Agricultural Experiment Station, Dept. of Entomology, *Tucson, Arizona* 85721 (0028287)

OBJECTIVE: Monitor the impact of noxious arthropods on the health of human and domestic animal populations in Arizona. Maintain high degree of readiness to research arthropod problems that pose an inordinately high risk to human and domestic animal populations in Arizona. Intensively research the biology of the black widow spider in urban environments.

APPROACH: Maintain close contact with Federal, State, and local public health officials to identify incipient problems. Regularly contact county agents for reports on outbreaks of noxious arthropod-related problems. Validate reports by on-site surveys. Maintain reference materials on arthropod-health related problems in Arizona. Maintain standard research equipment, supplies and trained technical personnel ready to handle urgent research needs. Coordinate emergency research activities with governmental agencies. Conduct field surveys and laboratory experiments to study defensive biting, urban habitat requirements and food habits, predators and parasites, mating behavior, and control strategies for the black widow spider.

PROGRESS: Black widow spiders, Latrodectus hesperus, were subjected to direct tactile stimulation in order to determine the circumstance under which they might bite non-prey. Spiders consistently responded to probing by retreat. A large percentage of those probed also emitted viscid silk globules that may have a defensive function against potential vertebrate predators. Although spiders rarely bit, hungry females and those guarding egg sacs were more inclined to bite than well-fed females without egg sacs. Females rarely bit in response to gradually administered intense pressure, but about 60% bit when subjected to repeated rapid applications of pressure. We have attempted to relate these data to the circumstances under which humans might be bitten and conclude that the actual threat of human envenomization in modern urban environments has probably been exaggerated. Eggs of Latrodectus hesperus were incubated at six temperatures. Mean developmental times were plotted against temperatures, resulting in a J-shaped curve. The reciprocal of the mean developmental period plotted against temperature produced a sigmoid rate curve. Development accelerates with increased temperature to the inflection point (26 degrees C), then decelerates. The optimum temperature was 35.5 degrees C, suggesting that L. hesp (Text Truncated - Exceeds Capacity)

SUPPORTED BY U.S. Dept. of Agriculture, Cooperative Research Office, Arizona funds n.a.

3.0098,

LIFE SATISFACTION, HEALTH RECORDS AND SOCIAL PARTICIPATION AMONG SEVERAL POPULATIONS

M. Pilisuk, University of California, Davis Campus, Agricultural Experiment Station, Dept. of Applied Behavioral Science, *Davis, California* 95616 (0078044)

OBJECTIVE: Testy the broad general relationship thought to exist between the degree and quality of an individual's participation in family and community activities and the individual's vulnerability to pathology and maladaptive behavior.

APPROACH: Survey methods will be used to gather data on population which by virtue of social marginality may be vulnerable to pathology and maladaptive behavior: Senior citizens living alone; recently divorced or legally separated adults; adults following the birth of a first child; families with tow full-time working parents and children under 13 years of age; unemployed persons seeking employment for more than 9 months; physically disabled persons; dryg adddicts and alcoholics in non-metropolitan areas; patients restricted in activity following hospitalization; age and socioeconomic status-matched samples for baseline comparison.

PROGRESS: The methodological difficulty posed by the problem of finding groups who by virtue of stressful circumstances will be prone to breakdown and who, at the same time, wil have complete medical records and be available for assignment to 'low' or 'high' social support variations has been solved. The samples will be family members of individuals who have suffered hospitalizaion, and are enrollees in a prepaid health care program. The identified patient, the stressor source for the remainder of the family, will be one whose particular disability is likely to provide stressful circumstances to other family members. Methods for assessment of social support levels have been reviewed. These include: The Social Network Scale (Froland, 1977); The Social Disruption Index (Pearlin and Lieberman, 1976; The Social Support Network Questionnaire (Pilisuk and colleagues, 1978); The Denver Social Adjustment Scale. Measurement and data collection measures will be adapted from these existing assessment tools for this study. A pilot study to be administered during this project year is being developed to assess the adequacy of the instruments. Contact regarding a site for the study has been made with the director of a major Kaiser health program in Northern California. An aritcle, 'Kinship Social Networks, Social Support and Health, ' providing the theoretical background for this study has been published.

SUPPORTED BY U.S. Dept. of Agriculture, Cooperative Research Office, California funds n.a.

3.0099,

ECOLOGY AND GENETIC STABILITY OF FOOD POISONING C. BOTULINUM AND C. PERFRINGENS

H.P. Riemann, University of California, Davis Campus, School of Veterinary Medicine, Dept. of Epidemiology & Preventive Medicine, *Davis, California* 95616 (0002606)

OBJECTIVE: Find the natural reservoirs of food-poisoning strains of C. perfringens and C. botulinum and obtain information as to how these reservoirs are maintained. Obtain information with respect to the genetic control of toxigenicity in these two organisms.

APPROACH: Survey of prevalence and possible causal factors of C. botulinum will be carried out in areas epidemic with respect to wild fowl botulism, ranches, and slaughter houses and data studied epidemiologically. Same for C. perfringens. Genetic transfer will be studied by application of adapted genetic techniques and use of toxigenic and non-toxic mutants with appropriate genetic markers. Special attempts will be made to look for incomplete toxins, i.e., serologically cross-reacting materials.

PROGRESS: A number of seagull sera from Alaska were tested for botulinum antitoxins with negative results. Otherwise, research activities have been very limited because of lack of funds. A grant proposal for ecology studies of C. botulinum has been submitted to USPH.

SUPPORTED BY U.S. Dept. of Agriculture, Cooperative Research Office, California funds n.a.

3.0100,

THE EPIDEMIOLOGICAL ASSOCIATION OF ELEVATED BLOOD PRESSURE WITH NITRATE EXPOSURE

E. Savage, Colorado State University, College of Veterinary Medicine & Biomedical Sciences, Dept. of Microbiology, *Fort Collins, Colorado* 80523 (0071139)

OBJECTIVE: Determine the relationship between high nitrate levels and hypertension in the young. Determine whether hospitalization due to hypertension occurs at an earlier age in communities serviced with potable water high in nitrates. Suggest methods to reduce hypertension morbidity and mortality.

APPROACH: A hospital records search will be made in hospitals selected at random. Primary and secondary cases of benign essential hypertension and demographic data will be evaluated. The second stage of this research will involve a state-wide study of Colorado school children to determine the status of hypertension in the young and its interrelationship to nitrate exposure through various environmental substrates.

PROGRESS: Two areas of interest concerned with the association between health and potable water nitrate levels were investigated epidemiologically. The major research effort involved a retrospective study of hospitalized hypertensives in eastern Colorada. Twenty-three randomly selected hospitals agreed to participate. Data collection was completed in June 1977. Epidemiologic information from approximately 8700 hypertensive patients was abstracted to an approved questionnaire. Coding and quality control of the questionnaires were completed in preparation for keypuncking. Keypunching is in progress. the investigation of the hypertension-nitrate interaction prompted additional research involving nitrate exposure and cancer mortality. Master's thesis project entitled 'Colorado Cancer Mortality and Potable Water Nitrate' was completed. This effort was a descriptive study of potable water nitrate and cancer of the bladder, esophagus, and stomach. Colorado death certificates between 1970 and 1975 from the four cancers were classified (by cause of death) according to the listed county of residence and placed within one of eight subgroups dependent on nitrate amount and degree of urbanness. Average, annual, age-adjusted mortality rates for each cancer were calculated for white males and females within each subgroup. A significant rate difference ($p=.05$) among subgroups was noted for stomach cancer.
SUPPORTED BY U.S. Dept. of Agriculture, Cooperative Research Office, Colorado funds n.a.

3.0101,

HUMAN FACTORS ENGINEERING

R.H. Wilkinson, Michigan State University, Agricultural Experiment Station, Dept. of Agricultural Engineering, *New Administration Bldg., East Lansing, Michigan* 48823 (0067899)

OBJECTIVE: Study the agricultural worker's performance, safety and comfort as affected by: machine vibrations, noise, dust, temperature, humidity and other environmental factors, machine controls, display location and operator position.

APPROACH: Field studies to determine health problems of agricultural workers. Develop vibration measuring capability for field studies of conditions, experienced by machine operators. Monitor body functions (i.e. heart rate, muscle tremor, etc.) as a measure of man's physical response to job demands, vibration, environment and work space. Modify a tractor cab to control and analyze environmental stress. Simulate work tasks to evaluate mental and physical performance. Evaluate shape coding of controls, location, movement, displays and operator position on performance. Evaluate performance in various milking parlor configurations.

PROGRESS: The 'Occupational Health Survey of Michigan Farmers' (1974) revealed a number of interesting observations. Among these were: (1) chronic back pain is the major health problem encountered by these farmers; (2) dust is the most important environmental problem they encounter; (3) noise induced hearing loss increases with years of farming exposure and is higher for farmers than normally would be expected due to aging. These observations prompted further research and considerable time and effort was directed to a study of farmer back pain. A complex mathematical model of the human back was developed by Oscar Braunbeck (Ph.D. Project) which revealed that the lower back is most susceptible to vibration in the range of 50 hz. - a frequency that corresponds to engine vibration. This is a new insight as most previous work has been directed to low frequency vibration originating from rough terrain and ride. The concern for farmer hear-

ing loss has resulted in free hearing tests for farmers at the annual MSU Farmers Week program and an MSU Extension Bulletin regarding noise and hearing loss. An M.S. graduate student project 'The Effects of Whole Body Vibration Upon Reaction Time and Performance' was done by R. McHawe. He found that particular frequencies did degrade operator performance.

SUPPORTED BY U.S. Dept. of Agriculture, Cooperative Research Office, Michigan funds n.a.

3.0102,

ELEMENTS OF NUTRITIONAL ANEMIA AMONG BLACKS IN CENTRAL MISSOURI, PHASE II

R.M. O'Neal, Lincoln University, School of Agriculture, Dept. of Agricultural & Natural Resources, *Jefferson City, Missouri* 65101 (0074830)

OBJECTIVE: Delineate the types and extent of the anemias associated with nutrient deficiencies, i.e., iron, folic acid and vitamin B(12). Relate the incidence and types of nutritional anemies to the food consumption patterns of the population groups. Relate socioeconomic characteristics of the population groups to the incidence of nutritional anemias and food consumption patterns.

APPROACH: Samples of participants from black population in Central Missouri will be determined. Blood samples, food recall history and socioeconomic records will be obtained. Blood will be checked for anemia and nutrients. The blood data and food intake will be examined for correlation.

PROGRESS: Elements of Nutritional Anemia Among Blacks in Central Missouri-Phase II. During the year 1979, the collection of data was completed on ninety-five (95) black families. Complete biochemical analyses were made on two hundred forty-nine (249) subjects. These analyses included 175 assays of serum ferritin. All of the dietary, socioeconomic, medical and biochemical parameters have been keypunched and these data have been put through statistical exercises. It was noted from this, that there was a large percentage of the population which reported low folic acid intake; this was supported by a large percentage of the population having relatively low values for serum folic acid. Also it was noted that there was very positive correlation between low hemoglobin and low serum ferritin values of the ones analysed to date. Some other very interesting preliminary associations have been seen and are being programmed through the computer at this time. The remainder of the serum ferritins is being analyzed at this time and this will complete the biochemical analyses.

SUPPORTED BY U.S. Dept. of Agriculture, Cooperative Research Office, Missouri funds n.a.

3.0103,

DETERMINANTS OF CONSUMER HEALTH STATUS IN THE NON-METROPOLITAN AREAS OF CENTRAL NEW YORK

P.S. Chi, Cornell University, Ithaca Campus, Agricultural Experiment Station, Dept. of Consumer Economics & Public Policy, *Ithaca, New York* 14850 (0074273)

OBJECTIVE: Collect micro-data on consumer health status and related information; assess health levels of certain groups within the non-metropolitan areas of Central New York; construct a multivariate model in which the key determinents of consumer health status will be ascertained; develop policy recommendation and publish research results.

APPROACH: A sample of 800 respondents will be randomly selected from the six non-metropolitan counties in Central New York. A mail-questionnaire will be the instrument for data collection. Techniques of cross-tabulation and standardization will be used to compare health levels among different social groups in the sample. Pathanalysis is the method for multivariate model construction.

PROGRESS: Due to severe reduction in the proposed research budget, the amount of actual funding is not adequate to conduct a social survey as originally planned. Instead, a substituted data set, the Pre-Retirement Health Survey, was obtained from the U.S. Department of Health, Education and Welfare. This data set not only contains numerous questions relevant to consumer health status but also possesses several distinctive features: (1) it is a national representative sample, including respondents from both metropolitan and non-metropolitan areas in the United States; (2) it is a longitudinal survey, covering the interviews of the same individuals for three time periods--1969, 1971 and 1973; (3) it is a survey of pre-retired and retired individuals who usually involve a great deal of health problems. Based on the unique nature of the Pre-Retirement Health Survey, it is felt that the proposed research model on consumer health status can be adequately tested with this data set. The previously completed literature review is still valid and useful for future analysis. The future research will focus on (1) comparisons of consumer health status between metropolitan and non-metropolitan areas; (2) analysis of determinants of health status of older consumers; (3) study of changes in health status of older consumers over time. It is expected that the Pre-Retirement Health Survey will not only provide us with data to test the proposed model, but also broaden the scope of the original research.

SUPPORTED BY U.S. Dept. of Agriculture, Cooperative Research Office, New York funds n.a.

3.0104,

EXPOSURE LEVELS OF RURAL NORTH CAROLINIANS TO CADMIUM AND TRACE METALLIC ELEMENTS

A.N. Williamson, University of North Carolina, North Carolina Agricultural & Technical State University, School of Arts & Sciences, Dept. of Chemistry, *N. Dudley St., Greensboro, North Carolina* 27411 (0080891)

OBJECTIVE: To determine the exposure levels of rural North Carolinians to Cd and related trace elements. To identify those areas in the state with high Cd levels and determine the average daily dietary intake of Cd by the inhabitants of those areas. To identify those foods indigenous to high Cd areas and determine Cd content and the extent of their use. To determine if daily intake of Cd from drinking water and foodstuffs pose any long range threats. To determine if patterns exist between Cd levels and the rates of occurence of renal and cardiovascular disease.

APPROACH: Cadmium exposure levels will be determined from the amounts of Cd ingested in foodstuffs and drinking water. Those areas in the state with high Cd levels will be targeted through reviews of existing data pertaining to chemical analyses of surface and ground water and soil assays. The average daily intake of Cd will be determined from the amounts of food consumed and the Cd content of such food and water. Chemical analyses of foodstuffs and water will be performed using Atomic Absorption Spectrophotometry and Colorimetry. Average daily exposure levels will be compared to the average American daily intake to see if any significant differences exist.

PROGRESS:

SUPPORTED BY U.S. Dept. of Agriculture, Cooperative Research Office, North Carolina funds n.a.

3.0105,

BURN INJURY STUDY: PRODUCT-RELATED BURN VICTIMS

C.M. Janeck, North Dakota State University, School of Home Economics, Dept. of Textiles & Clothing, *Fargo, North Dakota* 58102 (0079797)

OBJECTIVE: Determine the relationship of clothing-related and interior product-related burn injuries in everyday living and working situations to selected characteristics of individuals during a specified period of time for a well defined population.

APPROACH: A questionnaire for reporting individual burn injuries will be sent to each hospital in North Dakota. The questionnaire employed is a modification of the one used for the Nebraska Burn Study (1975). A questionnaire will be completed from the medical records of each inpatient by the hospital staff. The North Dakota Hospital Association has approved the study and recommends participation by the individual hospitals. The questionnaire was designed to eliminate duplication in retrieved data, to eliminate outpatients, to classify types of burn injuries, and identify factors which contributed to the accident. The total number of burn injuries and the number and characteristics of clothing-related and interior product-related injuries and deaths for fiscal year July 1, 1979 through June 30, 1980 will be determined for North Dakota. A statistical analysis will be completed. Result from the North Dakota study will be compared to other states in the North Central region and with data collected on a national level.

PROGRESS:

SUPPORTED BY U.S. Dept. of Agriculture, Cooperative Research Office, North Dakota funds n.a.

3.0106,

ZINC AND CADMIUM STATUS OF CHILDREN AND ADOLESCENTS IN SOUTH CAROLINA

R.F. Borgman, Clemson University, Agricultural Experiment Station, Dept. of Food Science, *Long Hall, Clemson, South Carolina* 29631 (0070134)

OBJECTIVE: Determine the concentrations of zinc and cadmium in the hair of South Carolina adolescents attending 4H camps and correlate the results with tests to determine the ability to taste. Determine the concentrations of zinc and cadmium in the deciduous teeth of children from an area of South Carolina where ischemic heart disease and hypertension incidence is high and compare the results with deciduous teeth from areas of South Carolina where the incidence of these diseases is lower.

APPROACH: Volunteers at 4H camps will be administered a test for ability to taste, and will be questioned as to the type of water they generally consume, ie. municipal, shallow well, or deep well. Hair samples will be obtained and analyzed for zinc and cadmium. Performance in the ability to taste, type of water consumed, area of residence, and other personal information will be correlated. Deciduous teeth from children will be collected from areas of the state with a high incidence of cardiovascular disease and from areas with a low incidence of cardiovascular disease. Analyses of these teeth will be made for zinc and cadmium content, and the result will be correlated with the areas and the type of water generally consumed by the individuals.

PROGRESS: Approximately 1,800 4H campers from all areas of South Carolina were examined at 2 state 4H camps. Age of campers ranged from 9 through 14 years, included blacks and white, and both sexes. Hair samples are being analyzed for Zn, Cd, Cu, Se, Cr, and Pb. Results are not complete at this time. However, the range of Pb concentrations in human hair has been noted to range from nil to 20ppm. Blood pressure determinations indicate that obesity and overweight conditions contributes to adolescent hypertension (above 129mm Hg systolic and above 90 mm Hg diastolic). The incidence of adolescent hypertension was greater in the coastal counties (8 to 10%) than in the Piedmont counties (1-2%). The incidence of adolescent hypertension parallels the incidence of ischemic heart disease, stroke, and hypertension in the adult population.

SUPPORTED BY U.S. Dept. of Agriculture, Cooperative Research Office, South Carolina funds n.a.

3.0107,

BURN INJURY STUDY: PRODUCT-RELATED BURN VICTIMS

M.M. Hurlocker, South Dakota State University, School of Home Economics, *Brookings, South Dakota* 57006 (0079429)

OBJECTIVE: Determine the relationship of clothing-related and interior product-related burn injuries to various segments of the population in everyday living and working situations during a specified period of time for a well-define population.

APPROACH: The questionnaire, refined from the Nebraska Burn Stidy, will be sent to every hospital in South Dakota and will be completed from the medical records of inpatients by the hospital staff. The State Health Department of South Dakota has endorsed the proposal for this project. Additional information will be obtained from data files of the Office of the State Fire Marshall. The questionnaire was designed to eliminate duplications in retrieved data and to eliminate outpatients, classify burn injuries, and identify factors which contribute to the accident. The total number of burn injuries and the number and characteristics of the clothing-related and interior product-related deaths and injuries for fiscal year (July 1, 1979 through June 30, 1980) will be determined for South Dakota. Further statistical analysis will be developed as needed to utilize the information obtained from the questionnaire.

PROGRESS: The fires and burn-related newspaper articles from South Dakota are received weekly from a news media clipping service and are recorded by county for use in completing questionnaires. Packets containing a cover letter, instructions and questionnaires were sent to all seventy hospitals in South Dakota on October 12. As of December 31, thirty hospitals have responded. One hospital has closed, one does not treat burn injuries, one is sending the medical records without the patient's identity for completion of the questionnaires. Several hospitals have misinterpreted the closing date and one chose not to cooperate. Thirty-four completed questionnaires have been received and are being coded for

computer storage. Approximately 25% of this project has been completed.
SUPPORTED BY U.S. Dept. of Agriculture, Cooperative Research Office, South Dakota funds n.a.

3.0108,
URBAN-RURAL DIFFERENCES IN PSYCHIATRIC IMPAIRMENT

B.A. Husaini, State University & Community College System of Tennessee, Tennessee State University, School of Arts & Sciences, Dept. of Sociology, *Nashville, Tennessee* 37203 (0080563)
OBJECTIVE: Assess differences between urban and rural communities: In the proportion of the population that may require some form of psychiatric help, in the relationship of demographic variables with the severity of psychiatric impairment, in the relationship of life change events with the severity of impairment, and in regard to awareness, perceived availability, and use of psychiatric services.
APPROACH: A questionnaire will be administered to 1,000 adults of the Nashville/Davidson County area.
PROGRESS:
SUPPORTED BY U.S. Dept. of Agriculture, Cooperative Research Office, Tennessee funds n.a.

3.0109,
AN EPIDEMIOLOGICAL STUDY OF MENTAL HEALTH NEEDS OF RURAL COUNTIES IN TENNESSEE

B.A. Husaini, State University & Community College System of Tennessee, Tennessee State University, School of Arts & Sciences, Dept. of Sociology, *Nashville, Tennessee* 37203 (0070866)
OBJECTIVE: Determine the mental health needs and their specific etiological factors in the rural communities of Tennessee; determine the variation in both the needs and their etiology in relation to the demographic characteristics; determine the extent to which mental health services are utilized in the rural communities; determine the relationship between the demographic characteristics and both the use of mental health services and the degree of satisfaction with the services received; and develop model plants and services directed toward an effective resolution of mental health needs of the rural communities.
APPROACH: The study will use the survey method where individuals between the ages of 18 and 65 years will be interviewed for approximately an hour.
PROGRESS: Data analysis indicate that approximately 11% of the rural population is psychiatrically high risk and may require some form of services. Also, psychiatrically impaired individuals tended to be older and from lower SES. They tended to have had a greater number of medical problems and to have had a greater number of life change events. They had limited internal adaptive capacities and few external supportive ties. Further, they had a greater number of marital problems and tended to be dissatisfied not only with both the parenting and housewife roles but also, on the whole, with their family life. Only 4% had sought professional help for themselves. Even though between 5% and 10% of respondents indicated a willingness to seek professional help, it is clear that rural residents rely more upon informal, nonprofessional help than upon formal, psychiatric help sources. These findings help to provide a clearer understanding of factors and processes involved in the development of psychiatric disturbances and have implications for planning and treatment modalities.
SUPPORTED BY U.S. Dept. of Agriculture, Cooperative Research Office, Tennessee funds n.a.

3.0110,
TEXAS TRI-COUNTY NUTRITION SURVEY

A.C. Washington, Texas A & M University, Prairie View A & M University, Agricultural Experiment Station, *Prairie View, Texas* 77445 (0065933)
OBJECTIVE: Determine the dietary status of the subjects included in this study with specific reference for adequacy of vitamin A, vitamin C, riboflavin, iron, calcium and serum protein. Determine food intake, preparation of food, food habits, mores and attitudes toward foods by subject groups. Develop a program which may be implemented and which will provide adequate nutritional status through proper food intake, preparation, food habits, changed mores and attitudes toward foods by subject group.
APPROACH: Methodologies and guidelines from the Manual of Nutrition Surveys and the Ten-State Nutrition Survey will be used. Clinical assessments will be made of each subject including medical history and examination, a dental examination, anthropometric measurements such as height, weight, and subcutaneous fat. Urine and blood samples will be assayed for vitamins A, C, B(2), iron calcium, and serum protein levels.
PROGRESS: Approximately six hundred and twenty-five households, comprising more than fifteen hundred people over a period of five years have been interviewed concerning their dietary habits. The twenty-four hour dietary recall method was used to obtain the data. These data reveal the following: (1) Thirty-three percent of black Americans consumed below normal amounts of protein followed by 27% for whites and 24% for Mexican Americans, (2) Serum analysis for each group reveals that 26% of the Black population had below normal serum protein levels followed by whites at 25% and Mexican Americans at 13%, (3) The data for serum calcium and iron tended to corroborate data report in the Ten State Nutrition Surveys and the HANES Report. Blacks had a higher incidence of calcium and iron deficiency than whites and Mexican Americans. Similar trends also existed for riboflavin deficiency. Serum vitamin A and vitamin C analyses revealed that Mexican Americans and Blacks had generally higher values than Whites--for serium vitamin C. Serum Vitamin A levels for Blacks, Whites, and Mexican Americans regardless of age and sex were generally found to be deficient. Obesity continued to be a problem of Black females and White males. In general, high blood pressure predominated in Mexican Americans followed by Blacks and Whites, an exception being adult Black males, which had the highest blood pressure level of all groups.
SUPPORTED BY U.S. Dept. of Agriculture, Cooperative Research Office, Texas funds n.a.

3.0111,
NUTRITIONAL STATUS & FOOD INTAKE PATTERNS AMONG ADOLESCENTS & ELDERLY FROM LOW-INCOME HOUSEHOLDS

J.S. Dinning, State University System of Florida, University of Florida, Agricultural Experiment Station, Dept. of Food Science & Human Nutrition, *Gainesville, Florida* 32601 (0033334)
OBJECTIVE: Determine the nutritional status and food intake patterns of adolescents and elderly from rural and urban predominately black low-income household and identify those major socioeconomic variables which influence them.
APPROACH: Nutritional status will be assessed by dietary intake data, physical examination and biochemical determination of key nutrients in body tissue. Food intake and socioeconomic data will be obtained by home interviews.
PROGRESS: Field work has been completed on two population groups, urban low-income elderly and urban low-income adolescents from Dade County Florida. Incidence of anemia in the elderly was 15%, the anemia was macrocytic, normochromic. Iron nutriture was normal, however, there was a 70% incidence of erythrocyte folacin levels below accepted norms. Approximately 30% of the subjects exhibited serum and/or hair zinc values below accepted norms. Blood levels of vitamins A and C were normal for all subjects. The findings suggest widespread folacin deficiency with no evidence of iron deficiency in this elderly population group. The urban adolescent group exhibited a lower incidence of anemia which was normocytic or microcytic. Serum iron and transferrin saturation values indicated that 8 to 10% of these subjects were iron deficient. These findings demonstrate the importance of determining the nutritional status of specific population groups before formulating intervention programs. The second grant year will be devoted to an analysis of the dietary, clinical and socioeconomic data from the two urban population groups and to field work on a rural adolescent population in Sumter County Florida.
SUPPORTED BY U.S. Dept. of Agriculture, Science & Education Admin., Competitive Research Grants Office funds n.a.

3.0112,
BIOMECHANICAL SURROGATES

H.P. Van Cott, U.S. Dept. of Commerce, National Bureau of Standards, Center for Consumer Product Tech, *Rte. 270, Gaithersburg, Maryland* 20234 (76106)
OBJECTIVE: To develop and validate, by 1984, two body part probes (a foot and either a hand or finger) for detecting intrusion hazards associated with such products as lawn mowers and power tool presses, and one multi-member interactive surrogate (including hands, arms, and upper body) for testing the dynamic loss of control hazards associated with chain saws or jack hammers.
SUPPORTED BY U.S. Dept. of Commerce, National Bureau of Standards, Center for Consumer Product Tech funds n.a.

3.0113,
DISTRIBUTION OF VIBRIOS AND RELATED SPECIES, PATHOGENIC AND NON-PATHOGENIC, IN SHELLFISH

R.R. Colwell, University of Maryland, College Park Campus, Graduate School, Dept. of Microbiology, *College Park, Maryland* 20742 (R/P-6)
OBJECTIVES: 1) To determine the incidence and geographical distribution of V. cholera, V. parahaemolyticus and related vibrios in Maryland, Louisiana, and Oregon waters; 2) To determine the environmental parameters governing, or associated with, the distribution of V. cholerae; 3) To determine the presence of V. cholerae and related vibrios in shellfish; 4) To establish the ability of V. cholerae, V. parahaemolyticus and related vibrios to multiply in shellfish, raw and processed, and to investigate potential variation in serotype associated with growth in and on shellfish and in the environment; 5) To develop 'Vibrio Index' (VI) for indicating public health safety of shellfish.
ANTICIPATED BENEFITS: The current outbreak of cholera in Louisiana and the established occurrence of V. cholerae in Chesapeake Bay, Maryland make it imperative for the economic health of the seafood industry in these states to obtain knowledge of the seasonality and microbiology of the pathogenic vibrios. Public education concerning the risks involved and the need for proper handling of seafood at the time of catch, during harvest and processing and prior to consumption should eliminate the potential of serious epidemics and should maintain public trust and confidence in shellfish as a major food staple.
SUPPORTED BY U.S. Dept. of Commerce, National Oceanic & Atmospheric Admin., Sea Grant Office $68,000

3.0114,
DISTRIBUTION, ISOLATION, & CHARACTERIZATION OF NATURAL MARINE ANTIVIRAL AGENTS (MAVAS) FROM HAWAIIAN OCEAN WATERS & OTHER PACIFIC REGIONS

P.C. Loh, University of Hawaii System, Manoa Campus, School of Arts & Sciences, Dept. of Microbiology, *2444 Dole St., Honolulu, Hawaii* 96822 (WQ/R-6)
OBJECTIVES: 1. To isolate and identify the marine microorganisms which have antiviral activities. 2. To determine the biological, chemical, and physical parameters which would promote the optimal growth of MAVAs in vitro and the conditions under which the virus-inactivating process can be made more effective. 3. To analyze the mechanisms by which viruses are inactivated and the spectrum of human and animal viruses sensitive to the MAVAs. 4. To assess the role of certain environmental parameters in modulating the virus-inactivating capacity of the MAVAs. 5. To determine the conditions for the adaptation of MAVAs to fresh and brackish waters so as to endow any body of water with the capacity to effectively inactivate human enteropathogenic viruses.
ANTICIPATED BENEFITS: Among several anticipated benefits of this study are: (1) the possible utilization of such antiviral microbiological agents in the biological control of contaminating human enteropathogenic viruses and other viruses in the ocean environment and various other bodies of waters; (2) the use of antiviral microorganisms as an alternate method for disinfecting viruses in sewage treatment plants; (3) the rendering of recycled wastewater safe for use in agriculture and mariculture, and preventing the contamination and destruction of marine resources in coastal waters; and (4) the extraction of the antiviral component for application as a potential antiviral drug in the chemotherapy of viral diseases.
The following state and local government agencies have expressed need for data and information concerning the survival of human enteropathogenic viruses in the oceanic environment: Department of Public Works of the City and County of Honolulu, State Department of Health, and the State Division of Fish and Game.
IDENTIFIED BENEFITS TO DATE: The Department of Public Works of the City and County of Honolulu has been receiving information on MAVAs and the survival of human enteropathogenic viruses in Mamala Bay and other oceanic sewage disposal sites.
SUPPORTED BY U.S. Dept. of Commerce, National Oceanic & Atmospheric Admin., Sea Grant Office $21,000

3.0115,

PCB LEVELS IN HUMAN FLUIDS - SHEBOYGAN CASE STUDY

J. Rankin, University of Wisconsin, Madison Campus, Medical School, Dept. of Preventive Medicine, *450 N. Randall Ave., Madison, Wisconsin* 53706 (R/MW-18)

OBJECTIVES: 1. To establish the range of polychlorinated biphenyl (PCB) contamination of breast milk and blood of Sheboygan area residents. 2. To establish the variation over time of individuals' breast milk and blood levels of PCBs. 3. To determine the relationship between PCB levels and the ingestion of sports fish from Wisconsin waterways, specifically the Sheboygan River. 4. To obtain preliminary data bearing on infant health effects associated with increased maternal PCB body burden.

ANTICIPATED BENEFITS: This study is being done in direct response to the expressed needs of the state Department of Health and Social Services, the Department of Natural Resources, and the city of Sheboygan Health Department. Their concern stems from an incident in which fish from the Sheboygan River were highly contaminated with PCBs leaching into the waterway from a nearby dump site. These studies, in conjunction with the results of ongoing studies in other states, will allow for the proper assessment of risk associated with the consumption of PCB-contaminated fish from the Sheboygan River and other Wisconsin waterways. A data base and experimental logistics will be afforded for the design of expanded studies to determine the effects on infant health of increased maternal PCB body burden.

SUPPORTED BY U.S. Dept. of Commerce, National Oceanic & Atmospheric Admin., Sea Grant Office $19,350

3.0116,

VIBRIOS AND RELATED SPECIES, PATHOGENIC AND NON-PATHOGENIC, IN SHELLFISH

H.B. Bradford, State Dept. of Health & Human Resources, *New Orleans, Louisiana* (R/PMO-2)

OBJECTIVES: (1) To determine the incidence and geographical distribution of V. cholerae, V. parahaemolyticus, and related vibrios in Louisiana; (2) to determine the environmental parameters governing, or associated with, the distribution of V. cholerae; (3) to determine the presence of V. cholerae and related vibrios in shellfish; (4) to establish the ability of V. cholerae, V. parahaemolyticus and related vibrios to multiply in shellfish, raw and processed, and to investigate potential variation in serotype associated with growth in and on shellfish and in the environment; and (5) to develop a 'Vibrio Index) (VI) for indicating public health safety of shellfish.

ANTICIPATED BENEFITS: The current outbreak of cholera in Louisiana and the established occurrence of V. cholerae in Chesapeake Bay, Maryland make it imperative for the economic health of the seafood industry in these states to obtain knowledge of the seasonality and microbiology of the pathogenic vibrios. Public education concerning the risks involved and need for proper handling of seafood at the time of catch, during harvest and processing and prior to consumption should eliminate the potential of serious epidemics and should maintain public trust and confidence in shellfish as a major food staple.

SUPPORTED BY U.S. Dept. of Commerce, National Oceanic & Atmospheric Admin., Sea Grant Office $35,000

3.0117,

DISTRIBUTION OF VIBRIOS AND RELATED SPECIES, PATHOGENIC AND NON-PATHOGENIC, IN SHELLFISH

H.B. Bradford, Louisiana State University, Agricultural & Mechanical College, Graduate School, *University Station, Baton Rouge, Louisiana* 70803 (R/MPO-2)

OBJECTIVES: 1) To determine the incidence and geographical distribution of V. cholerae, V. parahaemolyticus, and related vibrios in Louisiana; 2) To determine the environmental parameters governing, or associated with, the distribution of V. cholerae; 3) To determine the presence of V. cholerae and related vibrios in shellfish; 4) To establish the ability of V. cholerae, V. parahaemolyticus and related vibrios to multiply in shellfish, raw and processed, and to investigate potential variation in serotype associated with growth in and on shellfish and in the environment; 5) To develop a 'Vibrio Index' (VI) for indicating public health safety of shellfish.

ANTICIPATED BENEFITS: The current outbreak of cholera in Louisiana and the established occurrence of V. cholerae in Chesapeake Bay, Maryland make it imperative for the economic health of the seafood industry in these states to obtain knowledge of the seasonality and microbiology of the pathogenic vibrios. Public education concerning the risks involved and the need for propoer handling of seafood at the time of catch, during harvest and processing and prior to consumption should eliminate the potential of serious epidemics and should maintain public trust and confidence in shellfish as a major food staple.

SUPPORTED BY U.S. Dept. of Commerce, National Oceanic & Atmospheric Admin., Sea Grant Office $35,000

3.0118,

HUMAN CAPABILITIES IN ACOUSTIC ENVIRONMENTS

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Air Force noise environments may affect motor performance, physiological function, thought processes and contribute to fatigue in personnel as well as affecting hearing. Special problems may arise with infrasonic, impulsive, and noncontinuous acoustic energy exposures. This effort is to define noise exposure conditions which degrade and threaten task accomplishment in order to specify safe operating parameters and eventually exposure guidelines. This effort will provide support for the whole body exposure effects standards sections in AFR 161-35.

The approach is to quantify cognitive and psychomotor performance on specific tasks in acoustic environs to such a degree that allowable exposure conditions can be adequately defined. The nature and difficulty of the performance tasks will be varied together with the frequency, duration and intensity of the acoustic stimulus in an effort to identify variables in the stimulus, task or subject that might result in reduced human capabilities. Post-exposure task performance will be examined for continuous and varying acoustic signals. A substantial technology base describing human performance in acoustic environs will be realized when these results are integrated with those from earlier efforts. This work unit is a continuation of work unit 72310903, Human Capabilities in Infrasound, and work unit 72310904, Acoustic Degradation of Human Capabilities. Semiannual review was accomplished 30 Sep 78 in conjunction with the preparation of the technical management review.

SUPPORTED BY U.S. Dept. of Defense, Air Force, Aerospace Medical Research Lab. funds n.a.

3.0119,

PHYSIOLOGICAL INFLUENCES UPON THE WORK PERFORMANCE OF MEN AND WOMEN

G.D. Coates, Old Dominion University, School of Arts & Letters, Dept. of Psychology, *5201 Hampton Blvd., Norfolk, Virginia* 23508 (DF050490)

AF FUNCTION-AIR FORCE OPERATIONS EXPOSE AIRCREW MEMBERS AND OTHER SUPPORT PERSONNEL TO A WIDE VARIETY OF ENVIORNMENTAL STRESS FACTORS WHICH INCLUDE FATIGUE, UNUSUAL WORK CYCLES, THERMAL STRESS, ETC. THESE FACTORS MAY AFFECT MILITARY PERFORMANCE TO A DEGREE THAT WOULD LIMIT AN INDIVIDUAL'S EFFECTIVENESS IN A MAN/ MACHINE SYSTEM. THE RESULTS OF THESE STUDIES SHOULD PROVIDE CAREFULLY CONTROLLED, QUANTITATIVE LABORATORY ASSESSMENTS OF WOMEN'S PERFORMANCE UNDER STANDARD AND NONSTANDARD WORK CONDITIONS AS A MEMBER OF THE MILITARY TEAM. A COMPARISON OF DATA FROM THE PROPOSED STUDY AND DATA ALREADY COLLECTED ON MALES WILL PROVIDE CRUCIAL INFORMATION CONCERNING ANY DIFFERENCES BETWEEN HOMOGENOUS CREWS OF FEMALES AS COMPARED TO MALES. DEFICIENCY-AS MORE AND MORE WOMEN OCCUPY OPERATIONAL POSITIONS, A DATA BASE ON THEIR PHYSIOLOGICAL CAPABILITIES AND LIMITATIONS IS REQUIRED. OBJECTIVE-THIS EFFORT WILL EXPLORE THE EFFECTS OF THE OVARIAN CYCLE AND THE SEX OF THE SUBJECT ON WORK PERFORMANCE. THE PRIMARY FOCUS OF THE RESEARCH IS ON THE EFFECTS OF OVARIAN CYCLING ON THE WORK PERFORMANCE OF WOMEN, INCLUDING AN ASSESSMENT OF THE INTERACTIVE EFFECTS OF MENSTRUATION WITH A STRESSOR KNOWN TO PRODUCE DECREMENTS IN WORK PERFORMANCE, CONTINUOUS WORK, AND CONSEQUENT SLEEP LOSS. COMPARISON OF THE DATA OBTAINED ON FEMALE SUBJECTS TO THAT OF OTHER STUDIES USING MALE SUBJECTS EMPLOYING THE SAME WORK SITUATION, PREVIOUSLY CONDUCTED BY PERSONNEL OF THIS LABORATORY, WILL PERMIT SOME ASSESSMENT OF THE EFFECTS OF SEX ON WORK PERFORMANCE AS WELL. HOW RESEARCH CONTRIBUTES-THIS RESEARCH CONTRIBUTES DIRECTLY TO RO 1.5, 'AEROSPACE MEDICINE' AND RO 1.6, 'HABITABLE CREW ENVIRONMENTS IN AIR FORCE OPERATIONS'.

THE RESEARCH WILL BE CONDUCTED UTILIZING THE STANDARDIZED PROCEDURES OF THE SYNTHETIC-WORK APPROACH TO PERFORMANCE ASSESSMENT. IT EMPLOYS A MULTIPLE-TASK PERFORMANCE BATTERY (MTPB) TO CREATE WITHIN THE LABORATORY A SYNTHETIC-WORK SITUATION IN WHICH SYSTEMATIC ASSESSMENTS OF WORK BEHAVIOR CAN BE MADE.

SUPPORTED BY U.S. Dept. of Defense, Air Force, Office of Scientific Research $152,418

3.0120,

24-HOUR MEAN PLASMA HORMONE LEVELS IN MEN WITH CORONARY HEART DISEASE

B. Zumoff, Montefiore Hospital & Medical Center, *111 E. 210th St., Bronx, New York* 10467 (DF051630)

AF FUNCTION-CORONARY HEART DISEASE IS A SERIOUS, WIDESPREAD MEDICAL AND PUBLIC HEALTH PROBLEM THAT IS OF PARTICULAR CONCERN TO THE USAF BECAUSE IT RESULTS IN THE LOSS OF MANY VIGOROUS AND RELATIVELY YOUTHFUL MEN FROM FLYING DUTIES AND OTHER MILITARY ASSIGNMENTS. THE AF HAS RECOGNIZED THE SERIOUSNESS AND MAGNITUDE OF THIS PROBLEM BY INSTITUTING BOTH RESEARCH STUDIES, SUCH AS THE LONG-TERM BLOOD LIPID FOLLOW-UP PROGRAM, AND CLINICALLY-ORIENTED LARGE-SCALE RISK MODIFICATION STUDIES, E.G., THE RECENTLY-APPROVED HEART (HEALTH EVALUATION AND RISK TABULATION) PROGRAM. THE RATIONALE FOR THESE STUDIES RESTS LARGELY ON THE PREMISE THAT COUNTERACTING OR MITIGATING THE KNOWN 'MAJOR RISK FACTORS' FOR CORONARY HEART DISEASE, NAMELY SMOKING, HYPERLIPIDEMIA AND HYPERTENSION, WOULD DIMISH THE INCIDENCE AND PREVALENCE OF CORONARY HEART DISEASE IN USAF PERSONNEL. DEFICIENCY-EPIDEMIOLOGICAL STUDIES HAVE SHOWN THAT 'CLASSICAL' RISK FACTORS ACCOUNT IN THE AGGREGATE FOR ONLY ABOUT ONE-HALF OF THE INCIDENCE OF CORONARY HEART DISEASE IN HIGH-INCIDENCE POPULATIONS SUCH AS THAT OF THE UNITED STATES. THUS EVEN IF IT WERE POSSIBLE TO DECREASE ALL OF THESE FACTORS SIMULTANEOUSLY, AS THE USAF HEART PROGRAM PROPOSES AN EXCESSIVE INCIDENCE OF CORONARY HEART DISEASE WOULD REMAIN AS A SERIOUS HEALTH PROBLEM. IT APPEARS ESSENTIAL THEREFORE, TO DEVELOP NEW HYPOTHESES TO ACCOUNT FOR THE REMAINDER OF THIS EXCESS INCIDENCE OF CORONARY HEART DISEASE IN ORDER TO DEVISE APPROPRIATE METHODS FOR PREVENTION AND TREATMENT. OBJECTIVE-THE HYPOTHESIS UNDERLYING THIS RESEARCH IS THAT ABNORMALITIES OF THE ENDOCRINE ENVIRONMENT IN MAN PREDISPOSE TO THE DEVELOPMENT AND/OR PROGRESSION OF CORONARY HEART DISEASE. IF THIS IS SO, IT SHOULD BE POSSIBLE TO DEVELOP NEW AND EFFECTIVE PHARMACOLOGICAL THERAPY (WITH HORMONES, HORMONE METABOLITES, OR DRUGS CAPABLE OF ALTERING THE BLOOD LEVELS OF HORMONES OR HORMONE METABOLITES OR ANTAGONIZING THEIR EFFECTS) THAT COULD ACCOMPLISH BOTH PRIMARY AND SECONDARY PREVENTION OF MYOCARDIAL INFRACTION. HOW CONTRIBUTES-CONTRIBUTES DIRECTLY TO AUBAREA 1.4.

PLANS ARE TO IDENTIFY WHATEVER DIFFERENCES IN PLASMA HORMONE CONCENTRATIONS THERE MAY BE BETWEEN MEN WITH AND WITHOUT CORONARY HEART DISEASE. TO ACHIEVE THIS, THE INVESTIGATORS WILL RIGOROUSLY DEFINE THE DISEASE-POSITIVE AND DISEASE-NEGATIVE POPULATIONS AND THEN CARRY OUT AN EXHAUSTIVE 'CROSS-SECTIONAL' COMPARISON OF THE HORMONAL STATUS OF THESE TWO POPULATIONS, USING A LARGE NUMBER OF PARAMETERS, METHODS (TEXT TRUNCATED - EXCEEDS CAPACITY)

SUPPORTED BY U.S. Dept. of Defense, Air Force, Office of Scientific Research $33,500

3.0121,

G-RELATED PATHOLOGY IN AF PERSONNEL EXPOSED TO HIGH-G STRESS

K.K. Gillingham, U.S. Dept. of Defense, Air Force, School of Aerospace Medicine, *Brooks Air Force Base, San Antonio, Texas* 78235 (DF319710)

TO DETERMINE THE MAGNITUDE, DURATION AND OTHER PARAMETERS OF THE STRESS TO WHICH AIRCREW OF HIGH-PERFORMANCE FIGHTER/ ATTACK AIRCRAFT ARE EXPOSED DURING AERIAL COMBAT, AND TO DETERMINE THE PHYSIOLOGIC AND PATHOLOGIC RESPONSES TO THIS STRESS.

INFLIGHT RECORDINGS OF G STRESS, ECG, RESPIRATORY FLOW AND OTHER MEASUREMENTS WILL BE OBTAINED FROM PILOTS OF F-15, F-16, AND OTHER HIGH-PERFORMANCE AIRCRAFT DURING AIR COMBAT TRAINING. BLOOD AND URINE OF PILOTS AND HUMAN CENTRIFUGE RIDERS WILL BE QUANTITATIVELY ANALYZED FOR LEVELS OF CATECHLOAMINES AND OTHER STRESS HORMONES TO DETERMINE THE RELATIVE PHYSIOLOGIC AND BIOCHEMICAL EFFECTS OF DIFFERENT TYPES OF G STRESS.

SUPPORTED BY U.S. Dept. of Defense, Air Force, School of Aerospace Medicine funds n.a.

3.0122,

PROTECTIVE EQUIPMENT EFFECTS ON GROUND CREW PERFORMANCE EQUIPMENT FOR ESTABLISHMENT OF PHYSIOLOGICAL STANDARDS

L.G. Myhre, U.S. Dept. of Defense, Air Force, School of Aerospace Medicine, *Brooks Air Force Base, San Antonio, Texas* 78235 (DF322680)

TO DEVELOP INTEGRATED SYSTEM DESIGN CRITERIA FOR FIREFIGHTERS' PROTECTIVE GARMENTS AND BREATHING APPARATUS, BASED ON PHYSIOLOGIC REQUIREMENTS AND LIMITATIONS. ACKNOWLEDGED COMPLAINTS OF FIREFIGHTERS INCLUDE THE WEIGHT, BULK, LIMITED USE IME AND QUESTIONABLE EFFICIENCY OF THE BREATHING APPARATUS. NO STUDY TO DATE HAS QUANTITATED THE PHYSIOLOGIC CONSEQUENCES OF USING COMMERCIALLY AVAILABLE RESPIRATORS OVER A BROAD RANGE OF WORKLOADS. METABOLIC REQUIREMENTS AND WEIGHT PENALTIES OF PERFORMING OPERATIONAL TASKS SUCH AS CLIMBING, LIFTING AND BENDING WHILE WEARING A FIREFIGHTERS' LIFE SUPPORT AND PROTECTIVE EQUIPMENT HAS NOT BEEN ASSESSED. INTERACTIVE EFFECTS OF THERMAL STRESS IMPOSED BY PROTECTIVE EQUIPMENT, EXTERNAL HEAT LEADS AND METABOLIC AND RESPIRATORY STRESS IMPOSE PHYSIOLOGIC LIMITATIONS ON FIREFIGHTERS AND REDUCE ENDURANCE. SPECIFIC OBJECTIVES OF THIS EFFORTS ARE TO QUANTITATE THE REDUCTION IN WORK CAPACITY EFFECTED BY THE WEIGHT OF A SELF-CONTAINED RESPIRATOR AND PROTECTIVE CLOTHING, TO ASSESS ADDITIONAL PHYSIOLOGIC EFFECTS OF THERMAL STRESS AND RESPIRATOR LIMITATIONS, AND TO BUILD AN APPROPRIATE PHYSIOLOGIC DATA BASE REQUIRED TO ESTABLISH EQUIPMENT DESIGN CRITERIA.

TWENTH SUBJECTS INCLUDING SMOKERS AND NON-SMOKERS WILL PERFORM TREADMILL EXERCISE OVER A WIDE RANGE OF WORKLOADS AND WILL PERFORM OTHER TASKS SUCH AS CLIMBING, BENDING AND LIFTING. EKG, HEART RATE, 02 AND CO2 CONCENTRATIONS, BREATHING RESISTANCE, PEAK FLOWS, SKIN AND CORE TEMPERATURES WILL BE MONITORED CONTINUOUSLY. 02 CONSUMPTION, PULMONARY VENTILATION, AND BLOOD LACTATE AND CARBOXYHEMOGLOBIN CONCENTRATIONS WILL BE DETERMINED. ENDURANCE DECREMENTS AND PHYSIOLOGIC LIMITATIONS IMPOSED BY A SELF-CONTAINED RESPIRATOR AND/OR WEARING FIREFIGHTERS' PROTECTIVE CLOTHING WILL BE ASSESSED. BOTH THERMAL AND RESPIRATORY STRESSES WILL BE CONSIDERED.

SUPPORTED BY U.S. Dept. of Defense, Air Force, School of Aerospace Medicine funds n.a.

3.0123,

TECHNIQUES FOR ASSESSING G-RELATED PATHOLOGY IN PILOTS OF HIGH-PERFORMANCE AIRCRAFT

E.B. Smith, Technology Inc., *16821 Buccaneer, Suite 206, Houston, Texas* 77058 (DF323760)

The myocardial infarctions that go unrecognized each year in the general population and the cardiomyopathy and subendocardial hemorrhage detected recently in swine exposed to acceleration stress make it imperative to develop a diagnostic tool to detect this damage if it exists in aircrew of high performance aircraft. An analytical biochemical technique that correlates with myocardial injury will be developed.

The experimental protocol of this task is divided into four parts-(1) select the most appropriate analytical method for serum creatine phosphokinase isoenzymes and other chemical indicators to validate myocardial injury, (2) correlate laboratory induced myocardial injury with these selected chemical indicators, (3) correlate myocardial damage resulting from plus gz acceleration stress as in part 2, and (4) compare changes in isoenzymes concentrations in human subjects exposed to plus gz acceleration.

SUPPORTED BY U.S. Dept. of Defense, Air Force, School of Aerospace Medicine funds n.a.

3.0124,

USAFSAM CARDIOVASCULAR DISEASE FOLLOWUP STUDY LABORATORY SAMPLING PHASE

D.A. Clark, U.S. Dept. of Defense, Air Force, School of Aerospace Medicine, *Brooks Air Force Base, San Antonio, Texas* 78235 (DF321790)

AS DIRECTED BY AFR 160-131/ AR40-577, STUDY SERUM LIPID AND LIPOPROTEIN LEVELS AND OTHER RISK FACTORS ASSOCIATED WITH CARDIOVASCULAR DISEASE IN MILITARY OFFICERS, TO ACCUMULATE DATA FROM WHICH TO PREDICT RISK OF CARDIOVASCULAR DISEASE AT AN EARLY AGE.

CONDUCT A LIFETIME STUDY OF SERUM LIPID AND LOPOPROTEIN LEVELS IN MEMBERS OF THE 1956 GRADUATING CLASS OF THE U.S. MILITARY ACADEMY AT WEST POINT. OBTAIN BIENNIAL SAMPLES FOR LIPID ANALYSIS, RECORD RESULTS OF PHYSICAL EXAMINATIONS AND OTHER HEALTH-RELATED DATA, AND ACCUMULATE AS BROAD A DATA BASE AS PRACTICAL FOR EVALUATING RISK OF CARDIOVASCULAR DISEASE.

SUPPORTED BY U.S. Dept. of Defense, Air Force, School of Aerospace Medicine, Clinical Sciences Div. funds n.a.

3.0125,

AF ACADEMY LIPIDS

D.A. Clark, U.S. Dept. of Defense, Air Force, School of Aerospace Medicine, *Brooks Air Force Base, San Antonio, Texas* 78235 (DF321800)

TO DETERMINE WHETHER THE UNFAVORABLE CHANGES IN SERUM LIPIDS OBSERVED EARLIER IN WEST POINT CADETS ALSO OCCUR IN USAF ACADEMY CADETS.

STUDY SERUM LIPIDS AND KNOWN RISK FACTORS IN A GROUP OF USAF ACADEMY CADETS, BEGINNING WITH THEIR ENTRY INTO THE USAF ACADEMY AND CONTINUING THROUGHOUT THEIR FOUR YEARS AT THE ACADEMY AND FOR TWO YEARS THEREAFTER. EVALUATE DIET, BODY COMPOSITION, AND OTHER CONTRIBUTORS TO THE RESPONSE OF THE INDIVIDUAL CADET TO HIS ENVIRONMENT AS IT IMPACTS ON FACTORS RELATED TO HIS RISK OF HEART DISEASE.

SUPPORTED BY U.S. Dept. of Defense, Air Force, School of Aerospace Medicine, Clinical Sciences Div. funds n.a.

3.0126,

ADVERSE DRUG REACTIONS IN THE PEDIATRIC AGE

F.G. Mullick, U.S. Dept. of Defense, Armed Forces Inst. of Pathology, *c/o Walter Reed Medical Ctr., Washington, District of Columbia* 20306

The purpose of this study is to continue the investigation on all cases under eighteen years of age with drug-induced disease available in the files of the Institute in regard to both clinical and pathologic spectrum of the disease. To date, there are 600 pediatric cases in file. Clinico-pathologic studies on the first 200 patients have been finished and published. The remaining 400 cases are being studied to evaluate drug-related cases. Results on the remaining 400 cases are consistent with the first group. Like in the adult, all organ systems can be affected, and a large variety of therapeutic drugs can cause adverse reactions. Preliminary results indicate that the liver is the organ most commonly affected and that antibiotics are the type of drug most commonly causing adverse drug reactions in children.

A group of approximately 25 cases of Ferrous Sulfate poisoning and another of 22 cases of Salicylate poisoning have been selected to be studied in detail.

BIBLIOGRAPHIC REFERENCES: Mullick, F.G.: Sulfamylon Pneumonits in Children. Military Medicine, 144: 180, 1979.

SUPPORTED BY U.S. Dept. of Defense, Armed Forces Inst. of Pathology funds n.a.

3.0127,

CARDIOVASCULAR ADVERSE DRUG REACTIONS

F.G. Mullick, U.S. Dept. of Defense, Armed Forces Inst. of Pathology, *c/o Walter Reed Medical Ctr., Washington, District of Columbia* 20306

The purpose of this study is to continue the investigation on the injurious effect of both cardiac and non-cardiac therapeutic drugs on the heart.

A large series of cases are being studied by histologic methods. The narrative summaries, autopsy protocols and gross specimens are also being reviewed to study cases with an alleged drug reaction.

Results indicate that the type of vasculitis as well as the type of myocarditis seen in adverse drug reaction is specific. All the drug related lesions have been included under the term 'drug related vasculitis' and 'drug' related myocarditis.' The vasculitis is quite distinctive from the one seen in serum-sickness, periarteritis nodosa, collagen diseases and infections, and the myocarditis is quite distinctive from the one seen in infections. The myocarditis has been classified in two groups: Group I: Hypersensitivity Myocarditis and Group II: Toxic Myocarditis.

BIBLIOGRAPHIC REFERENCES: Mullick, F.G., Wagner, B. McAllister, H.A., and Fenoglio, J.J.: Hypersensitivity Vasculitis. Human Pathology 10: 313-325, 1979.

SUPPORTED BY U.S. Dept. of Defense, Armed Forces Inst. of Pathology funds n.a.

3.0128,

MYOCARDITIS

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The purpose of this study is to investigate the spectrum of myocarditis and its various etiologies. Clinical and epidemiologic data are collected, where appropriate, and routine histologic and electron microscopic techniques are applied. The results of our investigation continue to be the basis for lectures and publications.

BIBLIOGRAPHIC REFERENCES: Maron, Barry J., Roberts, William C., and McAllister, H.A., Rosing, D.R., and Epstein, S.E.: Etiology of Sudden Death in Athletes. Circulation 57/58: II-236, 919, 1978.

SUPPORTED BY U.S. Dept. of Defense, Armed Forces Inst. of Pathology funds n.a.

3.0129,

THERAPEUTIC DRUGS AND THEIR EFFECT ON THE FETUS

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The purpose of this study is to continue the general review of all cases in which maternal therapy during pregnancy has affected the fetus. The 22 cases that were collected are still under study.

Preliminary results indicate that a wide variety of drugs can cross the placental barrier and might affect the fetus. Our series of cases fall in two broad groups. Group one are the patients who developed fetal distress following maternal medication during labor. Group two are the patients who were born with congenital anomalies and whose mothers received medications during pregnancy.

The relationship between these series of drugs and the aforementioned effects on their offspring is under study. The results are very preliminary, and a definite relationship between the drugs and the alleged reactions in these fetuses has not been established as yet.

The follow-up study initiated last year requesting a more complete prenatal history has not been completed.

SUPPORTED BY U.S. Dept. of Defense, Armed Forces Inst. of Pathology funds n.a.

3.0130,

HODGKIN'S DISEASE IN CHILDREN

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The purpose of this study is to investigate the survival and differences in presentation of pediatric Hodgkin's disease.

We have identified approximately 500 cases of Hodgkins disease. Thirty-three out of 70 cases studied have been identified in children less than five years of age.

It is apparent that lymphocytic predominant type of Hodgkin's disease is very common in the pediatric age group. The survivals may be the same or longer, but this fact is still inconclusive.

SUPPORTED BY U.S. Dept. of Defense, Armed Forces Inst. of Pathology funds n.a.

3.0131,

CARCINOMA OF THE ENDOMETRIUM

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The diagnosis and management of endometrial hyperplasia, including atypical hyperplasia, for the past 50 years has been one of the most controversial subjects in gynecologic pathology and gynecology. Criteria are poorly defined and confusion exists due to the use of the same terms by pathologists for markedly different lesions. The natural history of endometrial hyperplasia has still not been delineated. These aspects should be classified by our study.

Five hundred cases of endometrial hyperplasia have been obtained from the AFIP files over a 30-year period ending in 1970. These cases are all military, the diagnosis having been made on endometrial curettings only. We would like to determine the fate of these patients after their curettage. Does the hyperplasia regress or does it progress to more advanced hyperplasia or carcinoma? We would like to review the slides if any additional surgical procedures such as a repeat curettage or hysterectomy was performed. It is only through such a 'prospective' analysis that the natural history of endometrial hyperplasia can be determined and the criteria for what constitutes the precursors of endometrial carcinoma defined.

The cases in the AFIP files have been reviewed and the 500 examples of endometrial carcinoma are in the process of being forwarded to the follow-up unit.

SUPPORTED BY U.S. Dept. of Defense, Armed Forces Inst. of Pathology funds n.a.

3.0132,

SUDDEN INFANT DEATH SYNDROME

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Each case of Sudden Infant Death Syndrome (SIDS) is added to the Pediatric Pathology Registry files following study of the slides and protocol. SIDS is a puzzle to pediatricians and neonatologists, as well as to pathologists. None of the several histologic findings initially thought to be either pathognomic for SIDS or related to its supposed pathogenesis have been reproducible by subsequent experimentation. Recent articles have emphasized subtle degenerative lesions in the brainstems (particularly medullae) of affected children. Some of these 'lesions' are described by a non-neuropathologist and are not very convincing. Others are more striking lesions, suggesting long-term hypoxia. Perhaps the latter group of infants does not conform to the definition of SIDS patients as ostensibly healthy babies who gasp and die (i.e., the lesions are 2 degrees not primary).

SIDS cases will continue to be accessioned in the Registry and studied carefully. It is suspected that the patient group may be heterogeneous and that the answer may be found by studying an at-risk infant population prospectively rather than attempting to demonstrate the cause of respiratory failure in the deceased individual.

SUPPORTED BY U.S. Dept. of Defense, Armed Forces Inst. of Pathology funds n.a.

3.0133,

STATISTICAL CORRELATIONS OF CLINICAL, EPIDEMIOLOGIC & HISTOPATHOLOGIC INFORMATION ON LEPROSY PATIENTS FROM ZAIRE

W.M. Meyers, U.S. Dept. of Defense, Armed Forces Inst. of Pathology, *c/o Walter Reed Medical Ctr., Washington, District of Columbia* 20306

The clinical, histopathologic, bacteriologic and lepromin reaction data were analyzed on 429 leprosy patients treated at the Institut Medical Evangelique, Kimpese, Zaire. All but 30 of the patients were Kikongo speaking.

There was complete agreement between the clinical and histopathologic diagnoses in 77.2% of the patients and an additional 21.4% of the patients differed by only one group in the Ridley-Jopling System (International Journal of Leprosy 20:255-273, 1966). The contingency coefficient for this comparison was 0.705. The Mitsuda reactions (x in mm) versus clinical diagnoses were as follows: polar lepromatous (LL) - 1.8; borderline-lepromatous(BL) - 3.6; borderline (BB) - 6.8; boderline-tuberculoid (BT) - 9.6, and polar tuberculoid (TT) -10.9. The Mitsuda reactions versus histopathologic diagnoses were similar and all groups differed significantly at the 5% level or less. The Bacterial indices (x) versus histopathologic diagnoses were: TT -0.01; BT - 0.04; BB - 0.11; BL - 1.18, and LL - 2.73. Thus, the primary parameters of the Ridley-Jopling System correlate well with the anticipated findings.

The Fernandez reactions and Mitsuda reactions were compared with the class of leprosy and the following correlations were obtained (Pearson's correlation coefficient): TT - 0.60; BT - 0.52; BB - 0.14; BL - 0.12 and LL - 0.29. Thus the Fernandez reactions vary increasingly independent of the Mitsuda reaction toward the lepromatous end of the spectrum of leprosy. This suggests that the Fernandez reaction is the result of sensitization to mycobacterial antigens that cross react with Mycobacterium leprae. This reactivity is not as strikingly suppressed in BB-B1 patients as in the Mitsuda Reaction.

BIBLIOGRAPHIC REFERENCES: Meyers, W.M., Heggie, C.D., Kay, T.L., Staple, E.M., and Kvernes, S.: The Ridley-Jopling Five-Group Classification of Leprosy-Correlations of Parameters of the Classification in 1,429 Leprosy Patients. Int. J. of Lepr. 47: 683-684, 1979.

SUPPORTED BY U.S. Dept. of Defense, Armed Forces Inst. of Pathology funds n.a.

3.0134,

CARCINOMA OF OVARY

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An immunohistochemical study of human chorionic gonadotropin (HCG) and alpha-fetoprotein (AFP) in malignant germ cell tumors of the ovary was published in collaboration with the National Cancer Institute in an effort to correlate the type of neoplasm with the presence of markers. The results were published in Ann. Clin. Lab. Sci. 9: 462-466, 1979.

A manuscript has been submitted to Cancer on Sertoli tumors of the ovary. These 29 cases are a special group that have not had ultrastructural features characterized.

Two hundred granulosa tumors have been collected and sent for follow-up in an effort to find out what the prognosis is after ten years of follow-up.

Results of a collaborative epidemiologic study conducted in cooperation with George Washington University was published: McGowen, L., et al. The Women at Risk for Ovarian Cancer. Gynecol. Oncol. 7:325-344, 1979.

A collaborative study with the Gynecologic Oncology Group has led to submission of a paper to Gynecol. Oncology for publication in the near future.

Two book chapters reviewing the AFIP experience with germ cell tumors of the ovary have also been completed. These will appear in Bloodworth's Endocrine Pathology and Coppleson's Textbook of Gynecologic Oncology.

BIBLIOGRAPHIC REFERENCES: Kao, G.F., and Norris, H.J.: Cystadenofibromas with Epithelial Atypia. Amer. J. Surg. Path. 2: 351-363, 1978. Kao, G.F., and Norris, H.J.: Endometrioid, Mucinous and Clear Cell Types. Obstet. Gynecol. 54: 729-736, 1979.

SUPPORTED BY U.S. Dept. of Defense, Armed Forces Inst. of Pathology funds n.a.

3.0135,

A STUDY OF NON-COMBAT DEATHS IN A COMBAT ZONE

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Within the files of the Institute, there is a group of 2,700 cases of deaths that occurred in Vietnam during the period 1966-1972. The majority of these cases are deaths due to non-combat causes. The cause and manner of the non-combat deaths will be evaluated, and this data will be compared to a U.S. city or area of comparable population. The objective of the project is to evaluate similarities and differences between non-combat deaths in a combat zone and deaths in a U.S. city of comparable population. The study may be able to identify certain non-combat problems that have not previously been realized.

During the past year, the demographic data from all the cases, along with the causes and manners of deaths, have been recorded on work sheets. The computer analysis of the data has begun but has not been completed. From Department of Defense data, it has been determined that during the period 1966-1972, there was an average number of approximately 400,000 U.S. Military personnel in Vietnam, and an appropriate U.S. city of comparable population is being sought for comparison.

SUPPORTED BY U.S. Dept. of Defense, Armed Forces Inst. of Pathology funds n.a.

3.0136,

SUDDEN UNEXPECTED DEATH ASSOCIATED WITH EXERCISE

H.A. McAllister, U.S. Dept. of Defense, Armed Forces Inst. of Pathology, *c/o Walter Reed Medical Ctr., Washington, District of Columbia* 20306

This study comprises autopsy cases from the Registries of Forensic and Cardiovascular Pathology, dealing with sudden unexpected death occurring during or following exercise. In addition to the 11,000 autopsies originally reviewed for the study, new cases are continually being added to the project which includes subjects 40 years and younger.

SUPPORTED BY U.S. Dept. of Defense, Armed Forces Inst. of Pathology funds n.a.

3.0137,

MILITARY ACOUSTIC HAZARDS - MECHANISMS OF HEARING LOSS

C.K. Burdick, U.S. Dept. of Defense, Army, Medical Research & Development Command, Aeromedical Research Lab., *Fort Rucker, Ozark, Alabama* 36362 (DA0B6889)

TO ESTABLISH VALID DAMAGE RISK CRITERIA TO INSURE THE ADEQUATE HEARING PROTECTION OF ARMY PERSONNEL EXPOSED TO CONTINUOUS NOISE.

BEHAVIORAL, HISTOLOGICAL, AND ELECTROPHYSIOLOGICAL PROCEDURES ARE USED WITH ANIMAL MODELS AND AUDIOMETRIC AND PSYCHOPHYSICAL PROCEDURES ARE USED WITH HUMAN SUBJECTS.

SUPPORTED BY U.S. Dept. of Defense, Army, Medical Research & Development Command, Aeromedical Research Lab. funds n.a.

3.0138,

RESEARCH OF BIOENGINEERING AND VIBRATION PROBLEMS MEDICALLY SIGNIFICANT TO ARMY AVIATION

T.M. Erhardt, U.S. Dept. of Defense, Army, Medical Research & Development Command, Bioengineering & Life Support Equipment Div., *Fort Rucker, Ozark, Alabama* 36362 (DA0E6733)

TO DETERMINE THE SHORT-TERM CLINICAL EFFECT OF HELICOPTER VIBRATION ON THE MUSCULOSKELETAL SYSTEM AND TO DEVELOP AN ORTHOPAEDICALLY, ANTHROPOMETRICALLY SOUND HELICOPTER CREW SEAT TO REDUCE VIBRATION EFFECTS.

PROSPECTIVE CLINICAL AND EPIDEMIOLOGIC STUDY USING PHYSICAL EXAMINATION SUBJECTIVE REPORTING FORMS, NORLAND BONE MINERAL ANALYSIS, BIOCHEMISTRY, AND X-RAY TECHNIQUES. SEAT DESIGN AND VALIDATION WILL BE ACCOMPLISHED STATICALLY AND DYNAMICALLY ON A THREE DEGREE OF FREEDOM, MAN-RATED VIBRATION TABLE USING DYNAMIC EMG TECHNIQUES. PILOT PERFORMANCE AND EFFICIENCY ARE STUDIED. ANIMAL MODELS ARE USED AND THE TECHNIQUES OF TETRACYCLINE BONE LABELING AND SCANNING ELEC-

TRON MICROSCOPY OF THE JOINT SURFACES ARE EMPLOYED.

SUPPORTED BY U.S. Dept. of Defense, Army, Medical Research & Development Command, Aeromedical Research Lab. funds n.a.

3.0139,

LIFE SUPPORT EQUIPMENT RETRIEVAL PROGRAM (DA0C6897)

T.A. Hundley, U.S. Dept. of Defense, Army, Medical Research & Development Command, Field Research & Biomedical Applications Div., *Fort Rucker, Alabama* 36362 (DA0G0167)

To provide a technological data base concerning the physiological and biomedical aspects of the evaluation and injury correlation of life support equipment, identification of hazard protection problems associated with life support equipment and to provide conceptual design recommendations and criteria for the improvement of life support equipment.

Army aviation life support equipment involved in either injury causation or prevention, in field, are sent to USARL for biomedical and injury correlation evaluation. This evaluation assesses the effectiveness/deficiencies of the life support equipment through an analysis of the physical condition of the protective devices, the human injury incurred and the related human dynamics involved in the accident. The analysis is accomplished by the application of epidemiologic methods incorporating medically related engineering failure mode analysis, accident investigative procedures, forensic pathology, mathematical modeling and applied bioengineering research techniques.

SUPPORTED BY U.S. Dept. of Defense, Army, Medical Research & Development Command, Aeromedical Research Lab. funds n.a.

3.0140,

ROLE OF LYSOSOMAL ENZYME RELEASE IN CIRCULATORY SHOCK AND CRITICAL ILLNESS

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TO DETERMINE THE ROLE OF LYSOSOMAL ENZYMES IN THE PATHOPHYSIOLOGY OF VARIOUS FORMS OF SHOCK. TO STUDY THE EFFICACY OF STEROIDS IN AMELIORATING THE EFFECTS OF THESE ENZYMES IN SHOCK. TO DEVELOP TECHNIQUES OR SUBSTANCES WHICH WILL PROTECT AGAINST OR REVERSE THE DELETERIOUS EFFECTS OF THE LYSOSOMAL ENZYMES.

DOUBLE-BLINDED CLINICAL STUDIES WILL BE USED TO COMPARE MORTALITY/MORBIDITY OF METHYLPREDNISOLONE TREATED VS. UNTREATED PATIENTS SUFFERING VARIOUS TYPES OF SHOCK. LYSOSOMAL ENZYME LEVELS WILL BE MONITORED. ANIMAL STUDIES WILL CORRELATE THE LEVEL OF LYSOSOMAL ENZYMES WITH THE SEVERITY OF SHOCK AND MORBIDITY/MORTALITY. THE ROLE OF LYSOSOMAL ENZYMES IN SHOCK, WITH AN AIM TO BLOCKING THE DELETERIOUS EFFECTS OF THESE ENZYMES, WILL BE DETERMINED.

SUPPORTED BY U.S. Dept. of Defense, Army, Medical Research & Development Command, Letterman Army Inst. of Research funds n.a.

3.0141,

SKIN DISEASES AMONG SOLDIERS

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THE OBJECTIVES ARE TO DETERMINE THE TYPE AND FREQUENCY OF POTENTIALLY DISABLING SKIN DISEASES AMONG SOLDIERS IN VARIOUS ENVIRONMENTS, TO CONDUCT TRIALS OF POTENTIAL PREVENTIVE AND THERAPEUTIC AGENTS AGAINST THE COMMON DISABLING DERMATOSES THAT AFFLICT MILITARY PERSONNEL, AND TO DEVELOP OR IMPROVE METHODS OF STUDYING MILITARILY RELEVANT SKIN DISEASES UNDER FIELD CONDITIONS.

CONDUCT A 3-YEAR STUDY OF ALL OUTPATIENT VISIT DIAGNOSES AT THE 4 ARMY DERMATOLOGICVAL CENTERS- DETERMINE PREVELENCE OF CONTACT SENSITIVITIES TO MATERIALS THAT MAY PRODUCE CONTACT DERMATITIS IN SOLDIERS- DEVELOP AND TEST PERFORMANCE CHARACTERISTICS OF NEW TECHNIQUES FOR DIAGNOSING SKIN DISEASES IN THE FIELD.

SUPPORTED BY U.S. Dept. of Defense, Army, Medical Research & Development Command, Letterman Army Inst. of Research funds n.a.

3.0142,

DEVELOPMENT AND EVALUATION OF CRITERIA FOR ADVANCED WASTEWATER TREATMENT PROCESSES AT MILITARY INSTALLATIONS

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PROVIDE ADVANCED WASTEWATER TREATMENT (AWT) TECHNOLOGY APPLICABLE TO US ARMY WASTEWATER TREATMENT PLANTS SO THAT NPDES PERMIT LIMITATIONS UNDER PL 92-500 CAN BE MET. DESIGN CRITERIA WILL BE ESTABLISHED FOR SELECTED PROCESSES WITH INITIAL EMPHASIS ON ORGANIC LOADING RATES AND NITROGEN REMOVAL PROCEDURES. EVALUATION OF PHOSPHORUS REMOVAL TECHNIQUES AND THE PROCESSING OF THE RESULTANT CHEMICALLY TREATED EFFLUENT ARE CONSIDERED IN RELATION TO UPGRADING EXISTING WASTE TREATMENT FACILITIES. THE APPLICABILITY OF COMBINING CARBON AND NITROGEN OXIDATION PROCESSES WILL BE EVALUATED TO DETERMINE ITS IMPACT ON UPGRADING US ARMY WASTEWATER FACILITIES.

PILOT-SCALE STUDIES WILL BE CONDUCTED ON SELECTED ADVANCED WASTEWATER TREATMENT PROCESSES AND PROBLEMS. EMPHASIS WILL BE PLACED ON UPGRADING EXISTING FACILITIES, RATHER THAN ATTEMPTING TO DEVELOP PROCESSES AND PROCEDURES FOR TOTALLY NEW TREATMENT PLANTS. THE GOAL WILL BE TO SATISFY NPDES PERMIT LIMITATIONS FOR DESIGNATED POLLUTANTS, AS OPPOSED TO ATTEMPTING TO OBTAIN DESIGN CRITERIA FOR EXTREMELY LOW POLLUTANT LEVELS. LABORATORY AND BENCH-SCALE STUDIES WILL BE CONDUCTED IN SUPPORT OF PILOT SCALE OPERATIONS.

SUPPORTED BY U.S. Dept. of Defense, Army, Medical Research & Development Command, Medical Bioengineering Research & Development Lab. funds n.a.

3.0143,

THERAPY OF DISEASE TRANSMITTED BY AEROSOL- LEGIONNAIRES' DISEASE

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DEVISE MORE EFFICIENT METHODS FOR TREATING AND MONITORING THE EFFECTS OF TREATMENT OF RESPIRATORY BACTERIAL INFECTIONS. THIS INFORMATION IS ESSENTIAL FOR THE EXPEDITIOUS THERAPY OF TROOPS SUBSEQUENT TO BW ATTACK.

DETERMINE FEASIBILITY OF AEROSOL THERAPY. COMPARE EFFICACY WITH CONVENTIONAL TECHNIQUES- DETERMINE PHARMACOKINETICS, TOXICITY AND BIOCHEMICAL SEQUELAE TO MONITOR PROGRESS OF DISEASE.

SUPPORTED BY U.S. Dept. of Defense, Army, Medical Research & Development Command, Medical Research Inst. of Infectious Diseases funds n.a.

3.0144,

DEVELOPMENT OF ASSESSMENT OF BIOMETEROLOGIC VARIABLES AND THEIR INFLUENCE ON HEALTH AND PERFORMANCE (22)

J.B. Sampson, U.S. Dept. of Defense, Army, Medical Research & Development Command, Research Inst. of Environmental Medicine, *Natick, Massachusetts* 01760 (DA0G0711)

AN EXTENSIVE LITERATURE IN THE FIELD OF BIOMETEROLOGY INDICATES THAT VARIOUS ATMOSPHERIC PHENOMENA MAY ACT ALONE OR WITH AMBIENT TEMPERATURE TO PRODUCE MALAISE, DYSPNEA, UPPER RESPIRATORY SYMPTOMS, HEADACHE, BEHAVIORAL AND MOOD CHANGES AND PERFORMANCE DEGRADATION.

SUPPORTED BY U.S. Dept. of Defense, Army, Medical Research & Development Command, Research Inst. of Environmental Medicine funds n.a.

3.0145,

DEVELOPMENT OF SURVEY METHODOLOGY FOR ANALYSIS OF ENVIRONMENTAL MEDICAL SYMPTOMS AND RISK IN ARMY PERSONNEL

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THE NUMBER AND TYPE OF ARMY PERSONNEL WHO ARE SUBJECTED TO ENVIRONMENTALLY INDUCED ILLNESS AND INJURY ARE NOT AVAILABLE FROM THE CURRENT MEDICAL RECORDS SYSTEM. DATA ARE NEEDED ON THOSE EXPOSED AS WELL AS THOSE TREATED, ON PARTIALLY DISABLING SYMPTOMS WHICH MAY GO UNREPORTED, ON THE NATURE OF EXPOSURE (ESPECIALLY AS RELATED TO MOS DUTIES) AND ON MEDICAL RISK FACTORS DUE TO INDIVIDUAL BACKGROUND, PHYSICAL CONDITION AND HEALTH-RELATED BEHAVIORS. SUCH DATA, OBTAINED FROM AND PUBLISHED IN TERMS OF ACTUAL ARMY POPU-LATIONS, WILL BE VALUABLE IN FOCUSING RESEARCH, PROPHYLAXIS AND TRAINING. IT WILL BE OF DIRECT USE TO OPERATIONAL PLANNERS, FIELD COMMANDERS, AND POTENTIALLY EFFECTED INDIVIDUALS. AT THE END OF THE DEVELOPMENTAL PROCESS IT IS EXPECTED THAT THE PERFECTED SURVEY PROCEDURES WILL BE USED OR APPLIED TO WORK UNITS DEDICATED TO THE ANSWERING OF SPECIFIC QUESTIONS.

DEVELOP AND FIELD TEST SPECIFIC METHODOLOGY FOR DATA COLLECTION AND ANALYSIS FROM ARMY PERSONNEL WHO ARE EXPOSED TO CLIMATIC EXTREMES AND/OR SUSTAINED OPERATIONS DURING FIELD MANEUVERS, SPECIAL TRAINING, OR TRANSMERIDIAN DEPLOYMENTS AND TO RIGOROUS PHYSICAL FITNESS PROGRAMS. METHODOLOGY INCLUDES QUESTIONNAIRES, INTERVIEWS AND BEHAVIORAL OBSER-VATIONS DESIGNED TO OBTAIN SUBJECTIVE AND OBJECTIVE DATA ON ILLNESS AND INJURY DURING FIELD OPERATIONS, AS WELL AS RELEVANT BACKGROUND INFORMATION. THE METHODOLOGY WILL ALSO BE USED IN CONTROLLED LABORATORY EXPERIMENTS WHERE CLIMATIC CONDITIONS ARE MANIPULATED. SURVEY SAMPLING STATISTICS WILL BE APPLIED TO DETERMINE CONFIDENCE LEVEL IN THE OBTAINED SAMPLES. DEVELOPMENT INVOLVES TRAINING OF PERSONNEL AND THE DESIGN, PRETEST, SAMPLE TEST, REVISION AND VALIDATION OF THE SURVEY INSTRUMENTS. DATA OBNTAINED WILL BE DESCRIBED IN TERMS OF PERCENT OR PERCENTILES IN SELECT ARMY SUBPOPULATIONS FOR EACH RELEVANT OR CLEARLY IDENTIFIABLE CLIMATIC CONDITION. WORK UNIT WILL CONSULT WITH MILPERCEN, OTSG'S PATIENT ADMINISTRATIVE DIVISION.

SUPPORTED BY U.S. Dept. of Defense, Army, Medical Research & Development Command, Research Inst. of Environmental Medicine funds n.a.

3.0146,

SURVEY ANALYSIS OF ENVIRONMENTAL MEDICAL SYMPTOMS AND RISK IN ARMY PERSONNEL

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DATA IS NEEDED ON THE NUMBER AND TYPE OF ARMY PERSONNEL WHO SUFFER ENVIRONMENTALLY-INDUCED ILLNESS AND INJURY, ON THERAPIES USED AND THEIR EFFECTIVENESS, ON TROOPS EXPOSED BUT NEVER REQUIRING TREATMENT, ON PARTIALLY DISABLING SYMPTOMS WHICH MAY GO UNREPORTED, ON THE NATURE OF EXPOSURE (ESPECIALLY AS RELATED TO MOS DUTIES) AND ON MEDICAL RISK FACTORS DUE TO INDIVIDUAL BACKGROUND, PHYSICAL CONDITION AND HEALTH-RELATED BEHAVIORS. SUCH DATA, OBTAINED FROM AND PUBLISHED IN TERMS OF ACTUAL ARMY POPULATIONS, WILL GIVE FOCUS TO RESEARCH, PROPHYLAXIS AND TRAINING, AND BE OF DIRECT USE TO OPERATIONAL PLANNERS, COMMANDERS, AND AT-RISK INDIVIDUALS.

DEVELOP AND FIELD TEST SPECIFIC METHODOLOGIES FOR DATA COLLECTION AND ANALYSIS FROM ARMY PERSONNEL WHO ARE EXPOSED TO CLIMATIC EXTREMES AND/OR SUSTAINED OPERATIONS DURING FIELD MANEUVERS, SPECIAL TRAINING, OR TRANSMERIDIAN DEPLOYMENTS AND TO RIGOROUS PHYSICAL FITNESS PROGRAMS. METHODOLOGY INCLUDES

QUESTIONNAIRES, INTERVIEWS RECORD SURVEYS AND BEHAVIORAL OBSERVATIONS DESIGNED TO OBTAIN SUBJECTIVE AND OBJECTIVE DATA ON ILLNESS AND INJURY AS WELL AS RELEVANT BACKGROUND INFORMATION. THE METHODOLOGY WILL ALSO BE USED IN CONTROLLED LABORATORY EXPERIMENTS WHERE CLIMATIC CONDITIONS ARE MANIPULATED. DEVELOPMENT INVOLVES COORDINATION WITH OTHER AGENCIES, TRAINING OF PERSONNEL AND THE PRETEST, SAMPLE TEST, REVISION AND VALIDATION OF SURVEY INSTRUMENTS. SURVEY SAMPLING STATISTICS WILL BE APPLIED TO DETERMINE CONFIDENCE LEVEL AND TO DESCRIBE SUBJECTS IN TERMS OF PERCENTILES IN SELECT ARMY SUBPOPULATIONS. IT IS EXPECTED THAT THE PERFECTED PROCEDURES WIL BE USED IN APPLIED WORK UNITS.

SUPPORTED BY U.S. Dept. of Defense, Army, Medical Research & Development Command, Research Inst. of Environmental Medicine funds n.a.

3.0147,

GENESIS OF ARTHROPOD-BORNE VIRAL EPIDEMICS

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THE TECHNICAL OBJECTIVE IS TO TEST THE HYPOTHESIS THAT ENDEMIC OR SYLVATIC STRAINS OF VENEZULELAN ENCEPHALITIS VIRUS CONTAIN A MINORITY VARIANT WITH THE CAPACITY TO PRODUCE MAJOR EPIDEMICS. THERE IS A REQUIREMENT FOR RESEARCH WHICH CAN BE EXPECTED TO PROVIDE KNOWLEDGE ON WHICH TO FORECAST EPIDEMICS OF ARTHROPOD-BORNE VIRAL DISEASES WHICH PRESENT A HAZARD TO MILITARY PERSONNEL. THE APPROACH WILL BE TO SEPARATE THE VIRULENT SUBPOPULATION OF VIRUS FROM AVIRULENT STRAINS OF VIRUS BY THEIR PRESUMED DIFFERENTIAL ATTACHMENT PROPERTIES ON HYDROXYLAPATITE COLUMNS.

SUPPORTED BY U.S. Dept. of Defense, Army, Medical Research & Development Command, Walter Reed Army Inst. of Research $49,485

3.0148,

THE ROLE OF NEWLY DISCOVERED EXOTOXIN (S TOXIN) IN PSEUDOMONAS AERUGINOSA INFECTIONS

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TO PURIFY AND CHARACTERIZE TOXIN FROM PSEUDOMONAS AERUGINOSA, AND ORGANISM FREQUENTLY INVOLVED IN INFECTIONS FOLLOWING BURNS OR BATTLEFIELD WOUNDS. SPECIFIC EFFORTS WILL BE CONCERNED WITH THE EPIDEMIOLOGY OF SUCH INFECTIONS AND THE PROTECTION OFFERED BY SPECIFIC ANTITOXIN. A LOGICAL OUTCOME OF THESE STUDIES WOULD BE THE DEVELOPMENT OF AN EFFICACIOUS VACCINE TO PROTECT WOUNDED AND/OR BURNED MILITARY PERSONNEL.

CONVENTIONAL EPIDEMIOLOGIC, BIOCHEMICAL AND SEROLOGICAL PROCEDURES WILL BE USED AND MODIFIED AS NEEDED.

SUPPORTED BY U.S. Dept. of Defense, Army, Medical Research & Development Command, Walter Reed Army Inst. of Research $59,879

3.0149,

PATHOLOGIC MANIFESTATIONS OF ZOONOTIC DISEASES OF MILITARY IMPORTANCE

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TO STUDY AND DEFINE THE PATHOGENESIS OF EXPERIMENTAL TRYPANOSOMIASIS, LEISHMANIASIS, AND SARCOCYSTOSIS AND THE EFFECTS OF OTHER INFECTIOUS, TOXIC, AND ENVIRONMENTAL BIOHAZARDS IN A VARIETY OF ANIMAL HOSTS. PROVIDE MORPHOLOGIC PATHOLOGY SUPPORT FOR WILDLIFE EPIDEMIOLOGIC SURVEYS IN THE TRANSAMAZON AND OTHER MILITARY INSTALLATIONS. PROVIDE DIAGNOSTIC PATHOLOGY FOR ANIMALS ACQUIRING SPONTANEOUS DISEASES AND DEATHS DURING QUARANTINE OR COLONIZATION AT THE WALTER REED ARMY INSTITUTE OF RESEARCH. PROVIDE THE PATHOLOGY PARAMETER FOR QUALITY ASSURANCE OF LABORATORY ANIMALS REARED IN THE ANIMAL FACILITY OF THE WRAIR AND THOSE ACQUIRED ON CONTRACT. PROVIDE MORPHOLOGIC PATHOLOGY, ULTRASTRUCTURAL MICROSCOPY, AND IMMUNOPATHOLOGY IN AN INVESTIGATIVE STUDY OF SPONTANEOUS, SEVERE RENAL DISEASE AND DEATHS IN COLONIZED AOTUS MONKEYS. ALL PROJECTS ARE GENERATED FROM APPROVED PROTOCOLS AND ARE RELATED TO MILITARY MEDICAL PROBLEMS.

STUDIES UTILIZE CONVENTIONAL GROSS AND HISTOPATHOLOGY, CLINICAL PATHOLOGY, HISTOCHEMISTRY, IMMUNOHISTOCHEMISTRY AND ELECTRON MICROSCOPIC TECHNIQUES.

SUPPORTED BY U.S. Dept. of Defense, Army, Medical Research & Development Command, Walter Reed Army Inst. of Research funds n.a.

3.0150,

MENINGOCOCCUS- BACTERIOLOGICAL, SEROLOGICAL AND EPIDEMIOLOGICAL STUDIES.

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THIS STUDY INCLUDES DOCUMENTATION OF THE SULFONAMIDE RESISTANCE OF STRAINS OF MENINGOCOCCUS OBTAINED FROM ALL OVER THE WORLD, DEVELOPMENT OF ADEQUATE SEROLOGIC AND IMMUNOLOGIC METHODS FOR STUDY OF THESE INFECTIONS, THE STANDARDIZATION OF TECHNIQUES FOR USE IN COMPREHENSIVE STUDIES OF MENINGOCOCCAL INFECTIONS, AND A CONTINUING SEARCH FOR NEW DRUGS TO PROVIDE MASS CONTROL OF INFECTIONS. STUDIES OF THIS NATURE PROVIDE TO THE MILITARY THE ABILITY TO BETTER UNDERSTAND THE PATHOGENESIS OF MENINGOCOCCAL MENINGITIS, A DISEASE THAT HAS BEEN COMMONPLACE IN RECRUIT POPULATIONS.

APPROACH - STRAINS OF MENINGOCOCCI ARE OBTAINED FROM MILITARY AND CIVILIAN SOURCES WORLDWIDE. SEROLOGIC TYPING AND CONVENTIONAL ANTIBIOTIC TESTING ARE EMPLOYED. A CONTINUING SEARCH IS MAINTAINED FOR NEW DRUGS AND ANTIBIOTICS TO DETERMINE THEIR IN VITRO EFFECT UPON MENINGOCOCCI. ANY THAT APPEAR TO BE POTENTIALLY USEFUL ARE THEN EVALUATED FURTHER UP THROUGH THE LEVEL OF LIMITED FIELD TRIALS.

SUPPORTED BY U.S. Dept. of Defense, Army, Medical Research & Development Command, Walter Reed Army Inst. of Research $29,862

3.0151,

TRANSMISSION CONTROL AND TREATMENT OF INFECTIOUS DISEASES OF MILITARY IMPORTANCE IN EQUATORIAL ASIA

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TO INVESTIGATE THE INCIDENCE OF SCRUB TYPHUS INFECTION IN SELECTED LOCAL AND FOREIGN POPULATIONS, TO RELATE THIS TO THE PREVALENCE OF VECTOR CHIGGERS AND THEIR COMMON RODENT HOSTS, TO DETERMINE THE STRAINS OF R. TSUTSUGAMUSHI CAUSING HUMAN INFECTIONS AND RELATE TO CLINICAL DISEASE, TO DEVELOP IMPROVED SEROLOGICAL METHODS, TO STUDY THE BASIS FOR IMMUNITY, TO DEFINE VECTOR-RICKETTSIA RELATIONSHIPS, TO DEVELOP A LABORATORY ANIMAL MODEL FOR THE DISEASE, AND TO PRODUCE LABORATORY ANIMALS IN SUPPORT OF THE MISSION. SCRUB TYPHUS IS AN INCAPACITATING DISEASE OF MILITARY IMPORTANCE.

COORDINATED STUDIES ARE BEING CONDUCTED AT SELECTED FIELD SITES IN AN EFFORT TO RELATE THE INCIDENCE OF SCRUB TYPHUS IN HUMANS TO NUMBERS OF VECTOR CHIGGERS, RODENT HOSTS, AND THE STRAINS OF R. TSUTSUGAMUSHI PREVALENT IN EACH. CLINICAL STUDIES INCLUDE AN EVALUATION OF A SINGLE DOSE DOXYCYCLINE FOR THE TREATMENT OF SCRUB TYPHUS. STANDARD TECHNIQUES DEVELOPED HERE AND ELSEWHERE ARE UTILIZED AND MODIFIED AS NEEDED.

SUPPORTED BY U.S. Dept. of Defense, Army, Medical Research & Development Command, Walter Reed Army Inst. of Research $450,750

3.0152,

INFECTIOUS MULTIPLE DRUG RESISTANCE IN ENTEROBACTERIACEAE

S. Falkow, University of Washington, School of Medicine, Dept. of Microbiology, *A-300 Health Sciences Ctr., SC-64, Seattle, Washington* 98195 (DA0B7136)

TO DETERMINE THE GENTIC AND MOLECULAR ORIGIN(S) OF R-FACTORS AND OTHER GENETIC ELEMENTS OF ENTERIC ORGANISMS. TO FURTHER STUDY THE DETERMINANTS OF BACTERIAL VIRULENCE, THEIR EPIDEMIOLOGY, MODE-OF-ACTION AND OTHER FACTORS THAT CONTRIBUTE TO THE DEVELOPMENT OF RESISTANT STRAINS OF ORGANISMS KNOWN TO BE THE CAUSE OF MILITARILY RELEVANT OUTBREAKS OF DIARRHEAL DISEASES.

THE MOLECULAR NATURE AND MODE OF REPLICATION OF R-FACTORS IS TO BE INVESTIGATED. ALSO THE LOCATION OF AND METHOD OF TRANSFER OF THESE R-FACTORS BETWEEN DONOR STRAINS AND RECIPIENT STRAINS IS TO BE STUDIED.

SUPPORTED BY U.S. Dept. of Defense, Army, Medical Research & Development Command, Walter Reed Army Inst. of Research $51,961

3.0153,

PARASITIC DISEASES OF MILITARY IMPORTANCE

D.E. Davidson, U.S. Dept. of Defense, Army, Medical Research & Development Command, Walter Reed Army Inst. of Research, *Washington, District of Columbia* 20012 (DA0A6440)

TO STUDY PHYSIOLOGICAL, BIOCHEMICAL, PATHOLOGICAL AND EPIDEMIOLOGICAL ASPECTS OF PARASITIC DISEASES OF MILITARY IMPORTANCE. TO EVALUATE EXISTING TECHNIQUES AND TO DEVELOP NEW TECHNIQUES FOR DIAGNOSIS, PREVENTION, TREATMENT AND CONTROL.

CULTURE SYSTEMS AND ANIMAL MODELS OF PARASITIC DISEASES WILL BE DEVELOPED AND USED TO STUDY THE PARASITES OF INTEREST, THE PARASITIC DISEASE PROCESS, AND THE EFFECTIVENESS OF NEW DIAGNOSTIC, PREVENTIVE AND THERAPEUTIC MEASURES. STUDIES WILL EMPHASIZE BUT WILL NOT BE RESTRICTED TO MALARIA, LEISHMANIASIS, TRYPANOSOMIASIS, AND SCHISTOSOMIASIS.

SUPPORTED BY U.S. Dept. of Defense, Army, Medical Research & Development Command, Walter Reed Army Inst. of Research funds n.a.

3.0154,

VIRAL INFECTIONS OF MAN

W.H. Bancroft, U.S. Dept. of Defense, Army, Medical Research & Development Command, Communicable Disease & Immunology Research Div., *Washington, District of Columbia* 20012 (DA0A6441)

TO DEFINE ETIOLOGY OF ACUTE INFECTIOUS DISEASES OF SPECIAL HAZARD TO MILITARY PERSONNEL, TO DETERMINE AND EVALUATE FACTORS INFLUENCING OCCURRENCE, DISTRIBUTION, SEVERITY AND MEDICAL RESULT OF HUMAN VIRUS INFECTIONS, AND TO DEVELOP MEANS FOR REDUCING DISABILITY DUE TO VIRUS DISEASES.

CONTEMPORARY VIROLOGICAL AND IMMUNOLOGICAL METHODS ARE APPLIED TO DISEASE PROBLEMS OCCURRING IN TROOPS OR IN SUSCEPTIBLE CIVILIAN POPULATIONS IN STRATEGICALLY IMPORTANT AREAS. NEW CONCEPTUAL APPROACHES AND METHODS ARE DEVELOPED AS NEEDED FOR SPECIFIC PROBLEMS.

SUPPORTED BY U.S. Dept. of Defense, Army, Medical Research & Development Command, Walter Reed Army Inst. of Research funds n.a.

3.0155,

BACTERIAL DISEASES OF MILITARY IMPORTANCE

S.B. Formal, U.S. Dept. of Defense, Army, Medical Research & Development Command, Communicable Disease & Immunology Research Div., *Washington, District of Columbia* 20012 (DA0A6443)

STUDIES ON THE ETIOLOGY, ECOLOGY, EPIDEMIOLOGY, PATHOGENESIS, PHYSIOLOGICAL IMMUNOLOGICAL AND DIAGNOSITC ASPECTS OF DISEASES OF MICROBIAL ORIGIN WHICH ARE CURRENT OR POTENTIAL PROBLEMS TO MILITARY FORCES. CURRENT EMPHASIS ON CONTROL OF MENINGOCOCCAL, GONOCOCCAL, PSEUDOMONAS AND STAPHYLOCOCCAL INFECTIONS IN MILITARY FORCES.

DEVELOPMENT OF BACTERIOLOGIC TECHNIQUES FOR STUDY OF VARIOUS INFECTIOUS DISEASES. FIELD STUDIES ON PROPHYLACTIC REGIMENS, SPREAD AND PERSISTENCE OF ORGANISMS IN VARIOUS MILITARY POPULATIONS.
SUPPORTED BY U.S. Dept. of Defense, Army, Medical Research & Development Command, Walter Reed Army Inst. of Research funds n.a.

3.0156,
BIOLOGICAL STUDIES OF INSECT INFECTION AND DISEASE TRANSMISSION
C.L. Bailey, U.S. Dept. of Defense, Army, Medical Research & Development Command, Communicable Disease & Immunology Research Div., *Washington, District of Columbia* 20012 (DA0A6514)
DEVELOP PHYSIOLOGICAL MEANS OF INTERRUPTING MALARIA TRANSMISSION THROUGH AN UNDERSTANDING OF FACTORS AFFECTING PARASITE INFECTIVITY IN VIVO AND IN VITRO. DETERMINE MOST EFFECTIVE MEANS OF INHIBITING MALARIA INFECTIONS IN VERTEBRATE HOSTS BY INJECTION OF LIPOSOMES CONTAINING GLYCOLIPIDS. DEVELOP MODELS FOR CYCLICAL TRANSMISSION OF AFRICAN TRYPANOSOMIASIS TO FACILITATE UTILIZATION OF LARGE NUMBERS OF PARASITES IN STUDYING IMMUNE MECHANISMS. REALIZATION OF OBJECTIVES MAY LEAD TO PREVENTION OR CONTROL OF MALARIA AND TRYPANOSOMIASIS IN MILITARY TROOPS.
ASSAY LIPOSOME PREPARATIONS, LACKING OR CONTAINING ANTIMALARIAL DRUGS FOR EFFECTIVENESS IN INHIBITING MALARIA INFECTIONS. ISOLATE DIFFERENT STAGES OF THE MALARIA PARASITE ON DENSITY GRADIENTS FOR SUBSEQUENT STUDY IN CULTURE SYSTEMS. CORRELATE RECENTLY DEVELOPED CYCLICAL TRANSMISSION MODELS FOR TSETSE FLIES WITH PHYSIOLOGICAL FACTORS THAT AFFECT FLY TRYPANOSOME INTERACTIONS. EVALUATE A SELF MATING STRAIN OF ANOPHELES BALABACENSIS FOR USE IN LABORATORY TRANSMISSION OF MALARIA.
SUPPORTED BY U.S. Dept. of Defense, Army, Medical Research & Development Command, Walter Reed Army Inst. of Research funds n.a.

3.0157,
EPIDEMIOLOGICAL STUDIES OF MILITARY DISEASES
R.N. Miller, U.S. Dept. of Defense, Army, Medical Research & Development Command, Preventive Medicine Div., *Washington, District of Columbia* 20012 (DA0B6489)
TO IDENTIFY, DEFINE, AND STUDY KNOWN AND POTENTIAL CAUSES OF DISABILITY IN MILITARY POPULATIONS USING RELEVANT, EXISTING UEPIDEMIOLOGIC TECHNIQUES AND DEVELOPING APPROPRIATE NEW METHODOLOGY. TO APPLY THIS INFORMATION TO THE PREVENTION AND CONTROL OF DISABILITY IN MILITARY POPULATIONS.
CONTEMPORARY EPIDEMIOLOGIC METHODS ARE APPLIED TO CAUSES OF DISABILITY IN MILITARY POPULATIONS. MULTIDISCIPLINARY COLLABORATIVE APPROACHES ARE UTILIZED AND NEW METHODS DEVELOPED AS REQUIRED.
SUPPORTED BY U.S. Dept. of Defense, Army, Medical Research & Development Command, Walter Reed Army Inst. of Research funds n.a.

3.0158,
MECHANISMS OF TRANSMISSION OF HEPATITIS VIRUSES
W.H. Bancroft, U.S. Dept. of Defense, Army, Medical Research & Development Command, Communicable Disease & Immunology Research Div., *Washington, District of Columbia* 20012 (DA0B6513)
TO DEFINE THE EPIDEMIOLOGY OF HEPATITIS IN MILITARY POPULATIONS IN ORDER TO ESTABLISH METHODS FOR REDUCING DISABILITY FROM HEPATITIS. EMPHASIS IS ON DEVELOPING AND APPLYING SENSITIVE AND SPECIFIC METHODS FOR DETECTION OF HEPATITIS VIRUSES/ ANTIGENS AND ANTIBODIES TO DETERMINE HOST FACTORS IMPORTANT IN RESISTANCE TO DISEASE AND INFECTION IM MILITARY PERSONNEL.
NEW METHODS FOR IDENTIFICATION AND ANTIGENIC ANALYSIS OF HEPATITIS VIRUSES ARE UNDER DEVELOPMENT. THE IMMUNE RESPONSE OF PATIENTS INFECTED WITH HEPATITIS VIRUSES IS STUDIED TO DEFINE SENSITIVE PARAMETERS OF INFECTION AND TO DEFINE FACTORS CRITICAL IN IMMUNITY. THE EPIDEMIOLOGY OF HEPATITIS B IN MILITARY POPULATIONS IS DEFINED.
SUPPORTED BY U.S. Dept. of Defense, Army, Medical Research & Development Command, Walter Reed Army Inst. of Research funds n.a.

3.0159,
ANTI-SCHISTOSOMAL DRUG DEVELOPMENT AND MALARIA IMMUNOLOGY AND VECTOR STUDIES
W.A. Reid, U.S. Dept. of Defense, Army, Medical Research & Development Command, Medical Research Unit, *APO, New York, New York* 09676 (DA0B6525)
FIND NEW PROPHYLACTIC AND CURATIVE DRUGS FOR THE PREVENTION AND CURE OF SCHISTOSOMIASIS INFECTIONS AND TO STUDY THE CLINICAL, EPIDEMIOLOGIC, DRUG SUSCEPTIBILITY AND VECTOR TRANSMISSION PATTERNS OF FALCIPARUM MALARIA IN THE AMAZON RIVER BASIN OF BRAZIL. BOTH ARE PRIMARY DISEASES WHICH WOULD BE ACQUIRED BY U.S. MILITARY AND DOD CIVILIAN PERSONNEL IN THE EVENT OF DEPLOYMENT TO ANY OF NUMEROUS TROPICAL AREAS OF THE WORLD.
THE WRAIR ANTI-SCHISTOSOMAL DRUG TESTING PROGRAM CONTINUES TO SUBMIT CANDIDATE COMPOUNDS FOR PROPHYLACTIC (PMT) AND CURATIVE (PCT) TESTING AGAINST SCHISTOSOMIASIS IN MICE. COMPOUNDS ACTIVE IN THE PRIMARY SCREEN ARE EXTENSIVELY REEXAMINED FOR CONFIRMATION AND DOSE RESPONSE PATTERNS. THE MALARIA IMMUNOLOGY STUDIES INCLUDE THE TESTING OF SERA FROM ENDEMIC AREAS BY THE INDIRECT FLUORESCENT ANTIBODY TEST, IN VITRO DRUG SUSCEPTIBILITY TESTING AND CREATION OF A CRYOBANK OF HUMAN STRAINS OF PLASMODIUM FALCIPARUM. MALARIA VECTOR TRANSMISSION STUDIES INCLUDE FIELD AND LABORATORY ANALYSIS OF MORPHOLOGICAL, BEHAVIORAL, PHYSIOLOGICAL AND DDT SUSCEPTIBILITY PATTERNS OF ANOPHELES DARLINGI AND OTHER POTENTIAL ANOPHELENE MALARIA VECTORS.
SUPPORTED BY U.S. Dept. of Defense, Army, Medical Research & Development Command, Walter Reed Army Inst. of Research funds n.a.

3.0160,
FIELD STUDIES OF RICKETTSIOSES AND OTHER TROPICAL DISEASES
M.G. Groves, U.S. Dept. of Defense, Army, Medical Research & Development Command, Medical Research Unit, *Kuala Lumpur* (DA0B6526)
1. INVESTIGATE THE EPIDEMIOLOGY OF SCRUB TYPHUS IN HUMAN POPULATIONS; 2. STUDY THE CHIGGER VECTOR OF SCRUB TYPHUS; 3. DETERMINE THE STRAINS OF R. TSUTSUGAMUSHI CAUSING HUMAN INFECTIONS; 4. EVALUATE NEW TREATMENTS FOR SCRUB TYPHUS; 5. STUDY THE BASIS OF SCRUB TYPHUS IMMUNITY; 6. DEVELOP A LABORATORY ANIMAL MODEL FOR SCRUB TYPHUS. THESE STUDIES ARE DESIGNED TO ELIMINATE SCRUB TYPHUS AS A MILITARY MEDICAL PROBLEM.
1. EVALUATION OF CLINICAL, PATHOLOGICAL, AND SEROLOGICAL CHARACTERISTICS OF SCRUB TYPHUS IN RURAL POPULATIONS. 2. DETERMINE CHANGES IN CHIGGER POPULATIONS DUE TO CHANGES IN ECOLOGY. IDENTIFY R. TSUTSUGAMUSHI INFECTION IN VECTOR CHIGGERS. 3. ANTIGENICALLY CHARACTERIZE R. TSUTSUGAMUSHI STRAINS ISOLATED THROUGHOUT THE ENDEMIC REGION. 4. ADMINISTER SINGLE DOSE DOXYCYCLINE IN EARLY FEBRILE DISEASE. 5. TEST ANTIGEN-STIMULATED, IMMUNE LYMPHOCYTES FOR BLASTOGENESIS. 6. CHARACTERIZE R. TSUTSUGAMUSHI INFECTION IN CYNOMOLGUS MONKEYS.
SUPPORTED BY U.S. Dept. of Defense, Army, Medical Research & Development Command, Walter Reed Army Inst. of Research funds n.a.

3.0161,
MILITARY PSYCHIATRY EPIDEMIOLOGY
D.H. Marlowe, U.S. Dept. of Defense, Army, Medical Research & Development Command, Neuropsychiatry Div., *Washington, District of Columbia* 20012 (DA0C6454)
THIS UNIT EXAMINES MILITARY ORGANIZATIONAL, SOCIAL PSYCHOLOGICAL, AND ENVIRONMENTAL FACTORS THAT CREATE RISK FOR AND CONDUCE TO PSYCHIATRIC DISEASE, PSYCHOSOMATIC ILLNESS, BEHAVIORAL DYSFUNCTION AND PHYSICAL ILLNESS AS THEY EFFECT ARMY PERSONNEL AND IMPACT ON CARE GIVING AGENCIES.
THE METHODS OF EPIDEMIOLOGY, INCLUDING RECORDS SURVEILLANCE, POPULATION AND DEMOGRAPHIC ANALYSIS, QUESTIONNAIRE AND FIELD AND COHORT STUDIES AS WELL AS METHODS OF THE PSYCHOLOGICAL AND SOCIAL SCIENCES ARE USED TO DELINEATE ENVIRONMENTS OF RISK FOR PSYCHIATRIC ILLNESS AND PERIODS OF SPECIAL RISK FOR SUCH ILLNESSES AT CRITICAL POINTS IN THE CAREER OF THE SOLDIER.
SUPPORTED BY U.S. Dept. of Defense, Army, Medical Research & Development Command, Walter Reed Army Inst. of Research funds n.a.

3.0162,
TROPICAL AND SUBTROPICAL DISEASE IN MILITARY MEDICINE
H.E. Segal, U.S. Dept. of Defense, Army, Medical Research & Development Command, Medical Component, *Bangkok* (DA0C6465)
TO DEFINE THE ECOLOGICAL AND BIOLOGICAL FACTORS THAT PREDISPOSE U.S. MILITARY PERSONNEL TO TROPICAL INFECTIOUS DISEASES. CHARACTERIZATION OF DISEASE ORGANISMS AND RESPONSE TO INFECTIONS IS DONE IN SUPPORT OF VACCINE DEVELOPMENT.
THE ETIOLOGY, EPIDEMIOLOGY, AND ECOLOGY OF DISEASE ORGANISMS ARE STUDIED IN THE FIELD AND IN HOSPITAL. IN VITRO CULTIVATION, SEROLOGICAL PROCEDURES, MICROBIOLOGICAL ASSAYS, MOSQUITO INOCULATION, VECTOR COLONIZATION, AND OTHER TECHNIQUES ARE USED TO CHARACTERIZE DISEASE ORGANISMS.
SUPPORTED BY U.S. Dept. of Defense, Army, Medical Research & Development Command, Walter Reed Army Inst. of Research funds n.a.

3.0163,
MEDICAL FACTORS LIMITING SOLDIER EFFECTIVENESS
L. Ingraham, U.S. Dept. of Defense, Army, Medical Research & Development Command, Walter Reed Army Inst. of Research, *Washington, District of Columbia* 20012 (DA0C6470)
TO IDENTIFY FACTORS IN THE MILITARY ORGANIZATIONAL, SOCIAL, PSYCHOLOGICAL AND PHYSICAL ENVIRONMENT THAT CREATE RISK FOR AND CONDUCE TO PSYCHIATRIC BREAKDOWN, BEHAVIORAL DYSFUNCTION, PSYCHOSOMATIC AND PHYSICAL ILLNESS AS THEY IMPACT ON INDIVIDUAL AND UNIT EFFECTIVENESS AND CONSUME HEALTH CARE RESOURCES.
THE METHODS OF EPIDEMIOLOGY, INCLUDING RECORDS ANALYSIS, POPULATION AND DEMOGRAPHIC ANALYSIS, QUESTIONNAIRE AND FIELD AND COHORT STUDIES AS WELL AS OBSERVATIONAL METHODS ARE EMPLOYED TO DEVELOP REQUISITE DATA.
SUPPORTED BY U.S. Dept. of Defense, Army, Medical Research & Development Command, Walter Reed Army Inst. of Research funds n.a.

3.0164,
STUDIES IN THE EPIDEMIOLOGY OF ARBOVIRAL INFECTIONS
G.T. Crane, U.S. Dept. of Defense, Army, Test & Evaluation Command, Environmental & Life Science Div., *Dugway Proving Ground, Dugway, Utah* 84022 (DA0K1535)
THE OBJECTIVE IS TO STUDY THE NATURAL INFECTION CHAIN FOR ARBOVIRUSES OF WESTERN UTAH.
ONE OF THE MAJOR PROBLEMS IN ARBOVIROLOGY IS AN UNDERSTANDING OF HOW EACH VIRUS IS MAINTAINED IN NATURE. SINCE CALIFORNIA ENCEPHALITIS IS ENDEMIC IN THE WESTERN UTAH AREA, DPG IS IN A UNIQUE POSITION TO STUDY THE VIRUS. JOINT EFFORTS OF DPG WITH SUCH AGENCIES AS THE CENTER FOR DISEASE CONTROL (CDC), THE UTAH STATE DEPARTMENT OF AGRICULTURE AND OF HEALTH HAVE RESULTED IN OBTAINING PARTIAL ANSWERS TO SOME OF THE BASIC EPIDEMIOLOGICAL AND EPIZOOTIOLOGICAL QUESTIONS. THIS STUDY IS DESIGNED TO HELP ELUCIDATE HOW THE VIRUS IS MAINTAINED IN NATURE.
SUPPORTED BY U.S. Dept. of Defense, Army, Test & Evaluation Command funds n.a.

3.0165,
EMISSION OF REO VIRUS AS AN INDICATOR OF PATHOGENIC VIRUSES
J.C. Spendlove, U.S. Dept. of Defense, Army, Test & Evaluation Command, Environmental & Life Science Div., *Dugway Proving Ground, Dugway, Utah* 84022 (DA0M1492)
TO CHARACTERIZE EMISSION OF REO VIRUS IN AEROSOLS FROM VARIOUS PROCESSES THAT INVOLVE WATER CONTAMINATED WITH HUMAN WASTE AND TO EVALUATE IT AS AN INDICATOR ORGANISM FOR HUMAN ENTEROVIRUS CONTAMINATION.
THIS PROJECT IS A CONTINUATION OF PREVIOUS STUDIES INVOLVING EMISSION OF MICROBIAL AEROSOLS FROM VARIOUS OPEN AIR SOURCES. THE PROJECT WILL BE CONDUCTED IN COOPERATION WITH THE UTAH STATE UNIVERSITY, DEPARTMENT OF MICROBIOLOGY. A DOCTORAL CANDIDATE FROM THE UNIVERSITY (MR. JACK ADAMS) WILL BE TRAINED AT DUGWAY PROVING GROUND IN THE USE OF BIOLOGICAL AIR SAMPLERS AND OTHER AEROBIOLOGICAL EQUIPMENT. THE STUDY WILL CONSIST OF AN EXAMINATION OF THE AEROSOL STABILITY CHARACTERISTICS OF THE VIRUS FOLLOWED BY AN EXAMINATION OF VARIOUS WASTE WATERS FOR CONCENTRATION OF REO VIRUS. THESE WILL INCLUDE WATER FROM SEWAGE TREATMENT PLANTS, COOLING TOWERS THAT UTILIZE WASTE WATER AND WASTE WATER USED IN SPRINKLER IRRIGATION OF AGRICULTURAL LAND. WATER SOURCES SHOWING SUFFICIENTLY HIGH CONCENTRATION WILL BE CHARACTERIZED FOR AEROSOL EMISSION OF REO VIRUS. EFFECTS OF METEOROLOGICAL CONDITIONS ON EMISSION OF VIRUS AND DOWNWIND CONCENTRATIONS AS CALCULATED BY USE OF ESTABLISHED DIFFUSION MODELS WILL BE EXAMINED. COMPARISON OF WATER CONCENTRATIONS OF REO VIRUS TO VARIOUS ENTEROVIRAL PATHOGENS WILL BE MADE ON THE BASIS OF THESE DATA. REO VIRUS WILL BE EVALUATED AS AN INDICATOR OF PATHOGENIC VIRUSES IN BOTH WATER AND AEROSOL EMISSION.
SUPPORTED BY U.S. Dept. of Defense, Army, Test & Evaluation Command funds n.a.

3.0166,
EPIDEMIOLOGY OF ROTAVIRUSES IN THE HUMAN POPULATION AT DUGWAY, UT (DA0M1512)
D.J. Adams, U.S. Dept. of Defense, Army, Test & Evaluation Command, Environmental & Life Science Div., *Dugway Proving Ground, Dugway, Utah* 84022 (DA0G5433)
TO INVESTIGATE THE EPIDEMIOLOGY OF VIRAL DIARRHEA IN AN ISOLATED ARMY INSTALLATION AT DUGWAY, UTAH.
WEEKLY SAMPLES OF SEWAGE WILL BE COLLECTED OVER A PERIOD OF MONTHS. ONE-HALF OF EACH SAMPLE WILL BE EXAMINED AT DPG FOR REOVIRUSES AND ROTAVIRUSES WITH THE CONCENTRATION AND ASSAY PROCEDURES DEVELOPED RECENTLY (IN PRESS). THE REMAINING SAMPLE WILL BE SENT TO THE MICROBIOLOGY DEPT, UTAH STATE UNIVERSITY, LOGAN, WHERE A GRATUITOUS EXAMINATION FOR PRESENCE OF ECHO, COXSACKIE AND POLIO VIRUS WILL BE PERFORMED. THE USA HEALTH CLINIC, DPG, WILL COOPERATE BY SUPPLYING STOOL SPECIMENS OF INFANT DIARRHEA FOR SIMILAR EXAMINATION AND ENTEROBACTERIAL STUDY.
SUPPORTED BY U.S. Dept. of Defense, Army, Test & Evaluation Command funds n.a.

3.0167,
STATISTICAL SURVEY OF MILITARY MORBIDITY DATA
R.A. Hodder, U.S. Dept. of Defense, Uniformed Services University of the Health Sciences, Dept. of Preventive Medicine & Biometrics, *Bethesda, Maryland* 20014 (DD700007)
TO ANALYZE EXISTING MILITARY MORBIDITY DATA IN ORDER TO IDENTIFY UNUSUAL DISEASE RATES AND SUBPOPULATIONS MOST AT RISK, AND TO COMPARE SUCH STATISTICS AMONG THE UNIFORMED SERVICES.
EXISTING DATA BASES FOR MILITARY MORBIDITY STATISTICS ARE IDENTIFIED. SELECTED SUMMARIES FROM THESE BASES ARE ANALYZED TO DETECT TRENDS, AND/OR UNUSUAL PATTERNS. GROUPS CONSIDERED AT HIGH RISK, PARTICULARLY IF OCCUPATIONALLY-RELATED, ARE STUDIED IN DETAIL TO DETERMINE RESPONSIBLE FACTORS.
SUPPORTED BY U.S. Dept. of Defense, Defense Advanced Research Projects Agency funds n.a.

3.0168,
IMMUNE SUPPRESSION IN BACTERIAL MENINGITIDES OF MILITARY IMPORTANCE IN THE MIDDLE EAST
R. Cahill, U.S. Dept. of Defense, Navy, Naval Medical Research Unit #3, *FPO, New York, New York* 09527 (DN977579)
BACTERIAL MENINGITIDES CAN BE EPIDEMIC AND AS A GROUP POSSESS MISSION ABORTING POTENTIAL. IMMUNE SUPPRESSION IS A FEATURE OF THESE DISEASES. IDENTIFICATION OF THESE IMMUNE MECHANISMS INVOLVED MAY HAVE POTENTIAL IMPORTANCE IN PREVENTING THE DISEASE BEFORE OR PROVIDING ADJUNCTIVE THERAPY TO ANTIMICROBIAL DRUGS AFTER INFECTION.
PURULENT BACTERIAL AND TURBERCULOUS MENINGITIS PATIENTS WILL BE THOROUGHLY EVALUATED IMMUNOLOGICALLY. LYMPHOCYTES AND THEIR SUBPOPULATIONS ISOLATED BY NOVEL APPROACHES WILL BE TESTED FOR IN VITRO T LYMPHOCYTE COMPETENCE BY MICROCULTURE BLASTOGENESIS ASSAYS. THE SPECIFIC SUPPRESSION DUE TO EITHER SERUM FACTORS OR SUPPRESSOR CELLS WILL BE IDENTIFIED AND CHARACTERIZED. DELAYED SKIN TESTS WITH MICROBIAL RECALL ANTIGENS WILL BE DONE FOR TESTING IN VIVO T CELL COMPETENCE.
SUPPORTED BY U.S. Dept. of Defense, Navy, Naval Medical Research & Development Command funds n.a.

3.0169,
EXTENSION AND APPLICATION OF A SHIPBOARD MORBIDITY FORECAST MODEL
A.P. Jones, U.S. Dept. of Defense, Navy, Naval Health Research Center, Environmental & Social Medicine Div., *San Diego, California* 92152 (DN077660)
THE OPERATIONAL READINESS OF A NAVY SHIP DEPENDS TO A LARGE EXTENT UPON THE PHYSICAL AND MENTAL FITNESS OF THE CREW. A MORBIDITY FORECAST MODEL HAS BEEN DEVELOPED TO PREDICT FLEET UNITS, CREW ELEMENTS, AND OPERATIONAL CONDITIONS AT GREATEST RISK OF ELEVATED MORBIDITY AND IMPAIRED EFFECTIVENESS DURING DEPLOYMENT. THE PURPOSE OF THE PRESENT STUDY IS TO EXTEND THE SCOPE AND PRECISION OF THE MORBIDITY FORECAST MODEL AND TO INCREASE UNDERSTANDING OF THE CAUSAL MECHANISMS INVOLVED IN THE ETIOLOGY OF ILLNESS AND INJURY ABOARD SHIP. SUCH KNOWLEDGE WILL IDENTIFY POINTS IN THE CAUSAL CHAIN WHERE INTERVENTIONS AND PREVENTIVE ACTIONS MAY BE EFFECTIVELY APPLIED.
PREVIOUS STUDIES ABOARD DEPLOYED COMBAT SHIPS HAVE IDENTIFIED ENVIRONMENTAL, WORK CLIMATE, AND PERSONNEL COMPOSITION FACTORS THAT CAN BE USED TO PREDICT VARIATIONS IN SHIPBOARD ILLNESS AND ACCIDENT RATES. THE PRESENT STUDY WILL DETERMINE THE CONTRIBUTIONS OF ADDITIONAL VARIABLES, SUCH AS SHIP TYPE AND EXPERT OBSERVERS' REPORTS, TO MORBIDITY PREDICTIONS AND WILL EXAMINE THE PROCESSES BY WHICH ENVIRONMENTAL FACTORS RESULT IN DISEASE SYMPTOMS AND ACCIDENTS. THE FIRST PHASE OF THE STUDY WILL FOCUS ON EXTENDING THE MODEL BY TESTING NEW PREDICTOR VARIABLES USING SHIPS' OPERATIONAL DATA, CREW MEMBERS' QUESTIONNAIRE DATA, AND KEY INFORMANTS' REPORTS. THE SECOND PHASE WILL USE STATISTICAL CAUSAL MODELS TO DERIVE ETIOLOGICAL MECHANISMS AND PATHWAYS. LATER PHASES OF THE RESEARCH (PERFORMED IN OUT-YEAR FUNDING PERIODS) WILL SEEK TO DEVISE SPECIFIC INTERVENTION STRATEGIES AND APPLICATIONS CONSISTENT WITH KNOWLEDGE OF CAUSAL PATHWAYS ESTABLISHED EARLIER.
SUPPORTED BY U.S. Dept. of Defense, Navy, Naval Medical Research & Development Command funds n.a.

3.0170,
MORBIDITY FORECAST MODEL FOR COLD WEATHER OPERATIONS
L.M. Dean, U.S. Dept. of Defense, Navy, Naval Submarine Medical Research Lab., Personnel Psychology Dept., *Naval Submarine Base, Groton, Connecticut* 06340 (DN077671)
THE OPERATIONAL EFFECTIVENESS OF NAVY AND MARINE CORPS PERSONNEL IN COLD ENVIRONMENTS DEPENDS UPON THE PHYSICAL AND MENTAL FITNESS OF THE TROOPS, THE OPERATIONAL OBJECTIVES, AND OTHER SITUATIONAL AND ENVIRONMENTAL FACTORS. IN ORDER TO PLAN COLD WEATHER OPERATIONS, IT IS IMPORTANT TO IDENTIFY THE PERSONNEL AND SITUATIONAL FACTORS THAT INCREASE THE RISK OF MORBIDITY OR IMPAIRED EFFECTIVENESS AND TO DEVELOP A MODEL FOR PREDICTING ILLNESS AND COLD INJURY AND THE ASSOCIATED COSTS IN MAN-DAYS LOST. A DATA BASE AND DATA ANALYSIS CAPABILITY TO ENABLE QUANTITATIVE PREDICTION OF NON-EFFECTIVE DAY LOSSES DUE TO COLD ASSOCIATED MORBIDITY OR ILLNESS OCCURRING DURING NAVY AND MARINE CORPS OPERATIONS WILL BE ONE END PRODUCT OF THIS RESEARCH. ANOTHER OUTCOME WILL BE THE CAPABILITY OF MAKING RECOMMENDATIONS AS TO THOSE PERSONNEL MANAGEMENT PROCEDURES WHICH, IF APPLIED, MAY ENHANCE THE OVERALL EFFECTIVENESS OF THE COLD WEATHER COMBAT OPERATION.
THE FEASIBILITY OF USING AFTER-ACTION MEDICAL REPORTS FROM PREVIOUS NAVY AND MARINE CORPS COLD WEATHER EXERCISES AS A DATA BASE FROM WHICH MORBIDITY WILL BE EVALUATED. ADDITIONAL SOURCES OF SIMILAR DATA BASES WILL BE IDENTIFIED AND APPRAISED WITH RESPECT TO THEIR POTENTIALITY FOR QUANTITATIVE PREDICTION OF COLD WEATHER INJURIES AND ILLNESSES. IF SUCH DATA BASES CAN BE ESTABLISHED THEN PRELIMINARY ANALYSES WILL BE CONDUCTED ON THESE DATA IN ORDER TO IDENTIFY THE SALIENT PREDICTORS/VARIABLES ASSOCIATED WITH NON-EFFECTIVE DAY LOSSES DUE TO COLD INJURY IN COLD WEATHER NAVY AND MARINE CORPS OPERATIONS.
SUPPORTED BY U.S. Dept. of Defense, Navy, Naval Medical Research & Development Command funds n.a.

3.0171,
MONITORING THE ORAL HEALTH STATUS OF NAVAL PERSONNEL
J.C. Cecil, U.S. Dept. of Defense, Navy, Naval Dental Research Inst., Dental Care Delivery Div., *Great Lakes, Illinois* 60088 (DN077687)
THE PREVALENCE OF ORAL DISEASE AMONG NAVAL RECRUITS IS NEARLY UNIVERSAL. THERE IS LITTLE DATA AVAILABLE ON THE ORAL HEALTH STATUS OF NONRECRUITS IN THE NAVY. THE OBJECTIVE OF THIS STUDY IS TO COLLECT AND ANALYZE ORAL EPIDEMIOLOGIC DATA USEFUL IN DETERMINING THE PREVALENCE, INCIDENCE, SEVERITY OF DENTAL DISEASE, AND NEED FOR TREATMENT AMONG NAVAL PERSONNEL.
DENTAL EXAMINATIONS WILL BE PERFORMED AND SALIVA SAMPLES WILL BE COLLECTED FROM MILITARY PERSONNEL. VALIDATED ORAL EPIDEMIOLOGIC INDICES WILL BE USED WITH RETROSPECTIVE, CROSS-SECTIONAL, AND LONGITUDINAL CLINICAL DATA FOR ANALYSIS. DEMOGRAPHIC, DENTAL AND MEDICAL HISTORY, AND PERSONNEL PERFORMANCE DATA WILL BE GATHERED FROM EXISTING DATA BASES OF THE NAVY. AGGREGATE DATA OBTAINED WILL BE ANALYZED USING AUTOMATED DATA PROCESSING AND STATISTICAL METHODS. ORAL HEALTH STATUS PROFILES OF SUBGROUPS OF THE NAVAL POPULATION WILL BE USED TO EVALUATE THERAPEUTIC AND PREVENTIVE DENTAL PROGRAMS, AND TO PREDICT THOSE MOST AT RISK FOR INCREASED DENTAL DISEASE.
SUPPORTED BY U.S. Dept. of Defense, Navy, Naval Medical Research & Development Command funds n.a.

3.0172,

DISTRIBUTION AND PREVALENCE OF MALARIA IN THE PHILIPPINES ESPECIALLY CHLOROQUINE-RESISTANT STRAINS OF PLASMODIUM FALCIPARUM

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THE OBJECTIVE OF THIS STUDY IS TO DETERMINE THE DISTRIBUTION OF MALARIA IN THE PHILIPPINES AND THE PREVALENCE OF THE DISEASE IN THE INDIGENOUS POPULATIONS. CHLOROQUINE-RESISTANCE FALCIPARUM MALARIA HAS BEEN REPORTED BUT AREAS OF RISK ESPECIALLY FOR U.S. MILITARY PERSONNEL STATIONED IN THE PHILIPPINES ARE NOT COMPLETELY DOCUMENTED.

CASES OF SUSPECTED MALARIA SEEN AT SAN LAZARO HOSPITAL MANILA WILL BE CONFIRMED BY LABORATORY EXAMINATION OF BLOOD SMEARS. PATIENTS WILL BE TREATED BY THE HOSPITAL STAFF WITH CHLOROQUINE AND FOLLOWED IN THE EVENT OF RELAPSE. TREATMENT FAILURES WILL BE TREATED BY STAFF PHYSICIANS WITH OTHER EFFECTIVE ANTI-MALARIAL DRUGS. AREAS YIELDING HIGH NUMBERS OF CASES OF MALARIA WILL BE SURVEYED BY STANDARD MALARIOMETRIC METHODS AND THE PREVALENCE OF DISEASE AND INFECTION RATES ESTABLISHED. SEROLOGIC METHODS WILL ALSO BE USED TO SUPPORT EPIDEMOLOGIC INVESTIGATIONS.

SUPPORTED BY U.S. Dept. of Defense, Navy, Naval Medical Research & Development Command funds n.a.

3.0173,

EVALUATION OF HEALTH RISKS FOR NAVY OCCUPATIONS

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THE PURPOSE OF THIS WORK UNIT IS TO EVALUATE THE NEED FOR REVISED HEALTH AND SAFETY STANDARDS IN SELECTED NAVY OCCUPATIONAL SPECIALTIES. WIDE DIFFERENCES IN HOSPITALIZATION RATES ACROSS NAVY OCCUPATIONAL GROUPS INDICATE A NEED TO EVALUATE HEALTH RISKS IN VARIOUS NAVAL OCCUPATIONS AND TO MODIFY PHYSICAL AND MENTAL FITNESS CRITERIA WHERE BIOMEDICAL RISKS ARE QUITE HIGH. HIGH LEVELS OF OCCUPATIONAL MORBIDITY MAY COMPROMISE OPERATIONAL READINESS AND EFFICIENCY OF NAVAL UNITS AND ADD TO OPERATIONAL COSTS. QUESTIONS TO BE ADDRESSED INCLUDE: WHAT ARE THE RISKS OF DISEASE, DISABILITY, AND MORTALITY IN SPECIFIC NAVAL OCCUPATIONS AND WORK ENVIRONMENTS. WHAT ARE THE DEMOGRAPHIC, ORGANIZATIONAL, ENVIRONMENTAL, AND TASK-RELATED FACTORS THAT EXPLAIN DIFFERENCES IN MORBIDITY AND MORTALITY. THE FEASIBILITY OF ALTERNATIVE STRATEGIES FOR REDUCING OCCUPATION-RELATED HEALTH RISKS WILL BE EVALUATED IN TERMS OF MANPOWER CONSTRAINTS AND MEDICAL SCREENING CAPABILITIES.

COMPUTERIZED MEDICAL RECORDS AND SERVICE HISTORY DATA FOR ALL NAVY ENLISTEES HOSPITALIZED DURING 1966-1977 WILL BE ANALYZED. PERSONNEL CHARACTERISTICS AND MORBIDITY/MORTALITY DATA WILL BE COMPARED FOR MAJOR ENLISTED OCCUPATIONAL GROUPS ON A CROSS-SECTIONAL BASIS IN TERMS OF ANNUAL INCIDENCE RATES. LONGITUDINAL STUDIES WILL BE CONDUCTED ON SELECTED HIGH RISK OCCUPATIONS TO RELATE LONG-TERM HEALTH HISTORIES TO JOB RESPONSIBILITIES AND WORK EXPERIENCES. PRELIMINARY STUDIES HAVE INDICATED THAT HOSPITAL CORPSMEN, ENGINEERING RATES, AND CONSTRUCTION PERSONNEL ARE AT HIGHER RISK FOR ILLNESS OR INJURY THAN OTHER OCCUPATIONAL SPECIALTIES. NAVAL OCCUPATIONAL TASK ANALYSIS PROGRAM SURVEY RESULTS AND SITE VISITS TO NAVAL FACILITIES WILL BE UTILIZED TO MAKE DETAILED COMPARISONS OF JOB CHARACTERISTICS, TASK DEMANDS, WORK ACTIVITIES, AND ENVIRONMENTAL CONDITIONS IN SELECTED HIGH AND LOW RISK OCCUPATIONS.

SUPPORTED BY U.S. Dept. of Defense, Navy, Naval Medical Research & Development Command funds n.a.

3.0174,

A BIOCHEMICAL STUDY OF CARDIOVASCULAR AND OTHER DISEASE RISK FACTORS ASSOCIATED WITH SUBMARINE SERVICE CAREERS

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TO EVALUATE BY BIOCHEMICAL AND PHYSIOLOGIC MEASURES THE EFFECTS OF LONG-TERM SUBMARINE DUTY ON THE APPEARANCE OF ANTECEDENTS OF DEGENERATIVE DISEASES, ESPECIALLY THOSE OF THE CARDIOVASCULAR SYSTEM. INCREASED CHOLESTEROL LEVELS, CHANGES IN GLUCOSE TOLERANCE AND CARDIOVASCULAR DISEASE RISKS HAVE BEEN FOUND TO BE DIRECTLY RELATED TO SUBMARINE EXPERIENCE. THESE DATA MAKE ANALYSES OF CARDIOVASCULAR RISK FACTORS AND DIABETES SUSCEPTIBILITY OF MAJOR IMPORTANCE TO THE HEALTH OF THE SUBMARINEH POPULATION.

SELECTED BIOMEDICAL VARIABLES ARE BEING MEASURED ON RANDOMLY SELECTED GROUPS OF ACTIVE DUTY AND RETIRED SUBMARINERS AND MATHCHED GROUPS OF OTHER NAVAL PERSONNEL TO EVALUATE INDICATIONS OF INCREASES IN POTENTIAL ILLNESSES THAT MAY BE RELATED TO TIME SPENT ABOARD SUBMARINES. A GROUP OF RETIRED PERSONNEL AGED 45-55 YEARS, GROUPS OF ACTIVE DUTY SUBJECTS WITH 5-9 YEARS AND 16-20 YEARS OF SUBMARINE EXPERIENCE AND WITH APPROPRIATE NON-SUBMARINER CONTROLS ARE BEING STUDIED. CLINICAL CHEMISTRY, PHYSIOLOGIC, HEMATOLOGIC, AND PSYCHOSOCIAL VARIABLES RELATED TO THE DEVELOPMENT OF CARDIOVASCULAR AND ASSOCIATED DISEASES ARE BEING MEASURED.

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3.0175,

DIAGNOSIS, EPIDEMIOLOGY AND TREATMENT OF HEPATITIS B VIRUS INFECTIONS IN SOUTHEAST ASIA

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THE MAJOR OBJECTIVES ARE TO: (1) DETERMINE THE MECHANISMS OF TRANSMISSION OF HEPATITIS B INFECTION; (2) IDENTIFY GROUPS SUITABLE FOR PROPHYLACTIC TRIALS; (3) UNDERSTAND THE FACTORS RELATING HBV INFECTIONS TO THE DEVELOPMENT OF CHRONIC LIVER DISEASE.

THE APPROACH OF THESE STUDIES IS EPIDEMIOLOGIC. THE PREVALENCE OF HEPATITIS B SURFACE ANTIGEN (HBSAG) AND HEPATITIS B SURFACE ANTIBODY (ANTI HBS) ARE STUDIED IN VARIOUS POPULATIONS TO DETERMINE WHAT DEMOGRAPHIC AND GEOGRAPHIC FACTORS ARE ASSOCIATED WITH INFECTION. CONVERSIONS OF ANTIGEN AND ANTIBODY STATUS ARE STUDIED IN VARIOUS POPULATIONS TO DETERMINE THE INCIDENCE OF NEW INFECTIONS AND IDENTIFY THE GROUPS AT HIGHEST RISK.

SUPPORTED BY U.S. Dept. of Defense, Navy, Naval Medical Research & Development Command funds n.a.

3.0176,

METHODS AND PROCEDURES FOR IMPROVED REPORTING OF OUTPATIENT MEDICAL DATA

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HEALTH CARE PLANNERS AND MANAGERS NEED ACCURATE DATA ON WORKLOADS, TYPES OF CASUALTIES AND DISEASES TO BE TREATED, UTILIZATION OF MEDICAL PERSONNEL AND BIOMEDICAL RISKS IN THE WORK ENVIRONMENT IN ORDER TO PROVIDE TIMELY PREVENTIVE AND TREATMENT SERVICES. PRESENT OUTPATIENT RECORD SYSTEMS GENERALLY ARE INADEQUATE FOR SUCH PURPOSES. THE PURPOSE OF THIS STUDY IS TO DEVISE AND DETERMINE THE FEASIBILITY OF IMPROVED REPORTING PROCEDURES FOR NAVY SHIPS AND SHORE DISPENSARIES AND TO PROVIDE A BASIS FOR ASSESSING THE SEVERITY AND RISK OF ENVIRONMENTAL HEALTH HAZARDS AS WELL AS OFFERING THE POTENTIAL FOR BETTER MANAGEMENT OF MEDICAL RESOURCES. THE FINAL OBJECTIVE OF THIS WORK UNIT WILL BE TO DEPICT PERSONNEL AND EQUIPMENT REQUIREMENTS. TO DEVISE NECESSARY DATA FORMS, AND TO DEVELOP PROPOSALS FOR REVISION OF EXISTING BUMED DIRECTIVES IN ORDER TO IMPLEMENT COST EFFECTIVE IMPROVEMENTS IN THE EXISTING OUTPATIENT MORBIDITY REPORTING SYSTEM.

A SICK CALL CARD WAS DEVELOPED TO RECORD INDIVIDUAL ILLNESSES AND INJURIES ABOARD DEPLOYED NAVY SHIPS FOR RESEARCH PURPOSES. THIS REPORTING PROCEDURE HAS BEEN EXPANDED AND REVISED AND IS NOW AVAILABLE IN A MACHINE-SCORABLE FORM THAT PROVIDES ESSENTIAL DEMOGRAPHIC, OCCUPATIONAL, TREATMENT, AND DISPOSITION INFORMATION FOR EPIDEMIOLOGICAL ANALYSES AND RESEARCH. THIS FORM WILL BE FURTHER MODIFIED FOR EVALUATION AT SHORE-BASED OUTPATIENT FACILITIES. MONTHLY OUTPATIENT MORBIDITY REPORTS AND OTHER MEDICAL REPORTS WILL BE GENERATED ON AN EXPERIMENTAL BASIS.

SUPPORTED BY U.S. Dept. of Defense, Navy, Naval Medical Research & Development Command funds n.a.

3.0177,

THE EPIDEMIOLOGY AND POST-TREATMENT OUTCOMES OF TRAUMA IN NAVAL ENVIRONMENTS

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ACCIDENTAL INJURIES ARE THE LEADING CAUSE OF HOSPITALIZATION AMONG NAVY ACTIVE DUTY PERSONNEL. THESE INJURIES MAKE A SUBSTANTIAL CONTRIBUTION TO MAN-DAYS LOST FROM THE JOB, DEMANDS FOE HEALTH CARE SERVICES, AND LONG-TERM DISABILITY AND MORTALITY FOR ACCIDENT VICTIMS. THE INTERACTION OF INDIVIDUAL, OCCUPATIONAL, AND ENVIRONMENTAL CHARACTERISTICS AS THEY RELATE TO THE INCIDENCE OF ACCIDENTAL INJURIES WILL BE INVESTIGATED. THE IMPLICATIONS OF AN INJURY-PRODUCING ACCIDENT FOR LENGTH OF HOSPITALIZATION, PROLONGED DISABILITY, PERFORMANCE EFFECTIVENESS, AND CAREER RETENTION OF ACCIDENT VICTIMS ALSO WILL BE INVESTIGATED. BY IDENTIFYNG THOSE POPULATIONS AND WORK SETTINGS WHERE THE RISKS OF TRAUMA ARE GREATEST, IT SHOULD BE POSSIBLE TO RECOMMEND MEANS FOR REDUCING THE NUMBER AND SEVERITY OF ACCIDENT CASUALTIES.

ANALYSES WILL BE CONDUCTED OF MEDICAL AND SERVICE HISTORY DATA FOR ALL NAVY ENLISTEES WHO WERE HOSPITALIZED FOR THE TREATMENT OF ACCIDENTAL INJURIES DURING 1965 THROUGH 1976. THE INCIDENCE OF TRAUMA-PRODUCING ACCIDENTS WILL BE RELATED TO THE VICTIM'S DEMOGRAPHIC AND MILITARY STATUS CHARACTERISTICS, OCCUPATION, JOB EXPERIENCE, AND WORK SETTING. DETAILED ANALYSES OF ORGANIZATIONAL AND ENVIRONMENTAL CIRCUMSTANCES SURROUNDING ACCIDENTAL INJURIES WILL BE POSSIBLE IF NAVAL SAFETY CENTER (NSC) RECORDS ARE USED IN CONJUNCTION WITH INPATIENT REORDS. A FOLLOW-UP STUDY WILL BE MADE OF INJURY VICTIMS TO DETERMINE HOW THE TYPE AND SEVERITY OF TRAUMA IS RELATED TO LENGTH OF HOSPITALIZATON, LONG-TERM DISABILITY, SUBSEQUENT PERFORMANCE EFFECTIVENESS, AND CAREER RETENTION.

SUPPORTED BY U.S. Dept. of Defense, Navy, Naval Medical Research & Development Command, National Naval Medical Center funds n.a.

3.0178,

PARASITIC DISEASES OF THREAT TO MILITARY OPERATIONS IN THE MIDDLE EAST AND NEARBY AFRICAN STATES.

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TO MAP THE DISTRIBUTION OF HUMAN PARASITES IN THE MIDDLE TEAST AND SOME AFRICAN STATES IN ORDER TO IDENTIFY THE AREAS OF RISK TO THE MILITARY, TO FURNISH

RELEVANT EPIDEMIOLOGICAL INFORMATION FOR FUTURE PLANNING OF DISEASE PREVENTION AND CONTROL, AND TO DEVELOP AND STANDARDIZE TECHNIQUES FOR FAST RELIABLE MEANS OF DIAGNOSIS AND DETECTION OF OBSCURE CONDITIONS.

PARASITOLOGICAL SURVEYS WILL BE CONDUCTED IN DIFFERENT AREAS OF NEARBY COUNTRIES. STOOL, URINE AND BLOOD SMEARS WILL BE COLLECTED AND EXAMINED UTILIZING STANDARD PARSITOLOGICAL METHODS. SERA WILL BE TESTED BY ESTABLISHED SEROLOGICAL TECHNIQUES TO DETERMINE PRESENT AND PAST EXPERIENCE WITH THE DIFERENT PARASITES OF IMPORTANCE. WHERE APPROPRIATE, INTERMEDIATE HOSTS, VECTORS AND RESERVOIRS HOSTS WILL BE COLLECTED IDENTIFIED AND EXAMINED. MAPS WILL BE PREPARED TO DEPICT THE DISTRIBUTION OF THE IMPORTANT PARASITES AND THEIR RELEVANT EPIDEMIOLOGIC DATA.

SUPPORTED BY U.S. Dept. of Defense, Navy, Naval Medical Research & Development Command, National Naval Medical Center funds n.a.

3.0179,

STUDIES OF THE VIRAL, CLINICAL, ENTOMOLOGICAL, ECOLOGICAL, AND EPIDEMIOLOGICAL ASPECTS OF EPIDEMIC RIFT VALLEY FEVER IN EGYPT

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RIFT VALLEY FEVER (RVF) CLEARLY HAS MISSION-ABORTING POTENTIAL: AT LEAST 1/2 MILLION HUMAN CASES OCCURRED IN EGYPT 1977-1978, INCLUDING SOME WITH FATAL HEMORRHAGIC FEVER, BLINDNESS OR ENCEPHALITIS. ISOLATION OF RVF FROM DOMESTIC ANIMALS IN LATE 1979 SUGGESTS THAT THE DISEASE IS PERMANENTLY ESTABLISHED IN EGYPT. THE OBJECT OF THIS MULTIDISCIPLINARY STUDY IS TO DETERMINE FACTORS CONTROLLING THE CLINICAL SPECTRUM OF THE DISEASE, TO DEVELOP METHODS FOR RAPID DIAGNOSIS, AND TO IDENTIFY FACTORS INFLUENCING PERSISTENCE AND EPIDEMIC SPREAD OF THE VIRUS.

MULTI-DEPARTEMNTAL FIELD AND LABORATORY STUDIES WILL IDENTIFY RVF VECTORS AND RESERVOIRS. FLUORESCENT ANTIBODY (FA) TEST, ENZYME LINKED IMMUNO-SORBENT ASSAY (ELISA) AND GEL DIFFUSION WILL BE EVALUATED FOR RAPID DIAGNOSIS IN HUMANS AND ANIMALS. WE WILL ATTEMPT TO DEVELOP ANIMAL MODELS OF THE HUMAN CLINICAL SYNDROMES, IDENTIFY SPECIES SERVING AS RESERVOIRS, AND COMPARE VIRUS STRAIN VIRULENCE. SPECIES USED WILL INCLUDE: MUS MUSCULUS, MESOCRICETUS AURATUS, PSAMMOMYS OBESUS, ORYCTOLAGOUS CUNICULUS, CAMELUS DROMEDARIUS, BUBALUS BUBALUS AND OVIS ARIES.

SUPPORTED BY U.S. Dept. of Defense, Navy, Naval Medical Research & Development Command, National Naval Medical Center funds n.a.

3.0180,

ARBOVIRAL DISEASES IN INDONESIA: EPIDEMIOLOGY AND DISTRIBUTION

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TO IDENTIFY ARTHROPOD-BORNE VIRUSES IN INDONESIA WHICH ARE CAUSING INFECTION IN HUMANS AND ANIMALS AND TO DETERMINE THE RELATIVE IMPORTANCE AND DISTRIBUTION OF EACH AS A CAUSE OF ILLNESS IN MAN.

VIRUS ISOLATIONS WILL BE ATTEMPTED FROM HUMAN CLINICAL SPECIMENS, ANIMAL SERA AND POOLED ARTHROPEDS COLLECTED IN INDONESIA. SEROLOGIC EVIDENCE OF ARBOVIRAL INFECTION WILL BE SOUGHT FROM BOTH HUMAN AND ANIMAL SERA USING HEMAGGLUTINATION INHIBITION (HI) AND IMMUNE ADHERANCE HEMAGGLUTINATION (IAHA) TESTS FOR ANTIBODIES AGAINST VIRUSES KNOWN TO BE ACTIVE IN SOUTHEAST AISA AND THE WESTERN PACIFIC.

SUPPORTED BY U.S. Dept. of Defense, Navy, Naval Medical Research & Development Command, National Naval Medical Center funds n.a.

3.0181,

A LONGITUDINAL ASSESSMENT OF THE CAUSE OF MYOPIA IN SUBMARINERS

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A NUMBER OF STUDIES OF THE VISION OF SUBMARINERS CONDUCTED OVER THE YEARS HAVE REVEALED A HIGH INCIDENCE OF MYOPIA (NEAR-SIGHTEDNESS) AND OTHER ASSOCIATED SYMPTOMS. CONFINEMENT WITHIN THE SUBMARINE, WITH ITS CONSTANT REQUIREMENTS FOR ACCOMMODATION AND CONVERGENCE, IS A POSSIBLE CAUSE OF THIS SYNDROME, BUT OTHER EXPLANATIONS CANNOT BE ELIMINATED ON THE BASIS OF AVAILABLE EVIDENCE. FOR EXAMPLE, DIFFERENCES IN THE LIFE-STYLE OF THE MEN, PARTICULARLY IN THEIR YOUNGER FORMATIVE YEARS, COULD ACCOUNT FOR REDUCED ACUITY WHEN COMPARED WITH OLDER MEN REARED UNDER OTHER SOCIAL CONDITIONS. THIS RESEARCH IS DESIGNED TO FIND THE BASIC CAUSE OF THE INCREASE IN MYOPIA; IF SUBMARINE LIVING SHOULD BE RESPONSIBLE, REMEDIAL PROCEDURES COULD BE DEVELOPED IN FUTURE WORK-UNITS.

THE RESEARCH DESIGN IS A LONGITUDINAL STUDY OF TWO GROUPS, ONE SUBMARINERS AND THE OTHER AN AGE-MATCHED GROUP OF NATIONAL GUARDSMEN. THE BASIC DATA FOR THE TWO GROUPS HAVE ALREADY BEEN OBTAINED, THREE YEARS AGO, IN ANOTHER WORK UNIT; TWO RETESTS, ONE IMMEDIATELY AND ONE IN THREE TO FOUR YEARS, WILL BE MADE ON THE AVAILABLE MEN, USING THE SAME TESTS AND METHODS AS THE BASIC DATA. A COMPARISON OF THE TEST-RETEST CHANGES IN THE TWO GROUPS, AS A FUNCTION OF AGE, SHOULD GIVE A CLEAR-CUT ANSWER AS TO WHETHER SUBMARINE LIVING IS RESPONSIBLE FOR THE VISUAL CHANGES.

SUPPORTED BY U.S. Dept. of Defense, Navy, Naval Medical Research & Development Command, National Naval Medical Center funds n.a.

3.0182,

ANTIBIOTIC RESISTANT NEISSERIA GONORRHOEAE: DETERMINATION OF PREVALENCE AND SPREAD IN INDONESIA

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TO DETERMINE THE PREVALENCE OF NEISSERIA GONORRHOEAE (N. GC.), ESPECIALLY PENICILLIN RESISTANT STRAINS IN SELECTED MAJOR SEA PORTS OF INDONESIA; DETERIME THE MINIMUM INHIBITORY CONCENTRATION OF SELECTED ANTIBIOTICS TO N. GC; AND DETERMINE THE PREVALENCE OF NON-CULTURABLE N. GC. IN BOTH SYMPTOMATIC AND ASYMPTOMATIC PATIENTS USING GENETIC TRANSFORMATION TO A COMPETENT N. GC. HOST.

SPECIMENS OBTAINED FROM PROMISCUOUS, SEXUALLY ACTIVE POPULATIONS WILL BE CULTURED FOR NEISSERIA SP. AND CHARACTERIZED BIOCHEMICALLY FOR N. GC. AND BETA LACTAMASE (PENICILLINASE) PRODUCTION. THE MINIMUM INHIBITORY CONCENTRATION (MIC) OF MAJOR USEFUL ANTIBIOTICS WILL BE ASSAYED BY THE AGAR DILUTION METHOD. SPECIMENS FROM WHCH NO N. GC. CAN BE CULTURED WILL BE TESTED FOR GENETIC TRANSFORMATION OF A NUTRITIONALLY DEFECTIVE COMPETENT HOST BY THE METHOD OF JANIK. ACQUISITION OF SPECIMENS WILL BE ACCOMPLISHED IN CONJUNCTION WITH THE INDONESIAN MINISTRY OF HEALTH, VENEREAL DISEASE CONTROL PROGRAM.

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3.0183,

AMEBIASIS IN ASIA: DIAGNOSIS, EPIDEMIOLOGY AND IMMUNOLOGY OF ENTAMOEBA HISTOLYTICA

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AMEBIASIS, INTESTINAL OR EXTRAINTESTINAL, CAN BE A DIAGNOSTIC PROBLEM IN MILITARY AS WELL AS CIVILIAN MEDICAL PRACTICE. THE OBJECTIVE OF THIS STUDY IS TO IMPROVE UPON THE CLASSICAL METHODS OF DETECTING INFECTIONS OF ENTAMOEBA HISTOLYTICA; TO OBTAIN INFORMATION ON THE PREVALENCE AND DISTRIBUTION OF THE PARASITE AND THE DISEASE BY STOOL AND SEROLOGIC EXAMINATIONS; AND TO STUDY THE ANTIGENICITY OF STRAINS OF THE PARASITE IN ORDER TO REFINE IMMUNOLOGIC METHODS OF DIAGNOSIS.

CONVENTIONAL METHODS AS WELL AS MODIFICATIONS OF THESE METHODS WILL BE USED TO DETECT E. HISTOLYTICA IN STOOL SPECIMENS, PROCTOSCOPIC PREPARATIONS AND BIOPSY MATERIAL. SEROLOGIC TESTING WILL BE DONE USING INDIRECT HEMAGGLUTINATION (IHA), GEL-DIFFUSION (G-D), ELISA TEST AND RADIO-IMMUNOASSAY (RIA). THE LATTER TWO WILL ALSO BE USED TO DETECT ANTIGENS IN SERA, ASPIRATES AND FECAL SPECIMENS. THE SEROEPIDEMIOLOGY OF AMEBIASIS WILL BE DONE BY EXAMINING STOOL SPECIMENS AND TESTING SERA FROM SAMPLED POPULATIONS IN THE PHILIPPINES.

SUPPORTED BY U.S. Dept. of Defense, Navy, Naval Medical Research & Development Command, National Naval Medical Center funds n.a.

3.0184,

EXPLORATION OF THE RELATIONS BETWEEN EYE COLOR, SELECTED PHYSIOLOGICAL MEASURES AND INDIVIDUAL SUSCEPTIBILITY

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To explore the relations between eye color, selected physiological measures and individual noise susceptibility. Identification of any such relationships would have implications toward the prevention of noise-induced hearing loss among naval personnel working in potentially hazardous noise environments.

Examine the extensive audiometric data obtained from subjects in the thousand aviator study and subjects in the control group of the repatriated prisoner of war (RPW) study. From the records of those subjects exhibiting hearing levels of 50 dB or greater at 3000, 4000 or 6000 Hz (subject group I) and those subjects exhibiting hearing levels of 25 dB or less at 500 through 6000 Hz (subject group II), determine eye color, percent body fat, systolic and diastolic blood pressures (sitting and supine), serum uric acid, cholesterol, and triglycerides. Conduct appropriate statistical analyses to determine possible relations between individual noise susceptibility, eye color and the various physiological measures.

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3.0185,

INFECTIOUS DISEASE RISKS TO TRANSLOCATED PERSONS IN INDONESIA

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TO IDENTIFY INFECTIOUS DISEASES IN OUTER ISLANDS OF INDONESIA OF RISK TO IMMIGRANTS WITH PRIOR DISEASE EXPOSURE UNLIKE THAT OF THE NEW ENVIRONMENT. THE STUDY HAS 3 PHASES: (1) BASELINE ASSESSMENT DISEASE AND DISEASE EXPOSURE OF INDIGENOUS AND PREVIOUSLY TRANSLOCATED PERSONS LIVING IN AREAS SELECTED FOR FUTURE TRANSSETTLEMENT (STRESSING INFECTIOUS DISEASE, THEIR ENVIRONMENTAL SOURCES, RESERVOIRS AND VECTORS); (2) ASSESSMENT OF DISEASE EXPERIENCE AMONG TRANSMIGRANT POPULATIONS PRIOR TO THEIR ARRIVAL IN TRANSSETTLEMENT AREA; (3) REASSESSMENT FOLLOWING IMMIGRATION.

FIELD TEAMS COLLECT FOR LABORATORY ANALYSIS BLOOD, SERUM AND STOOL SPECIMENS FROM SELECTED TRANSMIGRANT POPULATIONS PRIOR TO AND FOLLOWING EXPOSURE AT OUTER ISLAND SETTLEMENT SITES. FERAL AND DOMESTIC ANIMALS AND THEIR ECTOPARASITES ARE STUDIED FOR THEIR ROLE IN ZOONOTIC DISEASE. MOSQUITOES ARE COLLECTED FOR DETERMINING VECTORS OF MALARIA AND FILARIA AND EXAMINED FOR PATHOGENIC VIRUSES. INFORMATION RELEVANT TO THE ECOLOGY AND EPIDEMIOLOGY OF INFECTIOUS AND ENVIRONMENTAL DISEASES IS GATHERED.

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3.0186,

ARTHROPOD-VECTOR-DISEASE INTERRELATIONSHIPS

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INVESTIGATE AND INCREASE KNOWLEDGE OF BLOODSUCKING ARTHROPODS (TICKS, MITES, FLEAS, LICE, MOSQUITOES, ETC.) KNOWN OR STRONGLY SUSPECTED TO HARBOR AND TRANSMIT VIRAL, RICKETTSIAL, AND PROTOZOAL AGENTS HAZARDOUS TO MAN. IDENTIFY HOSTS AND DEFINE LIFE CYCLES, DISTRIBUTION, AND EPIDEMIOLOGICALLY IMPORTANT FACTORS.

VERTEBRATES AND BLOODSUCKING ARTHROPODS ARE COLLECTED FOR PATHOGEN ISOLATION; LABORATORY COLONIES ARE USED FOR DISEASE TRANSMISSION STUDIES. ANIMALS USED ARE HAMSTER MESOCRICETUS AURATUS, RABBIT ORYCTOLAGUS CUNICULUS, AND PIGEON COLUMBA LIVIA.

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3.0187,

IMMUNOLOGY OF HUMAN SCHISTOSOMIASIS; DISEASE OF MILITARY IMPORTANCE

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SCHISTOSOMIASIS POSES AN EXTRAORDINARY THREAT TO MILITARY FORCES OPERATING IN ENDEMIC AREAS, BOTH IN IMMEDIATE MORBIDITY AND IN CHRONIC SERVICE-CONNECTED ILLNESS. PRESENT TREATMENT LACKS EFFECTIVENESS AND SAFETY. THE LONGTERM GOAL OF THIS STUDY IS THE DEVELOPMENT OF A PROTECTIVE VACCINE. THE IMMEDIATE GOAL IS TO DETERMINE IF NATURAL IMMUNITY DEVELOPS IN A POPULATION, THE MECHANISM OF THAT IMMUNITY, AND ITS ROLE IN THE EPIDEMIOLOGY OF THE DISEASE EGYPT, WITH APPROXIMATELY 20 MILLION CASES OF SCHISTOSOMIASIS IS AN IDEAL LOCATION FOR THIS STUDY. A LONGITUDINAL STUDY IS UNDERWAY IN A SAMPLE POPULATION OF 5-14 YEAR OLD SCHOOL BOYS, CHOSEN FOR THE KNOWN HIGH RATE AT WHICH THEY ACQUIRE INFECTION AND MANIFEST APPARENT IMMUNITY, IN A STABLE RURAL AREA HIGHLY ENDEMIC FOR SCHISTOSOMIASIS. CLINICAL STATUS, EGG EXCRETION AND CELLULAR AND HUMORAL IMMUNITY TO THE SCHISTOSOME ARE EVALUATED SEMI-ANNUALLY. AT THE SAME TIME ECOLOGICAL SURVEYS ARE CONDUCTED TO IDENTIFY AND QUANTITATE THE SNAIL VECTOR POPULATION. SELECTED SUBJECTS WILL BE HOSPITALIZED TO EVALUATE RENAL FUNCTION AND IMMUNOLOGIC COMPETENCE.

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3.0188,

PATHOGENESIS AND HOST-PARASITE RELATIONS OF GEOGRAPHIC STRAINS OF SCHISTOSOMA JAPONICUM

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TO DETERMINED DIFFERENCES IN HOST-PARASITE RELATIONS, PATHOGENESIS, SUSCEPTIBILITY, RESISTANCE, ENZYMATIC AND METABOLIC PATHWAYS AND ANTIGENICITY OF VARIOUS GEOGRAPHIC STRAINS OF SCHISTOSOMA JAPONICUM; AND TO ESTABLISH FACTORS RESPONSIBLE FOR THESE DIFFERENCES IN ORDER TO DEVELOP EFFECTIVE APPROACHES TO CONTROL THE DISEASE.

STRAINS OF S. JAPONICUM AND THEIR SNAIL HOSTS WILL BE ESTABLISHED IN THE LABORATORY AND HOST-PARASITE RELATIONS STUDIES DONE IN BOTH SNAIL AND MAMMALIAN HOSTS. SUSCEPTIBILITY AND RESISTANCE TO INFECTION WILL BE DETERMINED BY WORM DEVELOPMENT, EGG PRODUCTION AND PATHOGENESIS OF INFECTIONS. ANTIGENS FROM RESPECTIVE STRAINS WILL BE CHARACTERIZED, ENZYMATIC AND METABOLIC PATHWAYS DETERMINED BY ENZYME ASSAY. INFLUENCE OF SNAIL PASSAGE ON THE INFECTIVITY, PATHOGENESIS AND ACTIVITY OF CERTAIN ENZYME OF THE PARASITE IN THE DEFINITIVE HOST WILL BE ASCERTAINED.

SUPPORTED BY U.S. Dept. of Defense, Navy, Naval Medical Research & Development Command, National Naval Medical Center funds n.a.

3.0189,

HEALTH AND LONGEVITY IN RELATION TO LENGTH OF OCCUPATIONAL EXPOSURE TO THE NAVAL SUBMARINE ENVIRONMENT

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THE AIM OF THIS STUDY IS TO DETERMINE THE HEALTH EFFECTS OF PROLONGED OCCUPATIONAL EXPOSURE TO THE NUCLEAR POWERED SUBMARINE ENVIRONMENT. PARTICULAR ATTENTION WILL BE DIRECTED TOWARD OBTAINING INFORMATION REGARDING MORBIDITY/MORTALITY RELATED TO LOW-LEVEL RADIATION EXPOSURE RECEIVED IN THAT ENVIRONMENT. NEGATIVE FINDINGS WILL DOCUMENT THE SAFETY OF THE NUCLEAR-POWERED SUBMARINE FOR HUMAN HABITATION. POSITIVE FINDINGS ARE EXPECTED TO LEAD TO RECOMMENDATIONS SUCH AS: (A) FURTHER STUDIES TO DETERMINE ETIOLOGY OF DELETERIOUS HEALTH EFFECTS, (B) ASSESSMENT OF EXISTING ENVIRONMENTAL ENGINEERING SYSTEMS ABOARD SUBMARINES, AND (C) ALTERATIONS TO CURRENT PHYSICAL EXAMINATION REQUIREMENTS FOR CURRENT AND PAST SUBMARINE CREW MEMBERS.

THIS RECORD-LINKAGE PROJECT WILL COMPARE DISEASE PREVALENCE AND DISEASE-SPECIFIC MORTALITY RATES TO LENGTH OF SUBMARINE EXPERIENCE AND TO RADIATION EXPOSURE. THE PRINCIPAL DATA BASE WILL BE INFORMATION IN AUTOMATED DATA PROCESSING FILES MAINTAINED IN THE NAVY AND OTHER FEDERAL AGENCIES. IN ORDER TO DEVELOP A LARGE RISK BASE AMONG OLDER PERSONNEL, ATTENTION IS DIRECT TO RETIRED AND FLEET RESERVE PERSONNEL. THIS WORK UNIT WILL BE SUPPORTED BY A CONTRACT WITH YALE UNIVERSITY.

SUPPORTED BY U.S. Dept. of Defense, Navy, Naval Medical Research & Development Command, National Naval Medical Center funds n.a.

3.0190,

DISTRIBUTION OF PARASITIC DISEASES OF MILITARY IMPORTANCE IN THE PHILIPPINES

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THE OBJECTIVE OF THIS STUDY WILL BE OBTAIN DATA ON THE DISTRIBUTION AND PREVALENCE OF PARASITIC DISEASES OF MILITARY IMPORTANCE THROUGHOUT THE PHILIPPINES THAT WILL AID IN THE IMPLEMENTATION OF EFFECTIVE MODELS FOR RISK PREDICTION AND PREVENTIVE PROGRAMS.

BIOMEDICAL SURVEYS WILL BE CONDUCTED THROUGHOUT PHILIPPINE ISLANDS FOCUSING ON THE DISTRIBUTION AND PREVALENCE OF BLOOD AND INTESTINAL PARASITIC DISEASES. STOOL SPECIMENS, BLOOD SMEARS AND SERA WILL BE COLLECTED AND EXAMINED BY APPROPRIATE PARSITOLOGICAL AND IMMUNOLOGICAL DIAGNOSTIC TECHNIQUES. ALL SURVEY DATA WILL BE COMPUTERIZED SO THAT CURRENT STATUS REPORTS ON PARASITIC DISEASES OF MILITARY IMPARTANCE CAN BE PRODUCED UPON DEMAND. INITIAL EMPHASIS WILL FOCUS ON THE SURVEILLANCE OF DISEASES.

SUPPORTED BY U.S. Dept. of Defense, Navy, Naval Medical Research & Development Command, National Naval Medical Center funds n.a.

3.0191,

EFFECTS OF OCCUPATIONAL EXPOSURE TO NONIONIZING RADIATION

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TO TEST THE HYPOTHESIS THAT REPEATED OCCUPATIONAL EXPOSURE TO NONIONIZING ELECTROMAGNETIC RADIATION (NEMR) HAS DELETERIOUS, PERHAPS DELAYED HEALTH EFFECTS. THIS INVESTIGATION WILL STUDY INDIVIDUALS REPORTED TO THE NAVY BUREAU OF MEDICINE AND SURGERY PER BUMEDINST 6470.13A, PARA 8, WHO HAVE BEEN EXPOSED TO NEMR. LONGITUDINAL MEDICAL EVALUATION OF THE SUBJECTS COMBINED WITH COMPLETE EXPOSURE DOCUMENTATION AND QUANTITATIVE DOSIMETRY AS REQUIRED WILL PROVIDE DATA TO SUPPORT REALISTIC SAFETY STANDARDS FOR NEMR EXPOSURE AND TO ESTABLISH IMPROVED MEDICAL STANDARDS FOR MONITORING WORKERS WHO DEAL WITH NEMR EQUIPMENT.

WHILE LABORATORY EXPOSURE OF HUMAN SUBJECTS OF NEMR AT LEVELS APPROPRIATE FOR THE STUDY OF BIOLOGICAL EFFECTS IS ILL-ADVISED, CERTAIN OCCUPATIONAL EXPOSURES PROVIDE A UNIQUE OPPORTUNITY TO EVALUATE MEDICAL EFFECTS. EXACT DOSIMETRIC INFORMATION IS RARELY, IF EVER, AVAILABLE ABOUT THE PAST OCCUPATIONAL EXPOSURE SITUATION, BUT IN INSTANCES OF THE TIMELY FOLLOW-UP OF SUCH EXPOSURES, MODERN DOSIMETRIC TECHNQUES CAN ACCURATELY DUPLICATE EXPOSURE CONDITIONS AND DETERMINE SPECIFIC ABSORPTION RATE (SAR) IN TISSUES. EXPOSED PERSONNEL WHO REPRESENT AN OPPORTUNITY FOR FRUITFUL RESEARCH IN OCCUPATIONAL NEMR EXPOSURE WILL UNDERGO LONGITUDINAL CLINICAL EVALUATION. QUANTITATIVE DOSIMETRIC DATA WILL PROVIDE THE BASIS TO INTERPRET MEDICAL FINDINGS SUGGESTIVE OF BIOELECTROMAGNETIC EFFECTS AND THEIR PATHOGENESIS IF THEY ARE OBSERVED.

SUPPORTED BY U.S. Dept. of Defense, Navy, Naval Medical Research & Development Command, National Naval Medical Center funds n.a.

3.0192,

INVESTIGATION OF THE PREVALENCE OF MILITARILY-IMPORTANT DISEASES AND VECTORS IN AFRICA AND THE MIDDLE EAST

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DEPARTMENT OF DEFENSE COMMITMENTS TO PRESENT AND FUTURE ALLIES ARE GEOGRAPHICALLY EXTENSIVE. MEDICAL PERSONNEL MUST BE ABLE TO PROTECT HEALTH OF US PERSONNEL THROUGHOUT THE WORLD. THIS STUDY WILL PROVIDE OTHERWISE UNATTAINABLE DATA ON THE CURRENT RISK OF DISEASES WHICH COULD REDUCE EFFECTIVENESS OF FUTURE MILITARY OPERATIONS IN AFRICA AND THE MIDDLE EAST. THE STUDY WILL ALSO AID THE HOST COUNTRY TO PREVENT AND CONTROL DISEASES AFFECTING ITS CIVILIAN POPULATION.

THE STUDY WILL BE PRIMARILY A SERODIAGNOSTIC SURVEY OF HUMANS AND ANIMALS TO MAP THE PREVALENCE OF MILITARILY-IMPORTANT INFECTIOUS DISEASES. IN SOME INSTANCES ARTHROPODS OR OTHER DISEASE VECTORS WILL BE STUDIED. THE HUMANS WILL BE FOREIGN NATIONAL VOLUNTEERS; THEY WILL DONATE BLOOD, URINE AND FECES UNDER SUPERVISION OF PHYSICIANS FROM THEIR OWN COUNTRY. THE ANIMALS WILL BE COMMON DOMESTIC SPECIES (EQUUS CALABIS, EQUUS ASINUS, BOS TAURUS, BUBALUS BUBALUS, CAMELUS DROMEDARIUS; OVIS ARIES; CAPRA HIRCUS; CANIS FAMILIARIS) WILD RODENTS (SPECIES OF MUS, RATTUS, ARVICANTHIS, ACOMYS) AND LABORATORY ANIMALS (MUS MUSCULUS, RATTUS RATTUS; MESOCICRETUS AURATUS, ORYCTOLAGUS CUNICULUS). ALL SPECIMENS WILL BE OBTAINED IN CONJUNCTION WITH LOCAL HEALTH OFFICIALS AND WILL BE ANALYZED WITH A BATTERY OF STANDARD DIAGNOSTIC TESTS. THOSE FOR PARASITIC DISEASE IN HUMANS WILL BE ANALYZED UNDER NAMRU-3 WORK UNIT MR041.09.01-0167. DISEASES SOUGHT WILL BE THOSE WITH MISSION-ABORTING POTENTIAL FOR MILITARY OPERATIONS AND WILL INCLUDE MALARIA, TRYPANOSOMIASIS, AMOEBIASIS, SCHISTOSOMIASIS, HEPATITIS, MENINGITIS, SALMONELLOSIS, ARBOVIRAL DISEASE. RESULTS WILL BE ANALYZED TO REVEAL GEOGRAPHIC PREVALENCE RATES, RESERVOIRS, AND ROUTES OF TRANSMISSION.

SUPPORTED BY U.S. Dept. of Defense, Navy, Naval Medical Research & Development Command, National Naval Medical Center funds n.a.

3.0193,

EPIDEMILOGY, IMMUNOLOGY AND CLINICAL FEATURES OF BRUGIAN FILARIASIS IN INDONESIA

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EPIDEMIOLOGY: TO DEFINE SPECIFIC RESERVOIR HOSTS AND MOSQUITO VECTORS OF BRUGIA MALAYI AND THEIR RELATION TO INFECTION IN MAN. TO DEVELOP ELECTROPHORETIC METHODS TO DISTINGUISH BETWEEN ANIMAL AND HUMAN FILARIAL PARASITES. (2) IMMUNOLOGY: TO CHARACTERIZE PROTECTIVE IMMUNE RESPONSES AND DETERMINBE MECHANISMS OF IMMUNE EVASION AND SUPPRESSION IN FILARIAL INFECTION. (3) CLINICAL: TO EVALUATE LONG-TERM BENEFITS OF DIETHYLCARBAMAZINE (DEC) IN TREATMENT AND CONTROL OF FILARIASIS.

(1) EPIDEMIOLOGY: RECOVER FILARIA FROM SELECTED ANIMALS AND MOSQUITOES FOUND DURING FY79 FIELD SURVEYS TO BE RESERVOIRS AND VECTORS RESPECTIVELY OF BRUGIA PARASITES AT THE ENDEMIC FILARIASIS SITE IN S. KALIMANTAN (BORNEO). ANTIGEN ELECTROPHORESIS AND ANIMAL PASSAGE WILL BE USED TO DISTINGUISH BRUGIAN PARASITES INFECTING MAN FROM THOSE INFECTING ANIMALS ALONE. (2) IMMUNOLOGY: COMPARE PRE-AND POST-TREATMENT STAGE SPECIFIC FILARIAL IMMUNE PROFILES AND IDENTIFY THOSE ANTIBODIES AND CELLULAR IMMUNE RESPONSES WHICH HAVE ANTIPARASITIC ACTIVITY. (3) CLINICAL: CONDUCT BLOOD SURVEYS AND CLINICAL EXAMINATIONS OF POPULATIONS PREVIOUSLY TREATED WITH DEC TO ASSESS LONG-TERM BENEFITS OF CHEMOTHERAPY.

SUPPORTED BY U.S. Dept. of Defense, Navy, Naval Medical Research Inst. funds n.a.

3.0194,

PREDICTION ANALYSIS OF INFECTIOUS DISEASES IN VARIOUS GEOGRAPHIC LOCATIONS

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THE DEVELOPMENT OF AN INFECTIOUS DISEASE RISK PREDICTIVE MODEL WHICH WOULD PROVIDE ESTIMATIONS OF THE MORBIDITY AND THE MORTALITY EXPECTED DURING MILITARY OPERATIONS. THE QUESTION TO BE ANSWERED BY THIS MODEL IS: HOW MANY MAN DAYS WILL BE LOST FROM INFECTIOUS DISEASES IN A MILITARY OPERATION INVOLVING A GIVEN NUMBER OF TROOPS IN A GIVEN LOCATION IN THE WORLD AT A SPECIFIED TIME OF THE YEAR? A WORKING GROUP WILL BE CONVENED TO PROVIDE RECOMMENDATIONS ON THE FOLLOWING: (1) THE FEASIBILITY OF CONSTRUCTING A MODEL TO ESTIMATE DISEASE RISK. (2) THE IDENTIFICATION OF FACTORS ESSENTIAL TO THE DEVELOPMENT OF A DISEASE RISK MODEL. (3) THE IDENTIFICATION OF DATA BASES THAT COULD BE EXPLOITED BY THIS SYSTEM. (4) THE CRITERIA ON WHICH THE SELECTION OF THE DISEASE TO BE STUDIED SHOULD BE BASED. VALIDATION OF THE PREDICTIONS WILL BE BASED ON HISTORICAL RECORDS AND ON FUTURE FIELD SURVEYS.

SUPPORTED BY U.S. Dept. of Defense, Navy, Naval Medical Research Inst., National Naval Medical Center funds n.a.

3.0195,

DETECTION OF HYDATID DISEASE IN RESIDENTS OF LINDU VALLEY, CENTRAL SULAWESI, INDONESIA.

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TO DETERMINE THE PREVALENCE OF ECHINOCOCCOSIS IN HUMAN INHABITANTS OF LINDU VALLEY, CENTRAL SULAWESI, USING SEROLOGIC METHODS AND TO DETERMINE THE EPIDEMIOLOGY OF HYDATID DISEASE IN THE LINDU VALLEY BY EXAMINING DEFINITIVE AND INTERMEDIATE HOSTS.

APPROXIMATELY 400 INDONESIAN CIVILIANS LIVING ALONG THE SHORE OF LAKE LINDU WILL BE REGISTERED AND THEIR RELATIONSHIP WITH DOGS FOUND INFECTED WITH ECHINOCOCCUS GRANULOSUS DETERMINED. SERUM SPECIMENS WILL BE OBTAINED AND EXAMINED FOR ECHINOCOCCAL ANTIBODIES BY THE INDIRECT HEMNAGGLUTINATIONA DN BE SCREENED FOR ECHINOCOCCAL INFECTION. DOGS WILL BE PURGED AND STOOLS COLLECTED AND INDIVIDUALLY EXAMINED FOR E. GRANULOSUS. A SURVEY OF NATURALLY INFECTED INTERMEDIATE HOSTS WILL BE CONDUCTED.

SUPPORTED BY U.S. Dept. of Defense, Navy, Naval Medical Research Unit #2 funds n.a.

3.0196,

ANIMAL INFLUENZA VIRUSES AND THEIR POSSIBLE ROLE IN HUMAN INFLUENZA EPIDEMIOLOGY

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TO INVESTIGATE TYPE A INFLUENZA VIRUSES IN FERAL AND DOMESTIC ANIMALS IN ORDER TO ASSESS THE ROLE OF THESE VIRUSES IN THE ORIGIN OF NEW OR RECURRENT INFLUENZA SUBTYPES. THE STUDIES WILL BE CARRIED ON IN THE WESTERN PACIFIC INCLUDING THE INDONESIAN AND PHILIPPINE ARCHIPELAGOES, AN AREA OF THE WORLD RICH IN FAUNA AND FROM WHICH RECENT NEW SUBTYPES OF HUMAN INFLUENZA HAVE EMERGED.

SPECIMENS FROM ANIMALS WILL BE TAKEN IN CONJUNCTION WITH STUDIES INVESTIGATING THE ECOLOGY OF ARBOVIRUSES IN INDONESIA AND THE PHILIPPINES. SWABS OF THE CLOACA AND THE RESPIRATORY TRACT IN BIRDS AND OF THE RESPIRATORY TRACT OF MAMMALS WILL BE TAKEN AND ISOLATION OF VIRUSES ATTEMPTED FROM THEM. ISOLATIONS WILL BE ATTEMPTED IN EMBRYONATED CHICKEN EMBRYOS OR EGG-BIT CULTURES AS WILL AS A CANINE KIDNEY-CELL-LINE. HEMAGEL DIFFUSION, AND NEURAMINIDASE INHIBITION TESTS. RECORDS OF LOCATION, SPECIES, DATA, SEX, AGE, AND SOURCE WILL BE KEPT AND ANALYZED THROUGH THE NAMRU-2 BIOSTATISTICS DEPARTMENT. SUMMARY STATISTICS AND DETAILED LISTS OF ANIMALS SAMPLED AND RESULTS WILL BE SENT TO THE WHO COLLABORATING CENTER FOR THE ECOLOGY OF INFLUENZA VIRUSES IN ANIMALS FOR INCLUSION IN THE SHO DATA BASE ON THIS SUBJECT.

SUPPORTED BY U.S. Dept. of Defense, Navy, Naval Medical Research Unit #2 funds n.a.

3.0197,

SEAFARERS AS AN INDEX OF PARASITIC DISEASES OF THE INDONESIAN ARCHIPELAGO.

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TO DETERMINE WHETHER INTER-ISLAND SEAFARERS LIVING ALONG THE NORTH COAST OF WEST JAVA MIGHT SERVE AS AN INDICATOR GROUP OF PARASITIC IDSEASES OF A LARGER GEOGRAPHIC AREA.

SMALL COMMUNITIES OF NATIVE SEAFARERS AND THEIR FAMILIES LIVING ALONG WITH NORTH COAST OF JAVA WILL BE SELECTED AS POTENTIAL INDEX POPULATIONS. THESE SEAFARERS USE SAIL-POWERED PRAUS TO TRADE ALONG THE COASTLINES OF THE MORE THAN 1,000 INHAABITED ISLANDS OF INDONESIA. APPROXIMATELY 100 SEAFARERS AND THEIR FAMILIES WILL BE EXAMINED FOR PROTOZOAN AND HELMINTH PARASITES BY STANDARD LABORATORY METHODS. PARASITIC DISEASE PATTERNS WILL BE RELATED TO SPECIFIC EPIDEMIOLOGIC MARKERS, ESPECIALLY ENVIRONMENTAL AND GEOGRAPHIC EXPOSURES, AND PREDICTION MODELS OF INFECTIOUS DISEASE RISK WILL BE DEVELOPED. PARTICULAR ATTENTION WILL BE PAID TO CHLOROQUINE RESISTANT STRAINS OF MALARIA, TREMATODE INFECTIONS AND FILARIASIS SINCE THESE HAVE FOCALLY DISTINCT GEOGRAPHIC DISTRIBUTION.

SUPPORTED BY U.S. Dept. of Defense, Navy, Naval Medical Research Unit #2 funds n.a.

3.0198,

DISEASES OF MILITARY RELEVANCE: THE INTERACTION OF HEPATITIS B AND SCHISTOSOMIASIS

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HEPATITIS B AND SCHISTOSOMIASIS PRESENT A CHALLENGE TO MILITARY OPERATIONS IN DEVELOPING COUNTRIES BECAUSE OF THEIR PREVALENCE AND THE ABSENCE OF PROPHYLACTIC VACCINES OR DRUGS. SINCE DUAL INFECTIONS WOULD BE EXPECTED TO OCCUR FREQUENTLY IN PERSONNEL DEPLOYED IN THESE AREAS, THE INTERACTION BETWEEN THE TWO DISEASES MUST BE DELINEATED. IT IS IMPERATIVE TO DETERMINE THE EFFECT OF SCHISTOSOMIASIS ON HEPATITIS B CARRIAGE RATES SINCE CARRIERS ARE AN IMPORTANT RESERVOIR OF DISEASE AND TO DETERMINE THE CLINICAL MORBIDITY ASSOCIATED WITH DUAL INFECTION. THIS STUDY ADDRESSES BOTH ISSUES: THE PREVALENCE OF HEPATITIS B CARRIERS WILL BE ESTABLISHED IN POPULATION SUBGROUPS WITH VARYING DEGREES OF SCHISTOSOMIASIS; AND THE 2 YEAR MORBIDITY OF DUAL INFECTION WILL BE COMPARED WITH THAT OF EITHER DISEAS E ALONE.

THE STUDY INVOLVES TWO RURAL EGYPTIAN VILLAGES WHOSE MALE INHABITANTS ARE REGULARLY SCREENED BY OTHER INVESTIGATORS AT 6 MONTH INTERVALS FOR HEPATITIS B SURFACE ANTIGEN AND ANTIBODY. LIMITED PHYSICAL EXAMINATION AND URINE AND STOOL EXAMINATIONS WILL BE PERFORMED ON ALL THESE MALE INDIVIDUALS TO ESTABLISH THE PRESENCE AND INTENSITY OF SCHISTOSOMIASIS IN THE VILLAGERS. THIS DATA WILL THEN BE COMPARED WITH THE PREVIOUSLY OBTAINED SEROLOGICAL DATA. FIFTY VILLAGERS WITH INTESTINAL SCHISTOSOMIASIS, 50 WITH HEPATITIS B ANTIGENEMIA AND 50 WITH BOTH CONDITIONS WHO CONSENT TO ANNUAL HOSPITALIZATION FOR IN DEPTH CLINICAL EVALUATION WILL BE FOLLOWED FOR 2 YEARS IN ORDER TO ASSESS THE RESPECTIVE CLINICAL MORBIDITY OF THE 3 DISEASE STATES.

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3.0199,

SURVEY OF EGYPTIAN BAT POPULATIONS FOR VIRAL DISEASES

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A NUMBER OF HUMAN AND ZOONOTIC VIRAL DISEASES HAVE BEEN DESCRIBED IN EGYPT. THE MOST PREVALENT ARE RABIES AND RIFT VALLEY FEVER (RVF). RVF AFFECTS MAMMALS, PRINCIPALLY FARM ANIMALS AND HUMANS. IN HUMANS IT IS AN ACUTE, FEBRILE, INCAPACITATING DISEASE WITH OCCASIONAL DEATHS. IT HAS SPREAD THROUGH HUMAN AND ANIMAL POPULATIONS VERY RAPIDLY. RVF, IN ADDITION TO SINDBIS, WEST NILE, AND OTHERS ARE INSECT BORNE. RABIES IS SPREAD BY BITES AND DIRECT CONTACT AND IS USUALLY FATAL. IN OTHER PARTS OF THE WORLD MANY CHIROPTERAN SPECIES (BATS) HAVE BEEN SHOWN TO CARRY, TRANSMIT AND BE POSSIBLE RESERVOIRS FOR RABIES AND MANY OF THE ARTHROPOD BORNE VIRAL DISEASES. THERE IS AN EXCELLENT CHANCE THAT BATS ACT AS A VECTOR AND RESERVOIR FOR RABIES AND THE INSECT BORNE VIRAL DISEASES IN EGYPT SINCE THEY CONSTITUTE A LARGE PROPORTION OF THE MAMMALIAN POPULATION. THIS SURVEY WILL GIVE AN ACCURATE ESTIMATE OF THAT INVOLVEMENT.

BATS OF THE GENERA NYCTERIS, RHINOPOMA, TAPHOZOUS, RHINOLOPHUS, PIPPISTRELLUS, ROUSETTUS, ASELLIA AND OTENYCTERIS WILL BE COLLECTED FROM SUMMER AND WINTER ROOSTING AREAS IN VARIOUS PARTS OF EGYPT. BLOOD AND TISSUES WILL BE COLLECTED AND ANALYZED FOR EVIDENCE OF INSECT BORNE VIRUS AND RABIES BY SEROLOGICAL MEANS AND VIRUS ISOLATION IN ANIMALS. MUS MUSCULUS (MICE) AND MESOCRECETUS AURATUS (HAMSTERS) WILL USED FOR ISOLATION WORK. RVF ANALYSES WILL BE PERFORMED UNDER EXISTING WORK UNIT MR041.09.01-0165.

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3.0200,

DISEASE OF MILITARY RELEVANCE: VIRAL HEPATITIS IN AN EGYPTIAN MILITARY HOSPITAL

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HEPATITIS A AND B INFECTION POSE A THREAT TO MILITARY PERSONNEL OPERATING IN AN ENDEMIC AREA. INFECTION IS ACQUIRED BY

FECAL-ORAL ROUTE OR FOOD-BORNE IN TYPE A OR BY PARENTERAL ROUTE IN TYPE B. THREE CASES OF CLINICAL HEPATITIS WERE OBSERVED IN A DIALYSIS UNIT AT THE MAADI MILITARY HOSPITAL IN EGYPT AND 100 PATIENTS WITH LIVER CIRRHOSIS ARE CURRENTLY UNDER INVESTIGATION. THIS STUDY ADDRESSES BOTH ISSUES: (A) TO FIND OUT THE PREVALENCE AND INCIDENCE OF HEPATITIS B VIRUS (HBV) AND HEPATITIS A VIRUS (HAV) INFECTIONS IN ALL NURSES OF MAADI MILITARY HOSPITAL WITH STRESS ON THOSE WORKING IN THE DIALYSIS UNIT; (B) IN-DEPTH STUDY IN PATIENTS WITH LIVER CIRRHOSIS.

SERA OF ALL NURSES OF MAADI MILITARY HOSPITAL, PARTICULARLY THOSE WORKING IN DIALYSIS UNIT, WILL BE TESTED PERIODICALLY (EVERY 6 MONTHS) FOR HBSAG, ANTI-HBS, HBEAG, AND ANTI-HBE AND HA USING RADIOIMMUNOASSAY METHOD. (2) SERA OF THE 100 PATIENTS WITH LIVER CIRRHOSIS WILL BE TESTED FOR THE SERO DIAGNOSIS. ALL PATIENTS WILL BE SUBJECTED TO IN-DEPTH CLINICAL STUDY AND CHECKED FOR SCHISTOSOMIASIS INFECTION. RESULTS WILL BE CORRELATED WITH THE LIVER BIOPSY FINDINGS AND PATIENTS WILL BE LONGITUDINALLY FOLLOWED FOR STUDYING THE MORBIDITY OF DISEASES.

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3.0201,

EPIDEMIOLOGY OF VIBRIO PARAHAEMOLYTICUS IN EGYPT

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VIBRIO PARAHAEMOLYTICUS, THE MOST COMMON CAUSE OF SUMMER DIARRHEA IN JAPAN, IS FREQUENTLY ASSOCIATED WITH GASTROENTERITIS OUTBREAKS IN MANY PARTS OF THE WORLD. ITS POTENTIAL ABILITY TO AFFECT NAVAL POPULATIONS HAS BEEN DEMONSTRATED ON AT LEAST THREE RECENT OCCASIONS WHEN UP TO 60% OF PASSENGERS ON CRUISE SHIPS SUFFERED FROM V. PARAHAEMOLYTICUS INFECTIONS. THESE WERE PRESUMABLY CAUSED BY USING CONTAMINATED SEA WATER FROM THE SHIP'S FIRE CONTROL SYSTEM TO THAW OR WASH SEA FOOD. ALTHOUGH THERE HAVE BEEN MANY REPORTS ON ITS OCCURRENCE INCLUDING SEVERAL FROM THE NAMRU-2 DETACHMENT, DJAKARTA, NO STUDIES FROM THE EASTERN MEDITERRANEAN HAVE APPEARED IN THE LITERATURE. THE AIM OF THIS INVESTIGATION IS TO VERIFY THAT THE ORGANISM RESIDES IN EGYPT AND TO ESTIMATE ITS SIGNIFICANCE AS A CAUSE OF GASTRO-ENTERITIS IN ALEXANDRIA AND NEARBY COASTAL COMMUNITIES.

WATER COLLECTED FROM THE MEDITERRANEAN, ESTUARIES, AND LAGOONS, SEA FOOD SAMPLES, AND RECTAL SWABS FROM PATIENTS SUFFERING FROM GASTROENTERITIS WILL BE INCUBATED IN ALKALINE PEPTONE WATER AT 37 DEGREES C OVERNIGHT AND THEN SUBCULTURED ON TO THIOSULFATE CITRATE BILE SUCROSE AGAR. LARGE BLUE-GREEN COLONIES WILL BE CHARACTERIZED BIOCHEMICALLY TO CONFIRM THEIR IDENTITY, SEROTYPED, AND TESTED FOR ANTIBIOTIC SUSCEPTIBILITY. ISOLATION RATES IN DIFFERENT LOCATIONS, FOOD SOURCES, AND SEASONS WILL BE COMPARED AND INCIDENCE OF DISEASE MONITORED.

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3.0202,

INCIDENCE OF BACTERIAL AND PARASITIC ETIOLOGY OF ACUTE DIARRHEA IN EGYPT

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ACUTE DIARRHEA IS ONE OF THE MOST COMMON DISEASES OF MAN. SALMONELLA, SHIGELLA, AMOEBA AND GIARDIA HAVE BEEN IMPLICATED IN 20% OF ACUTE DIARRHEAL EPISODES. THE EFFICACY AND NECESSITY OF ANTIBIOTIC THERAPY FOR SALMONELLA AND SHIGELLA IS DEBATABLE. THE FECAL LEUKOCYTE EXAM HAS BEEN SHOWN TO DIFFERENTIATE BOWEL-WALL INVASIVE ETIOLOGIES FROM THOSE NON-INVASIVE ETIOLOGIES. THIS STUDY WOULD DOCUMENT THE INCIDENCE OF THESE 4 CAUSES OF DIARRHEA IN EGYPT AS WELL AS EVALUATE THE EFFICACY OF A GLUCOSE-ELECTROLYTE ORAL SOLUTION FOR DIARRHEA NOT DUE TO THE 4 CAUSES. COMPARISON OF GENERAL SUPPORTIVE THERAPY ALONE, WITH A SINGLE DOSE OF ANTIBIOTIC, OR WITH A 5 DAY COURSE OF ANTIBIOTIC WILL BE EVALUATED IN SALMONELLA (NON TYPHI) AND SHIGELLA CAUSED DIARRHEA.

STOOL SPECIMENS WILL BE TAKEN FROM PATIENTS PRESENTING WITH ACUTE DIARRHEA. THESE WILL BE EXAMINED FOR LEUKOCYTES, PARASITES AND SALMONELLA OR SHIGELLA. BASIC TREATMENT WILL BE WITH A GLUCOSE-ELECTROLYTE SOLUTION FOR 5 DAYS, AND SPECIFIC TREATMENT WILL BE BASED ON THE RESULTS OF THE FECAL LEUKOCYTE EXAM AND THE BACTERIAL CULTURE AND PARASITIC EXAMINATION. PATIENTS WILL BE RE-EXAMINED 7-9 DAYS AFTER COMPLETING TREATMENT FOR RESOLUTION OF SYMPTOMS AND REPEAT EXAMINATION OF STOOL FOR LEUKOCYTES, PARASITES AND SALMONELLA OR SHIGELLA.

SUPPORTED BY U.S. Dept. of Defense, Navy, Naval Medical Research Unit #3 funds n.a.

3.0203,

DIAGNOSIS IN MENINGITIS PATIENTS WITH NEGATIVE BACTERIAL CULTURES

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CURRENTLY 40-50% OF CASES ADMITTED TO THE MENINGITIS WARD DO NOT HAVE AN ETIOLOGIC AGENT IDENTIFIED AS THE CAUSE OF THEIR DISEASE. THE PURPOSE OF THIS STUDY IS TO IDENTIFY THE VIRAL AGENTS RESPONSIBLE AND TO EXPLAIN WHY BACTERIAL CULTURES ARE NEGATIVE WHEN NO VIRAL AGENT IS IDENTIFIED.

CHARTS OF PATIENTS ADMITTED TO THE NAMRU-3 MENINGITIS WARD OF THE ABBASSIA FEVER HOSPITAL (AFH) DURING 1978 WILL BE REVIEWED TO DETERMINE DOCUMENTED BACTERIAL CAUSES. ACUTE AND CONVALESCENT SERUM OF THESE PATIENTS WILL BE EVALUATED FOR MANY VIRAL AGENTS. PROSPECTIVELY ALL PATIENTS ADMITTED TO THE NAMRU-3 WARD OF AFH WILL HAVE CAREFUL HISTORY AND PHYSICAL DONE. ALIQUOTS OF ADMISSION BLOOD AND CEREBROSPINAL FLUID (CSF) WILL BE EVALUATED FOR ANTIBIOTICS AND VIRAL ANTIBODIES (BY COMPLEMENT FIXATION). ALIQUOTS OF CONVALESCENT BLOOD AND CSF WILL BE EVALUATED FOR A RISE IN VIRAL ANTIBODY LEVELS IN ORDER TO IDENTIFY THE VIRAL ETIOLOGY OF MENINGITIS.

SUPPORTED BY U.S. Dept. of Defense, Navy, Naval Medical Research Unit #3 funds n.a.

3.0204,

DISEASE AND HEALTH OF AMERICAN MILITARY MEN NEWLY ARRIVED IN CAIRO, EGYPT

M.E. Kilpatrick, U.S. Dept. of Defense, Navy, Naval Medical Research Unit #3, Clinical Investigation Dept., *FPO, New York, New York* 09527 (DN077732)

IT IS COMMONLY BELIEVED THAT PEOPLE NEWLY ARRIVED INTO AN ENVIRONMENT INITIALLY HAVE A HIGH INCIDENCE OF DISEASE, PARTICULARLY ACUTE DIARRHEA. THIS STUDY WILL DOCUMENT FREQUENCY OF ILLNESS, ETIOLOGY OF ILLNESS, SEVERITY AND DURATION OF ILLNESS IN AMERICAN ACTIVE DUTY MILITARY MEN NEWLY ARRIVED IN CAIRO, EGYPT. ALL NEW ARRIVALS HAVING FREELY GIVEN WRITTEN INFORMED CONSENT WILL BE STUDIED. INITIALLY BASELINE BLOOD, URINE, AND STOOL STUDIES WILL BE DONE AND HISTORICAL BACKGROUND RECORDED. DURING EPISODES OF ILLNESS APPROPRIATE LABORATORY TESTS WILL BE DONE AND THERAPY ADMINISTERED. AT THE END OF EACH INDIVIDUAL'S TOUR OF DUTY IN EGYPT BLOOD, URINE AND STOOL STUDIES WILL BE REPEATED TO VERIFY DISEASE OR DETECT ASYMPTOMATIC DISEASE.

SUPPORTED BY U.S. Dept. of Defense, Navy, Naval Medical Research Unit #3 funds n.a.

3.0205,

MORBIDITY FORECASE MODEL FOR COLD WEATHER OPERATIONS

L.M. Dean, U.S. Dept. of Defense, Navy, Naval Submarine Medical Research Lab., Personnel Psychology Dept., *Naval Submarine Base, Groton, Connecticut* 06340 (DN977623)

THE OPERATIONAL EFFECTIVENESS OF NAVY AND MARINE COPRS PERSONNEL IN COLD ENVIRONMENTS DEPENDS UPON THE PHYSICAL AND MENTAL FITNESS OF THE TROOPS, THE OPERATIONAL OBJECTIVES, AND OTHER SITUATIONAL AND ENVIRONMENTAL FACTORS. IN ORDER TO PLAN COLD WEATHER OPERATIONS, IT IS IMPORTANT O IDENTIFY THE PERSONEL AND SITUATIONAL FACTORS THAT INCREASE THE RISK OF MORBIDITY OR IMPAIRED EFFECTIVENESS AND TO DEVELOP A MODEL FOR PREDICTING ILLNESS AND COLD INJURY AND THE ASSOCIATED COSTS IN MAN-DAYS LOST.

THE FEASIBILITY OF USING AFTER-ACTION MEDICAL REPORTS FROM PREVIOUS MARINE COPRS COLD WEATHER EXRCIES TO ESTABLISH A MORBIDITY FORECAST MODEL TO PREDICT NON-EFFECTIVE DAY LOSSES DUE TO COLD MORBIDITY WILL BE EVALUATED. ADDITIONAL SOURCES OF SIMILAR DATA WILL BE IDENTIFIED AND APPRAISED WITH RESPECT TO THEIR CONTRIBUTION TO A MORBIDITY FORECAST MODE. PRELIMINARY MULTIVARIATE ANALYSES WILL BE CONDUCTED ON THESE DATA TO IDENTIFY VARIOUS PREDICTORS ASSOCIATED WITH MEDICAL PROBLEMS FOUND IN CODL WEATHER EXERCISES/OPERATIONS.

SUPPORTED BY U.S. Dept. of Defense, Navy, Naval Submarine Medical Research Lab. funds n.a.

3.0206,

ASSESSMENT OF BONE AND BODY COMPOSITION IN RECENTLY RETIRED AND ACTIVE DUTY SUBMARINERS

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LABORATORY CONTROLLED STUDIES OF VARIABLES PRESENT IN THE SUBMARINE ENVIRONMENT HAVE CONSIDERED THE ROLE OF CARBON DIOXIDE, LACK OF SUNLIGHT LEADING TO DECREASED LEVELS OF VITAMIN D, DIMINISHED PHYSICAL ACTIVITY, ALTERATION IN DIET, AND INTAKE OF DISTILLED WATER LACKING IN TRACE MINERALS AS FACTORS WHICH MAY INFLUENCE CALCIUM METABOLISM AND BE REFLECTED, OVER A PERIOD OF TIME AFTER REPEATED EXPOSURES, BY CHANGES IN BONE MINERAL CONTENT AND BODY ELEMENTAL COMPOSITION. THE IMPLICATION OF THESE FINDINGS IS THAT REPEATED, PROLONGED, SUBMARINE EXPOSURE MAY HAVE AN EFFECT ON CALCIUM METABOLISM. THE OBJECTIVE OF THIS STUDY IS TO ESTABLISH WHETHER ANY DETECTABLE CHANGE IN BONE AND BODY ELEMENTAL COMPOSITION HAS OCCURRED IN A SELECTED GROUP OF ACTIVE AND RETIRED SUBMARINERS WITH MAXIMUM CAREER SUBMERGED TIME.

TWELVE RECENTLY RETIRED SUBMARINERS WHO HAVE HAD CONSIDERABLE SUBMERGED SERVICE TIME WILL BE CHOSEN FOR IN VIVO MEASUREMENTS OF CERTAIN ELEMENTAL WHOLE-BODY CONSTITUENTS BY MEANS OF TOTAL-BODY NEUTRON ACTIVATION ANLAYSIS (TBNAA). SPECIFICALLY, MEASUREMENT WILL BE MADE OF TOTAL BODY CALCIUM, SODIUM, CHLORIDE, PHOSPHORUS, NITROGEN, POTASSIUM, AND BODY WATER. NORMALIZATION OF THE DATA FOR BODY WEIGHT, SEX, AGE, LEAN BODY MASS, AND HEIGHT WILL ALLOW NA INTERCOMPARISON OF THE ABSOLUTE MEASUREMENTS WITH A PREDICTOR CURVE OF 'NORMAL' VALUES DEVELOPED AT THE BROOKHAVEN NATIONAL LABORATORY. IN A SEPARATE PILOT STUDY, A PORTABLE BONE DENSITOMETER WILL BE USED TO ESTIMATE THE BONE MINERAL CONTENT OF FIFTY EXPERIENCED ACTIVE DUTY SUBMARINERS. THE RESULTS OF THIS STUDY WILL INDICATE WHETHER OR NOT CHANGES IN BONE AND BODY MINERAL CONTENT HAVE OCCURRED TO SUCH A GROSS EXTENT THAT THEY HAVE BECOME DETECTABLE BY DENSITY MEASUREMENTS.

SUPPORTED BY U.S. Dept. of Defense, Navy, Naval Submarine Medical Research Lab. funds n.a.

3.0207,

AN EPIDEMIOLOGICAL STUDY OF THE HEALTH OF 200 US NAVY DIVERS

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DIVING IS A STRESSFUL OCCUPATION OF RELATIVELY YOUNGER MEN AND REQUIRES THE INDIVIDUAL TO BE IN EXCELLENT HEALTH. A

REVIEW OF THE LITERATURE SHOWS A PAUCITY OF DESCRIPTIVE STUDIES ON THE LONG TERM EFFECTS OF OCCUPATIONAL DIVING ON MEASURABLE PHYSICAL HEALTH PARAMETERS. MOREOVER, THERE ARE RELATIVELY FEW EPIDEMIOLOGICAL STUDIES WHICH EXAMINE THE RELATIONSHIPS BETWEEN INDIVIDUAL HEALTH AND STRESSFUL OCCUPATIONS AND KNOWN HEALTH RISK FACTORS (E.G., HABITS OF CIGARETTE AND ALCOHOL CONSUMPTION, SERUM CHOLESTEROL) IN YOUNG MEN. THE GOAL OF THIS STUDY IS TO CHARACTERIZE PARAMETERS OF INDIVIDUAL HEALTH AMONG A GROUP OF US NAVY PERSONNEL WITH OCCUPATIONAL DIVING EXPERIENCE. FUTURE COMPARISONS WITH HEALTH STATISTICS FROM OTHER POPULATIONS COULD POTENTIALLY IDENTIFY FACTORS UNIQUELY RELATED TO DIVING ACTIVITY AND LEAD TO RECOMMENDATIONS REGARDING SELECTION OF PERSONNEL, HEALTH MONITORING, AND SO FORTH.

A STORAGE BANK OF HEALTH DATA ON 200 US NAVY DIVERS, COLLECTED AT ONE POINT IN TIME, HAS BEEN PREVIOUSLY GATHERED AT NSMRL. FOR EACH INDIVIDUAL THIS INCLUDES: DIVING HISTORY, COMPLETE MEDICAL HISTORY AND PHYSICAL EXAMINATION, BIOCHEMICAL AND HEMATOLOGICAL STUDIES, RADIOLOGICAL EXAMINATIONS, ELECTROCARDIOGRAPHY, PULMONARY FUNCTION TESTING, ANTHROPOMETRIC MEASUREMENTS, AND PSYCHOSOCIAL TESTING. THE ANALYSIS OF THESE DATA WILL INVOLVE SPECIFIC STATISTICAL PROGRAMS DESIGNED TO DISCOVER SIGNIFICANT RELATIONSHIPS AMONG/BETWEEN THE DATA.

SUPPORTED BY U.S. Dept. of Defense, Navy, Naval Submarine Medical Research Lab. funds n.a.

3.0208,

HEALTH AND LONGEVITY IN RELATIONSHIP TO OCCUPATIONAL EXPOSURE IN THE NAVAL SUBMARINE ENVIRONMENT

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BECAUSE OF THE RELATIVELY RECENT OPERATIONAL USE OF NUCLEAR POWERED SUBMARINES, THERE IS LITTLE INFORMATION AVAILABLE AS TO THE INCIDENCE OF DISEASE AMONG OLDER PERSONNEL WHO MIGHT HAVE BEEN EXPOSED TO NUCLEAR SUBMARINE ENVIRONMENTS EARLIER IN THEIR CAREERS. THIS WORK UNIT WILL INVOLVE AN EPIDEMIOLOGICAL STUDY OF A LARGE POPULATION OF FORMER NUCLEAR SUBMARINERS TO DETERMINE IF THERE ARE ANY ABNORMAL INCIDENCES OF DISEASE AMONGST THEM.

THE RECORDS OF ABOUT 400,000 RETIRED AND FLEET RESERVE PERSONNEL WILL BE SURVEYED. CAUSE SPECIFIC MORBIDITY AND MORTALITY RATES WILL BE DETERMINED FOR THE TOTAL POPULATION AS WELL AS FOR SUBGROUPS WITH DIFFERENT EXPOSURE LEVELS TO THE SUBMARINE ENVIRONMENT. THE NUMBER OF PATROLS, SPECIFIC RATINGS AND EXPOSURE TO IONIZING RADIATION ARE AMONG THE VARIABLES TO BE INCLUDED.

SUPPORTED BY U.S. Dept. of Defense, Navy, Office of Naval Research $245,231

3.0209,

STOCHASTIC MODELS FOR PHYSICAL AND BIOLOGICAL SYSTEMS

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TO IMPROVE GENERAL NAVAL PERFORMANCE BY DEVELOPING MODELS FOR DISEASE SPREAD IN CLOSED ENVIRONMENTS SUCH AS ABOARD NAVAL SHIPS OR SUBMARINES.

EPIDEMICS OF VIRAL AND TWO-HOST PARASITIC INFECTIONS WILL BE MODELED AS PAIRS OF TIME INHOMOGENEOUS MARKOV CHAINS. FOR SUCH CHAINS THE DETERMINISTIC CHAPMAN-KOLMOGOROV EQUATIONS WILL BE STUDIED AND THEIR LINKAGES ESTABLISHED.

SUPPORTED BY U.S. Dept. of Defense, Navy, Office of Naval Research $24,500

3.0210,

HEALTH EFFECTS OF ASBESTOS EXPOSURE AMONG PEARL HARBOR NAVAL SHIPYARD WORKERS

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THIS STUDY IS TO ASSESS DISEASE RISKS ASSOICATED WITH VARYING DEGREES OF ASBESTOS EXPOSURE IN A NAVAL SHIPYARD. THE EFFECT OF SMOKING AND OTHER ADVERSE RESPIRATORY EXPOSURES ON THESE RISKS WILL BE EVALUATED.

THE RELATIONSHIPS BETWEEN EXPOSURE TO A PARTICULA R TYPE OF ASBESTOS FIBER AND THE INCIDENCE OF DISEASE AMONG WORKERS IN VARIOUS SHIPYARD JOBS ARE BEING ESTABLISHED. MEASUREMENT OF THE AIR-BORNE ASBESTOS IS MADE WITH INDIVIDUAL SAMPLERS WORN NEAR THE BREATHING ZONE. DIAGNOSIS OF PULMONARY LESIONS AND INTRA-ABDOMINAL TUMORS IS CONFIRMED BY HISTOLOGICAL EXAMINATION. DETAILED CASE HISTORIES REGARDING SMOKING HABITS AND ASBESTOS EXPOSURE ARE OBTAINED. THE DATA IS STORED IN SUITABLE FORM FOR COMPUTER ANALYSIS.

SUPPORTED BY U.S. Dept. of Defense, Navy, Office of Naval Research $25,856

3.0211,

SYMPOSIUM ON HEALTH ASPECTS OF NON-IONIZING RADIATION

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THIS SYMPOSIUM IS DESIGNED TO BRING TOGETHER CLINICIANS AND OTHER PERSONNEL INVOLVED IN THE DELIVERY OF HEALTH CARE IN THE INDUSTRIAL (INCLUDING MILITARY) AND PUBLIC SECTORS FOR THE PURPOSE OF INFORMING THEM OF THE LATEST ASPECTS OF THE EFFECTS OF MICROWAVES ON HUMAN HEALTH.

THE ENVIRONMENTAL PROTECTION AGENCY WILL CONTRIBUTE THE MAJOR PORTION OF THE SUPPORT FOR THIS SYMPOSIUM. ALL SPEAKERS ARE INVITED AND THE PROGRAM IS STRUCTURED INTO SECTIONS TO COVER SEVERAL TOPIC AREAS: SECTION 1, A REVIEW OF PHYSICAL ASPECTS OF MICROWAVES AND THEIR MEASUREMENT IN RELATION TO MAN. SECTION 2, P RESENT TRENDS IN RESEARCH ON BIOMEDICAL EFFECTS. SECTION 3, EPIDEMIOLOGICAL APPROACH AND SOME FINDINGS. SECTION 4, CLINICAL APPLICATIONS OF MICROWAVES. SECTION 5, PUBLIC ISSUES AND STANDARDS.

SUPPORTED BY U.S. Dept. of Defense, Navy, Office of Naval Research $2,000

3.0212,

THE APPLICABILITY OF EPIDEMIOLOGIC AND BIOLOGIC MEASUREMENTS FOR THE CONSTRUCTION OF A RISK INDEX FOR ASBESTOS-RELATED DISEASE

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THERE IS A RECOGNIZED INCREASE IN CANCER OF THE RESPIRATORY AND DIGESTIVE TRACTS AMONG INDIVIDUALS ENVIRONMENTALLY EXPOSED TO ASBESTOS. IN A POPULATION LIKELY TO BE EXPOSED ROUTINELY TO ASBESTOS, IT IS DESIRABLE TO HAVE THE MOST RELIABLE SURVEILLANCE FOR EARLY SIGNS OF SUCH DISEASE. IT IS THE TECHNICAL OBJECTIVE OF THIS RESEARCH TASK TO IDENTIFY AND EVALUATE RELIABLE AND ACCURATELY MEASURABLE MEDICAL MARKERS SUITABLE FOR ROUTINE USE IN MEDICAL SURVEILLANCE OF NAVY SHIPYARD WORKERS.

A TEST GROUP OF SELECTED SHIPYARD WORKERS FROM THE LONG BEACH NAVAL SHIPYARD WILL BE THOROUGHLY STUDIED. A CONTROL GROUP OF WORKERS, FROM AREAS IN WHICH ASBESTOS EXPOSURE IS NOT A HAZARD, BUT OTHERWISE COMPARABLE, WILL BE USED FOR COMPARISON. THE RELIABILITY OF THE FOLLOWING BIOLOGICAL MARKERS AS INDICES TO SUSCEPTIBILITY AND AS EARLY DIAGNOSTIC TESTS WILL BE ASSESSED: INFLAMMATORY REACTIONS, CHANGES IN IMMUNOLOGICAL STATUS, DNA CHANGES AND HEMATOLOGICAL EXAMINATIONS. THE DATA COLLECTED WILL BE SUBJECTED TO STATISTICAL ANALYSIS TO DETERMINE IF THERE ARE DIFFERENCES BETWEEN ASBESTOS-EXPOSED AND CONTROL GROUPS, AND TO ESTABLISH THE MOST SIGNIFICANT INDICES OF CANCER SUSCEPTIBILITY.

SUPPORTED BY U.S. Dept. of Defense, Navy, Office of Naval Research $107,415

3.0213,

EPIDEMIOLOGICAL STUDIES ON RICKETTSIAL INFECTIONS

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THESE CLINICAL AND FIELD STUDIES OF ECTOPARASITE-BORNE DISEASES ARE TO IMPROVE THE MEANS FOR CONTROL, PREVENTION AND TREATMENT OF RICKETTSIAL INFECTIONS WHICH ARE ENDEMIC IN AFRICA, THE MIDDLE EAST AND ASIA. EMPHASIS IS PLACED ON THE ECOLOGY, PATHOGENESIS AND TREATMENT OF MURINE TYPHUS.

THE RESERVOIRS AND MODE OF TRANSMISSION OF MURING TYPHUS ARE BEING INVESTIGATED IN A VARIETY OF HABITATS IN BURMA, PAKISTAN, AUSTRALIA AND THE MIDDLE EAST. THE STUDIES IN ETHIOPIA WERE TERMINATED FOR POLITICAL REASONS. PARTICULAR ATTENTION IS PAID TO STUDIES TO DETERMINE IF INFECTED FLEAS HARBOR THE CAUSATIVE AGENT (RICKETTSIAE) AFTER THE RODENT HOST BLOOD HAS BEEN DIGESTED. THE WORK INCLUDES DEVELOPMENT OF TECHNIQUES FOR RAPID DETECTION OF RICKETTSIAL INFECTIONS IN FLEAS AND MAMMALS.

SUPPORTED BY U.S. Dept. of Defense, Navy, Office of Naval Research $77,997

3.0214,

HEALTH EFFECTS OF LOW-LEVEL RADIATION IN SHIPYARD WORKERS

Unknown, Johns Hopkins University, School of Hygiene & Public Health, Dept. of Epidemiology, *615 N. Wolfe St., Baltimore, Maryland* 21205

No summary has been provided to the Smithsonian Science Information Exchange.

SUPPORTED BY U.S. Dept. of Energy funds n.a.

3.0215,

RESEARCH ON HUMAN GENETICS IN ICELAND

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The Genetical Committee of the University of Iceland will make use of a VAX-11 780 computer system with a 1 MB (1024 KB) memory for its data on the Icelandic human population. The main objective is to link the demographic data of all Icelanders born since 1840 to present into pedigrees and making various medical data available for genetic studies. These studies may provide valuable information on the inheritance of disease and disabilities as well as the consequence of cousin-marriage, their fertility and the viability of their children. It will also give information on various genetic markers, their frequency, and their association with disease. Records of blood groups have been made available by the Blood Bank in Reykjavik and a study of the associations of various types of disease and blood groups and other blood proteins will be carried out. Furthermore, a study of the association of various types of cancer with blood groups and other genetic markers will be continued through linking with the cancer registry. Mental disorers are also gradually being linked to the main register of the Genetical Committee and a study of the fertility of patients with mental disorders is underway.

SUPPORTED BY U.S. Dept. of Energy funds n.a.

3.0216,

DETERMINATION OF 239 PU CONCENTRATIONS IN NEW YORK CITY AUTOPSY TISSUE SAMPLES

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No summary has been provided to the Smithsonian Science Information Exchange.

SUPPORTED BY U.S. Dept. of Energy funds n.a.

3.0217,

A STUDY OF URANIUM MINER LUNG CANCER

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OBJECTIVES: (1) Continuation of sputum collection and collection of lungs from deceased miners. (2) "Predictive" analytical study of sputum samples taken from individual miners over several years. (3) Uranium Miners Lung Study.

APPROACH: (1) Early diagnosis of lung cancer by sputum smears. (2) Many publications of our findings. (3) Manual on Pulmonary Cytology.

RESULTS: (1) Satisfactory technique for preparation of sputum smears. (2) We have proven that carcinoma in situ will remain in that stage for three plus years before becoming invasive.

SUPPORTED BY U.S. Dept. of Energy funds n.a.

3.0218,

ENVIRONMENTAL ASSESSMENT FOR GASIFIERS IN INDUSTRY

Unknown, U.S. Dept. of Energy, Oak Ridge National Lab., Central Management Office, *P.O. Box X, Oak Ridge, Tennessee* 37830 (800300 TICNO)

The objective of this program is to implement an environmental and health, monitoring and testing program at the University of Minnesota at Duluth Gasifier Project. Process streams and plant effluents will be characterized chemically and physically by on-line and in-plant sample collections, measurements, and monitoring. Data developed will be used to determine the efficiency, reliability, and maintenance requirements of environmental control equipment, and to assess and document the adequacy of health and safety controls incorporated into the process system.

SUPPORTED BY U.S. Dept. of Energy, Div. of Environmental Control Technology funds n.a.

3.0219,

HUMAN HEALTH EFFECTS FROM ENERGY GENERATION

Unknown, Hanford Environmental Health Foundation Inc., *P.O. Box 100, Richland, Washington* 99352

Hanford Environmental Health Foundation (HEHF) is performing three research projects: the Hanford DOE Health and Mortality Study, U.S. Transuranium Registry 'USTR); and U.S. Uranium Registry (USUR). The task of the Hanford DOE Health and Mortality Study is to determine whether any correlation exists between health patterns and long-term occupational exposure to ionizing radiation while adjusting for other confounding factors. This study has been conducted jointly by HEHF and Pacific Northwest Laboratories (PNL). The USTR is a nationwide autopsy research program. It is designed to study the distribution, concentration and possible tissue effects of transuranics in occupationally exposed workers who volunteer to participate in the study. Such information is important in the evaluation of the radiation injury in various organs and tissues in which these elements accumulate. The USUR is using several approaches to study the effects of uranium exposures on workers in the uranium fuel cycle. These include: (1) an autopsy program similar to the USTR; (2) characterization of the uranium fuel cycle and potential sources of exposure; (3) review of previous epidemiologic investigations, with establishment of priorities for future studies; and (4) design and conduct of appropriate epidemiologic studies. PNL is collaborating with HEHF in accomplishment of the tasks of the USUR.

SUPPORTED BY U.S. Dept. of Energy, Economic Regulatory Admin., Office of Public Affairs $1,055,000

3.0220,

HEALTH EFFECTS IN THE PETROLEUM INDUSTRY

E.L. Alpen, University of California, Berkeley Campus, Lawrence Berkeley Lab., *Berkeley, California* 94720 (005681 TICNO)

The objective of this project is to examine the health effects of emissions from petroleum refineries and related industries in Contra Costa County, California. Our study populations consist of communities adjacent to refineries and workers engaged in the processing and transportation of petroleum and related products. We are using both direct and indirect studies to compare the health status of occupationally and residentially exposed groups and unexposed control populations. The studies are designed to measure various health outcomes: (1) selected causes of mortality by age; (2) cancer incidence; (3) infertility; (4) congenital malformations; (5) low birth weight and other adverse reproductive effects; and (6) adult and childhood morbidity.

SUPPORTED BY U.S. Dept. of Energy, Office of Environment $300,000

3.0221,

HEALTH AND MORTALITY STUDY

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Epidemiologic studies are being conducted on populations of DOE (or DOE contractor) workers whose occupations involve potential exposure to internal and/or external radiation. These workers also have the potential of being exposured to uranium, uranium dust, and such toxic metals as lead, cadmium, and nickel, etc., in nuclear fuel production and enrichment and in the processing of radioactive material related to military applications. The principal aim of these studies is to assess long-term health effects of occupational exposure to low-level ionizing radiation and additive effects by confounding chemical stresses. Current studies concern mortality experience of workers at sites in Oak Ridge (Y-12 Tennessee Eastman Corporation, Y-12 Union Carbide, X-10, and K-25 plants), other current DOE facilities (Paducah, Portsmouth), disbanded Manhattan Engineering District (MED) sites (Mallinckrodt, Linde, Columbia University, Middlesex), and other selected sites (National Lead of Ohio, Mound, Savannah River, Argonne National Laboratory, Brookhaven National Laboratory, Idaho Test Site, and Nevada Test Site). Statistical methods and data-management techniques are being developed through methodology research for improving the power of epidemiologic analysis of low-level stresses to large numbers of people. This biostatistical research also provides record-linkage algorithms and statistical data-editing procedures to facilitate handling problems generic to using large complex data sets in longitudinal cohort studies. The long-range goal of this project is to be able to merge all occupational, rosters, radiation exposure records and other pertinent data from all MED/AEC/ERDA/DOE sites since 1942 into a National Atomic Energy Worker Roster to provide as many as possible person year rems for radiation risk assessment and a basis for a continuous health and safety survey for DOE workers.

BIBLIOGRAPHIC REFERENCES: Armstrong, R.D., and E.L. Frome, Least Absolute Value Estimators for One-Way and Two-Way Tables, Nav. Res. Logistics Quart. 26:79-96 (1979). Armstrong, R.D., E.L. Frome and D.S. Kung, A. Revised Simplex Algorithm for the Absolute Deviation Curve Fitting Problem, Commun. Stat. 8B: 175-190 (1979).

SUPPORTED BY U.S. Dept. of Energy, Office of Environment $1,736,000

3.0222,

IVEP-HEALTH EFFECTS

L. Anspaugh, University of California, Central Office, Lawrence Livermore Lab., *P.O. Box 808, Livermore, California* 94550 (005816 TICNO)

The Health Effects Element of the Imperial Valley Environmental Project (IVEP) will perform four major tasks. First, we will review the health literature for the effluents known or expected to be released by geothermal energy utilization, compile a priority ranking of pollutants, and, if appropriate, recommend needed research. Second, we will establish an exemplary system for reporting and analyzing Imperial County health statistics, including morbidity and mortality. The third task is to review and perhaps to supplement the health surveillance of workers in the geothermal industry. Fourth, we will conduct a background survey of odor and noise annoyance perceptions in Imperial County. These studies will be conducted with the collaboration and contracted assistance of the Imperial County Department of Health and the California Department of Health Services.

SUPPORTED BY U.S. Dept. of Energy, Office of Environment $50,000

3.0223,

MOLECULAR PERTURBATIONS IN MAN PRODUCED BY ENERGY RELATED POLLUTANTS

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Radiation and energy-related toxic agents may produce a variety of biological effects including DNA breakage, altered DNA repair, mutation, altered gene expression, cancer, or cellular toxicity, accelerated aging, and cell death. These effects can only be understood in terms of a wide range of molecular mechanisms involving the estimated 30 to 50,000 protein gene products (PGP's) encoded by the human genome. We have developed the systems and techniques required to see a large fraction of all human PGP's and to index them in a rational manner. This makes possible a revolution in energy-related biomedical research since effects may now be studied in terms of specific molecular species. For the study of PGP's we have developed mapping systems and techniques for using high resolution two-dimensional electrophoresis techniques for spot identification, for determining a number of identifying biophysical properties and compositional characteristics for each PGP, and for image analysis and data reduction. Maps and multiple identifications for PGP's in human plasma, muscle red cell lysates, and urinary protein concentrates have been prepared and published. Emphasis now centers on the indexing of PGP's of human peripheral lymphocytes, and on changes in the pattern of gene expression in these cells in response to radiation, carcinogens, toxic chemicals, and hormones.

BIBLIOGRAPHIC REFERENCES: Anderson, N.G., Making Molecular Catalogues, Nature 278: 122-123 (1979). Anderson, N.G., and N. L. Anderson, Molecular Anatomy, Behring Inst. Mitt. 63: 169-210 (1979).

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3.0224,

EPIDEMIOLOGY OF MAGNETIC EFFECTS

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This epidemiological study on the health effects of static and slowly varying magnetic fields is designed to acquire data on both long term low level and acute high level exposure to magnetic fields. The data can be used to evaluate risks to populations near facilities which cause increased environmental magnetic fields and to technical workers at the facilities. Workers at the national laboratories are chosen for this study both for their exposure to magnetic fields and their excellent medical records. Matched controls are selected for each exposed subject. Medical records and exposure levels are coded for exposed and control subjects. Statistical tests are used to analyze the results. We expect 1000 exposed subjects and 1000 controls to be available in North America. Statistical analysis indicates that with this sample size a threefold increase or decrease in the incidence of cardiovascular disease can be detected. The retrospective survey will be complete in FY 1981 and form the basis for a prospective epidemiology study using a cohort of exposed and control subjects.

BIBLIOGRAPHIC REFERENCES: Budinger, T.F., Thresholds for Physiological Effects Due to RF and Magnetic Fields Used in NMR Imaging, IEEE Trans. Nucl. Sci. NS-26 (2): 2821-2825 (1979).

SUPPORTED BY U.S. Dept. of Energy, Office of Environment $145,000

3.0225,

DOSIMETRY FOR HUMAN EXPOSURE

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The objective of studies on the dosimetry of human exposures is to improve techniques for assessing the risk to man from gamma-ray and neutron exposures. This has involved detailed investigations and predictions of radiation interactions within the body at the microscopic and macroscopic levels, and results of these studies have been used by national and international committees in establishing current radiation protection criteria. These studies are now providing significant new refinements in the estimation of radiation exposure risks using data from clinical and epidemiological studies of atomic-bomb survivors by the Radiation Research Foundation (RERF) in Japan. The RERF's studies are the most extensive source of data on the latent effects of human radiation exposures and the only major epidemiological study providing data on the latent effects of human neutron exposures.

BIBLIOGRAPHIC REFERENCES: Kerr, G.D., Organ Dose Estimates for the Japanese Atomic-Bomb Survivors, Health Phys. 487 (1979)

SUPPORTED BY U.S. Dept. of Energy, Office of Environment $104,000

3.0226,
RADIATION INSTRUMENTATION - RADIOLOGICAL CHEMISTRY

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This program is primarily concerned with the development of radiochemical instrumentation and analytical technology for the measurement of low levels of radionuclides which enter the environment from the nuclear industry and from nuclear testing operations. It is also concerned with the development and refinement of neutron activation analysis technology for the analysis of trace elements released to the environment from fossil fuel combustion, coal conversion, oil shale retorting, and geothermal power generation. In the nuclear fuel cycle, the transuranium and long-lived fission products are of immediate concern. Instrumentation and technology are developed for the measurement of radioisotopes in environmental samples. Coupled with neutron activation, these techniques are subsequently used to define the pathways of natural or waste radioisotopes and toxic, stable elements in the environment. Efforts are in three parts: low-level radiochemical laboratory techniques, in situ monitoring techniques, and activation analysis technology. Low-level radiochemical laboratory techniques which are developed and improved include x-ray, beta-gamma, alpha-beta-gamma, and gamma-ray radiation detection systems for the analysis of ultra-low levels of radioactive species. In situ monitoring technology is being developed to allow real-time determination of natural or field-induced radioactivity under field conditions. The designed systems are directly applicable to radionuclide measurement problems in the nuclear industry. Activation analysis technology is developed for improved handling and increased sensitivity in the measurement of various trace elements harmful to man over a wide spectrum of environmental materials.

SUPPORTED BY U.S. Dept. of Energy, Office of Environment $115,000

3.0227,
DETERMINATION OF PLUTONIUM IN MAN

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This study is designed to: (1) establish the annual baseline levels of plutonium in the tissues of the general population due to worldwide or regional environmental contamination; (2) establish the uptake and distribution patterns of plutonium in the human body; and (3) measure plutonium concentrations in tissue for individuals occupationally exposed to plutonium. Tissues are collected at autopsy of persons in the general population who have had no known occupational exposure to plutonium and of former nuclear industry employees having had a potential for an occupational exposure to plutonium. The latter includes cases from several facilities throughout the U.S. that have had exposures and have signed autopsy consent forms with the U.S. Transuranium Registry. All tissues are analyzed for plutonium and, additionaly, the tissues from the occupational cases are analyzed for americium. Data are being accumulated continuously to evaluate the time-related effects of fallout Pu deposition and retention and also to monitor possible increases in tissue concentrations due to accidental releases from nuclear facilities. Statistical evaluation of existing data is being expanded. In vivo methods for estimating the body content of Pu in occupational exposures are being compared with the content determined from direct tissue analyses. Techniques for determining the distribution of Pu in microstructure of lungs and bone are being evaluated using fission track analysis, electromicroprobe analysis, autoradiography, etc.

BIBLIOGRAPHIC REFERENCES: McInroy, J.F., et al, Plutonium in Autopsy Tissue: A Revision and Updating of Data Resported in LA-4875, Health Phys. 37: 1-136 (1979).

SUPPORTED BY U.S. Dept. of Energy, Office of Environment $530,000

3.0228,
HEALTH EFFECTS OF ENERGY-RELATED POLLUTANTS

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This research project aims to elucidate the relationships between air pollution, health, and population dynamics, specifically mortality and migration and to a lesser extent fertility in the United States. An epidemiological model will be used to examine the functional relationships between various social, demographic, and environmental variables, and to formulate hypotheses regarding the association of air pollution to changes in these variables. Primary consideration will be given to consistency of these hypotheses: (1) with each other; and (2) with current knowledge. A modular approach will be used to organize the extensive body of data required for this multidisciplinary study. Using concentration data, local emission data, and meteorological transport models, the agent module will focus on the identification of various airborne pollutants and the quantification of their respective doses to the population. The host module will address inherent biological factors, such as age, sex, physiologic and genetic variables, and their differential effects on a hypothesized pollution/health interrelationship. The environment module will focus on such characteristics associated with individual's habitats and lifestyle. Primary effects on health, including changes in mortality, morbidity, and health resources utilization, will be used to measure the postulated pollution damage, while secondary effects such as changes in population structure and social costs, will also be evaluated.

SUPPORTED BY U.S. Dept. of Energy, Office of Environment $347,000

3.0229,
ENERGY PRODUCTION AND HUMAN HEALTH

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Evaluation of the merits of alternative energy technologies for our country's future requires accurate assessments of their probable human health consequences. The present research develops new statistical methodology, mathematical models, and data bases of relevance to the assessment process, and uses these to identify, quantify, and predict adverse health effects of energy related pollutants. Efforts are in four related areas: (1) development of a national data base of demographic, socioeconomic, climatic, and pollution variables to be used in exploring the multivariate relationships associated with variation in human mortality data; (2) studies of a second national data base consisting of 50% samples of all U.S. births for the years 1968 to 1975; preliminary results suggest that birth weight measures may provide an early warning system for the effects of environmental pollution; (3) evaluation and development of statistical procedures for the analysis of death rate and disease incidence data; and (4) development of dose response and demographic models useful in the prediction of the health effects of energy technologies. The ultimate goal of these related lines of inquiry is to provide persons responsible for the assessment of health impacts with a unified body of fact and theory upon which they may base their analyses.

BIBLIOGRAPHIC REFERENCES: Curtiss, J.R.B., and D. Grahn, Population, Environment, and Mortality, J. Env. Pathol. Toxicol., in press 1979. Dixon-Davis, D., J.J. Collins and D. Grahn, Mortality in Counties near Energy Facilities: Use of Economic and Social Variables for Standardization, Environ. Res., in press 1979.

SUPPORTED BY U.S. Dept. of Energy, Office of Environment $175,000

3.0230,
HUMAN HEALTH FROM RADIONUCLIDES IN ENVIRONMENT

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Nuclear energy facilities are potential sources of radionuclides, which are hazardous to human health if inhaled or ingested. A complete assessment of those hazards includes quantitation for each nuclide of the source terms, transport pathways, human metabolism, internal dosimetry, and dose-response relationships. Most existing risk assessments for nuclear facilities are not as accurate or complete as is desirable, because when prepared, specific information was lacking and analytical methods were undeveloped. A variety of data bases, models, and calculation methods have been devised by several groups working independently, and the multiplicity of approaches to risk assessment create public confusion and regulatory difficulties. In the last 5 years new compilations have appeared of biologic data for several important radionuclides, metabolic and dosimetric models, estimates of human radiation dose-response relationships, and data on environmental transport and metabolism of the actinide elements. This project will accomplish four tasks: (1) compile needed data for important, but incompletely treated radionuclides; (2) prepare specifically for use in risk assessments synopses of biologic data, models, and dosimetric calculation methods; (3) assist development of uniform approaches to risk assessment for nuclear facilities; and (4) modernize existing risk assessments for specific aspects of nuclear fuel cycles.

SUPPORTED BY U.S. Dept. of Energy, Office of Environment $108,000

3.0231,
OIL SHALE WORKERS HEALTH STUDY

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This occupational health study of oil shale workers includes: (1) field industrial hygiene surveys and sampling to assess potential environmental hazards in the workplace; (2) medical examinations and assessment of medical data of workers to determine current health status and to establish a data base for prospective epidemiologic studies; and (3) a review and assessment of research literature and reports relative to oil shale processing as well as other fossil fuels. This research provides industrial hygiene data and health information that can be correlated with toxicocological studies and will help to direct such studies into applicable and practical areas of research.

SUPPORTED BY U.S. Dept. of Energy, Office of Environment $275,000

3.0232,
DOSE REASSESSMENT FOR RONGELAP AND UTIRIK

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An in-depth study of all information pertaining to BRAVO test fallout on Rongelap and Utirik will be made. In addition, using advanced analytical and computer techniques, a comprehensive fallout model will be developed. Using this model in conjunction with dietary and life style patterns prevalent at time of exposure, a reassessed dose estimate - internal and external - will be made for the populations of Rongelap and Utirik. These dose estimates will be evaluated in terms of the thyroid nodule incidences in these populations, and the results obtained will provide information towards correlating doses and radiation effects.

SUPPORTED BY U.S. Dept. of Energy, Office of Environment $55,000

3.0233,
HUMAN HEALTH EFFECTS OF PLUTONIUM

G.L. Voelz, University of California, Central Office, U.S. Dept. of Energy Los Alamos Scientific Lab., *P.O. Box 1663, Los Alamos, New Mexico* 87545 (006025 TICNO)

Possible late health effects from plutonium deposition are searched for in plutonium workers in this long-term retrospective/prospective study being conducted at Los Alamos, Rocky Flats, Mound, Savannah River, Hanford, and Oak Ridge. Age-specific mortality rates from all major causes of death, with special emphasis on cancer, will be estimated, and dose-response relationships derived using plutonium deposition estimates. A subset of 8000 workers, including controls, will be actively followed. Questionnaire or interview studies of other risk factors, such as tobacco use and occupational histories, and of morbidity from cancer, cardiovascular, respiratry, and other chronic diseases will be done. Preliminary studies in progress include a clinical study of 26 Manhattan District workers at Los Alamos, a mortality study on 241 highest exposed Los Alamos workers, a study of cancer incidence and mortality in residents of Los Alamos County, and case-control study of cancer in Los Alamos.

BIBLIOGRAPHIC REFERENCES: Voelz, G.L., et al, A Thirty-Two Year Medical Follow-Up of Manhattan Project Plutonium workers, Health Phys. 37: 445-485 (Oct 1979).

SUPPORTED BY U.S. Dept. of Energy, Office of Environment $940,000

3.0234,

MEDICAL STUDIES OF THE PEOPLE OF THE MARSHALL ISLANDS ACCIDENTALLY EXPOSED

H.S. Pratt, U.S. Dept. of Energy, Brookhaven National Lab., *Upton, New York* 11973 (005509 TICNO)

The primary objective is the determination of the lifetime effects of fallout radiation on the Marshallese who were accidentally exposed to radioactive fallout on March 1, 1954. Medical Surveys of these people have been conducted at quarterly intervals, and an unexposed Rongelap population is examined for comparison. The surveys, carried out jointly by Brookhaven National Laboratory under the auspices of the Department of Energy, and the Trust Territory of the Pacific Islands, are of great importance in view of the development in this population of growth impairment in some exposed children, thyroid lesions, and one case of acute leukemia.

SUPPORTED BY U.S. Dept. of Energy, Office of Environment $867,000

3.0235,

DEATH CERTIFICATE RETRIEVAL OFFICE

C.C. Lushbaugh, Oak Ridge Associated Universities Inc., *Box 117, Oak Ridge, Tennessee* 37830 (006138 TICNO)

The Death Certificate Retrieval Office (DCRO) supports Department of Energy sponsored epidemiologic studies by providing vital status follow-up of DOE/DOE-contractor workers. An important function which the DCRO performs is to act as a single point of contact with the Social Security Administration (SSA) which is one of the most complete sources of information concerning vital status in U.S. worker populations. The DCRO also uses a variety of methods such as searches of state death indices to determine vital status and to cross reference these results for validity. After a worker has been identified as deceased, the DCRO conducts a search for a death certificate. When the death certificate is found, the DCRO verifies the certificate as the one sought. It is then reviewed by a nosologist for cause-of-death coding. The coded death certificates are then sent to the user requesting the vital status search. If a worker's status is undetermined, the DCRO attempts to determine the status via methods approved by epidemiologists conducting the study. Results from these searches are then reported to investigators to fullfill their request.

SUPPORTED BY U.S. Dept. of Energy, Office of Environment $184,000

3.0236,

HEALTH AND ENVIRONMENTAL ASSESSMENTS FOR ENERGY TECHNOLOGIES

L.R. Anspaugh, University of California, Central Office, Lawrence Livermore Lab., *P.O. Box 808, Livermore, California* 94550 (005858 TICNO)

The purpose of this task is to assist DOE in preparing comprehensive, quantitative evaluations of the environmental and human-health impacts of energy-producing technologies and of energy and environmental policy applications. The general approach is to consider the residual effluents of a particular technology, model the transport and fate of these effluents, and then calculate the human-health and environmental impacts. This last step is most difficult at the present time because of the lack of adequate response-vs-dose functions; the derivation of these functions will be one of the primary foci of this task. We anticipate that this task will be part of a larger DOE program to accomplish this purpose and that our efforts will focus on producing an annual health and environmental effects assessment for geothermal energy development.

SUPPORTED BY U.S. Dept. of Energy, Office of Environment $340,000

3.0237,

NATIONAL CHLORINATION CONFERENCE

W.W. Pitt, U.S. Dept. of Energy, Oak Ridge National Lab., *P.O. Box X, Oak Ridge Operations Office, Oak Ridge, Tennessee* 37830 (003976 TICNO)

International concern about the effects of chlorination during water treatment requires increased attention from the scientific and engineering community. Evidence has been presented at the first three national conferences on water chlorination that there are certain health and environmental problem areas associated with chlorination practices.Approximatly 300 scientists attended each conference. The proceedings of the third conference will be published in May 1980 and will report a significant fraction of the research conducted nationally and internally in this subject area. Planning is starting for the fourth conference tentatively scheduled for October 1981. The chlorination of cooling waters for electric power generating plants and associated environmental problems in freshwater, estuarine, and marine ecosystems is a subject of continuing concern for the Department of Energy. The U.S. Environmental Protection Agency, the National Cancer Institute, the U.S. Nuclear Regulatory Commission, and the Tennessee Valley Authority also co-sponsored the third conference.

BIBLIOGRAPHIC REFERENCES: Jolley, R.L., Water Chlorination: Environmental Impact and Health Effects, Volume 1, Ann Arbor Science Publishers, Inc., Ann Arbor, MI, 439p., 1978. Jolley, R.L., H. Gorchev and D.H. Hamilton Jr., Water Chlorination: Environmental Impact and Health Effects, Volume 2, Ann Arbor Science Publishers, Ann Arbor, Michigan, 909p., 1978.

SUPPORTED BY U.S. Dept. of Energy, Office of Environment $12,000

3.0238,

POPULATIONS AT RISK TO ENVIRONMENTAL POLLUTION

S. Selvin, University of California, Berkeley Campus, Lawrence Berkeley Lab., *Berkeley, California* 94720 (005680 TICNO)

The Populations at Risk to Environmental Pollution (PAREP) project is conducting epidemiologic investigations into the relationship between diseases (particularly cancer) and environmental pollution using an environmental data base established at Lawrence Berkeley Laboratory. The data base contains, for each county in the United States, information on air quality, human mortality, geographic location, and a number of socio-economic indicators. In 1979--1980, the data base was supplemented with more inclusive air-quality data and with information on age-specific mortality and cancer incidence. The resulting integrated data base will be used for carrying out several specific epidemiologic studies in 1981 and 1982 as well as a study of leukemia based on new data sources.

SUPPORTED BY U.S. Dept. of Energy, Office of Environment $200,000

3.0239,

STATISTICAL STUDIES OF HEALTH EFFECTS

Unknown, U.S. Dept. of Energy, Battelle Pacific Northwest Lab., *P.O. Box 999, Richland, Washington* 99352 (004543 TICNO)

The primary objective of this program is to analyze the mortality of Hanford workers and particularly to assess the effect of radiation exposure in this population. Data collected for this study are the principal source of information regarding the health of workers in the nuclear industry and also provide one of the best available opportunities for assessing directly the health effects of low-level chronic radiation exposure. Methods which are developed for this task should prove useful to others with similar data involving chronic exposure to radiation and other substances. Methods of analysis include comparing death rates of Hanford workers with US vital statistics and relating death rates to the radiation exposure that has been received. The latter analysis is based on the proportional hazards model of Cox and involves comparing the exposures of workers who have died with those at risk of dying with careful control for possible confounding variables. With increased complexity of the analyses, the services of full-time computer analyst have been engaged. This will also accelerate the development of new findings. We, therefore, request an increase in budget over that previously projected for fiscal year 1981.

SUPPORTED BY U.S. Dept. of Energy, Office of Environment $205,000

3.0240,

RADIATION EMERGENCY ASSISTANCE CENTER/TRAINING SITE

K.F. Huebner, Oak Ridge Associated Universities Inc., *Box 117, Oak Ridge, Tennessee* 37830 (006142 TICNO)

This task is concerned with the need to improve the medical care of persons injured by radiation, and to gain a better understanding of late effects of radiation in man. The task is done through: (1) assisting in the medical and radiological management of radiation accidents through consultation or direct involvement using a unique facility equipped for the management of trauma and severe radioactive contamination; (2) maintaining radiation accident registries and collecting medical follow-up information for the DOE medical and epidemiological studies; (3) conducting training courses for medical and paramedical personnel on a nation-wide and international basis to meet the need for properly trained professionals in this area of occupational and emergency medicine; (4) doing radiopathology research focusing on early detection of severe localized radiation injury; and (5) doing cytogenetic studies with emphasis on biological radiation dosimetry and assessment of potential mutagenic or genetic effects of human exposures to ionizing radiation and chemical factors in the environment. This task is an important part of ORAU's mission to study health hazards from energy production processes and to develop solutions and recommendations for these problems.

BIBLIOGRAPHIC REFERENCES: Littlefield, L.G., et al, Sister-Chromatid Exchanges in Human Lymphocytes Exposed to Ionizing Radiation During G/sub o/ , Radiat, Res. 78: 524 (1979). Littlefield, L.G., et al, Sister-Chromatid Exchanges in Human Lymphocytes Exposed During G/sub o/to Four Classes of DNA-Damaging Chemicals, Mutat. Res. 67: 259-269 (1979).

SUPPORTED BY U.S. Dept. of Energy, Office of Environment $1,050,000

3.0241,

OCCUPATIONAL HEALTH AND MEDICAL RESEARCH

Unknown, University of California, Berkeley Campus, Lawrence Berkeley Lab., *Berkeley, California* 94720

This work package includes research directly related to occupational exposure and medical effects of energy generation. A single epidemiological program is examining the effects of high magnetic fields associated with energy generating options such as MHD and Magnetic Fusion. The work continues with collection and analysis of health data on individuals occupationally exposed at accelerator and related machinery. A group of programs has been devised to use laboratory models to explore the effects of energy pollutants on the various organ systems that might be at high risk, either occupationally or environmentally. The agents being used for these studies include the oxidant gases, ozone, nitrogen oxides, and sulfur oxides, as well as heavy metals and organic pollutants. The systems being examined are the endocrine organs, the reproductive organs, the brain, and the lung. Some research is also underway to examine the effectiveness of treatment modalities in the removal of toxic substances. The present approach is the use of new chemical removal agents for plutonium.

SUPPORTED BY U.S. Dept. of Energy, Office of Environment $807,000

3.0242,

HEALTH EFFECTS OF FOSSIL FUEL PROCESSES

B.H. Mayall, University of California, Central Office, Lawrence Livermore Lab., *P.O. Box 808, Livermore, California* 94550 (005819 TICNO)

This project establishes a coordinated program for the early detection of delayed and potentially serious effects on human health of exposure to noxious agents. A battery of tests designed to detect precancerous lesions and genetic damage are applied to samples of blood, urine, and semen. The samples are obtained from workers and other persons at risk based on their significant exposure to noxious pollutants from fossil fuel technologies. The tests currently are in use or are under development, and measure: sister chromatid exchange rate; incidence of erythrocytes with mutant hemoglobin; proteolytic enzyme profiles of serum; mutagenic activity of serum and urine; urinary cytology; and frequency of abnormal sperm in semen. Test results are correlated with epidemiological input concerning donor health and medical, workplace, and exposure history, etc. We propose a longitudinal study of oil refinery workers, grouped into cohorts at high or low risk for exposure to noxious agents. Individuals will be tested annually for sister chromatid exchanges, urinary cytology, sperm morphology, etc. Results will be compared between cohorts and will be correlated prospectively for individual exposure and subsequent health status.

SUPPORTED BY U.S. Dept. of Energy, Office of Environment $140,000

3.0243,

INHALATION HAZARDS TO COAL MINERS (COAL DUST AND DIESEL ENGINE EXHAUST)

M.T. Kariagenes, U.S. Dept. of Energy, Battelle Pacific Northwest Lab., *P.O. Box 999, Richland, Washington* 99352 (106477 TICNO)

The objectives of this project are to study the biological behavior and effects of present and anticipated coal mine air contaminants, with particular emphasis on the mechanisms of development of the chronic respiratory disease, coal workers pneumoconiosis (CWP), and to evaluate the degree of hazard associated with possible extensive use of diesel engines in coal mines as they are currently used in hard-rock (non-gaseous) mines. This research will correlate results from air sampling in working coal mines, together with experience in characterization of complex organic gas-aerosol atmospheres from combustion engine exhausts, with observed biological changes in large and small experimental animal models developed for study of human respiratory diseases.

SUPPORTED BY U.S. Dept. of Energy, Office of Health & Environmental Research $100,000

3.0244,

RADIOACTIVITY STUDIES

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This is a proposal for continuation of studies of the metabolic behavior of heavy alpha-emitting radionuclides in man and in non-human primates; in particular, we will concentrate on metabolic studies of the bone-seeking radionuclides, 241Am, 244Cm, Pb, and 210Po. The objective is to continue current research efforts which have been directed at defining those metabolic parameters associated with potential radiological health problems resulting from radionuclides encountered at various stages of the nuclear fuel cycle.

SUPPORTED BY U.S. Dept. of Energy, Office of Health & Environmental Research $115,000

3.0245,

SIMS FIVE YEAR STUDY ON STATISTICS AND ENVIRONMENTAL FACTORS IN HUMAN HEALTH

D.L. Thomsen, S.I.A.M., *97 Parish Rd. S., New Canaan, Connecticut* 06840 (006520 TICNO)

The research and educational activities of the study will be carried out on a cooperative basis at the Stanford University Department of Statistics and the San Francisco Bay Area Air Quality Management District. The research program of the study will primarily be to evaluate, develop, and test statistical methodologies for examining phenomena associated with air pollution and resulting health effects; in addition, the study includes an educational program for training doctoral students who will participate both at Stanford and, as summer interns, at the Bay Area Air Quality Management District. The results of the study will be both of immediate interest and of long range concern to those in the Bay Area and to many others in the U.S. concerned with air pollution and health effects; these results will be widely disseminated by SIMS through conferences, meetings, and various publications, many of which are already in existence. For the study, SIMS has appointed a Technical Advisory Group, whose membership consists of distinguished scientists with expertise in the various fields represented in the study; this group will advise and comment regarding progress of the study on a continuing basis.

SUPPORTED BY U.S. Dept. of Energy, Office of Health & Environmental Research $75,000

3.0246,

DIESEL: HEALTH RISK ASSESSMENT

F.G. Cuddihy, Lovelace Center for the Health Sciences, *5200 Gibson Blvd. S.E., Albuquerque, New Mexico* 87108 (106316 TICNO)

This task is directed toward providing a series of integrated assessments of the human health risks associated with various scenarios for the utilization of diesel engines in light-duty vehicles. The integrated assessment will have three major contributing assessments. The first is a human exposure assessment to predict human exposures. It will be made using data on emission levels, the physical and chemical characteristics of the emissions (especially particles), their dispersal under various traffic patterns (e.g., metropolitan street canyons, urban freeways, open country roads), diesel production scenarios and demographic statistics. The second is a human dose assessment which will predict tissue levels of particle constituents, especially hydrocarbons, resulting from the exposure levels derived in the exposure assessment. This will be done using the physical and chemical characteristics of emissions, knowledge of particle deposition and clearance in man and laboratory animals, and data on the dissociation of hydrocarbons from particles gained from in vivo and in vitro studies. The third assessment will predict human health effects for various levels of exposure. It will utilize the results of human epidemiologic studies, studies of animals exposed in controlled environments, and short-term assays. The integrated assessment will seek to establish the relationships between source, exposure environment, dose to people, and health effects for the total population. Where possible, comparisons will be made to other transportation technologies that result in potential health risks to man. The assessments will be performed in an iterative manner with a view to providing improved estimates of risks as additional input data become available from the on-going parallel research effort.

SUPPORTED BY U.S. Dept. of Energy, Office of Health & Environmental Research $150,000

3.0247,

EVALUATION OF HEALTH EFFECTS OF AIR POLLUTION IN CHESTNUT RIDGE AREA

J. Gruhl, Massachusetts Inst. of Technology, Energy Lab., *77 Massachusetts Ave., Cambridge, Massachusetts* 02139

This project involves several tasks designed to take advantage of (1) a very extensive air pollution monitoring system that is operating in the Chestnut Ridge region of Western Pennsylvania; and (2) the very well-developed analytic dispersion models that have been previously fine-tuned to this particular area. The major task in this project is to establish, through several distinct epidemiological approaches, health data to be used to test hypotheses about relations of air pollution exposures to morbidity and mortality rates in this region. Another important goal of this project is to collect and test the many available models for associating health effects with air pollution, to determine their predictive validity and their usefulness in the choice and siting of future energy facilities. Some of the preliminary statistics and results of the first to health data collection exercises are presented. The principal emphasis of this report is, however, on the analytic techniques and examples that convey information about the exposure profiles that characterize the air pollution patterns in the area. Significant findings include the fact that the exposure is not easily characterized by one or two parameters, in fact about 50 parameters appear to be needed in order not to lose important information. In addition, exposures are not well correlated from year to year, and are in certain instances negatively correlated from one pollutant to the next. These conclusions introduce a tremendous number of variables that must be considered in the characterization of air pollution exposure.

SUPPORTED BY U.S. Dept. of Energy, Office of Health & Environmental Research, Div. of Human Health Studies funds n.a.

3.0248,

DEVELOP ALTERNATIVE FORMS FOR PRESENTING ENVIRONMENTAL, SAFETY, AND HEALTH IMPACT INFORMATION

Unknown, TERA Inc., *Arlington, Virginia* 22209 (104064 TICNO)

During the first year, the contractor will examine the relationship between worker health and worker environment in six navy shipyards and one private yard. The study population is comprised of approximately 250,000 workers employed since the early 1950's. The actual study will consist of the construction of an automated data base of all relevant information on individual work histories of all workers employed since the early 1950's. Existing Federal and state information systems will be queried to identify separated employees that have died. Death certificates for these persons will be obtained. In the second year, research of vital records, social security, etc., and tracing occupational histories of each worker who died will continue. Each subject will be classified by job class, thereby developing an individual work history profile for each worker. Analysis of data will begin using a variety of life table.

SUPPORTED BY U.S. Dept. of Energy, Office of Technology Impacts funds n.a.

3.0249,

PREVENTION OF ABUSE AND NEGLECT IN INFANTS DISCHARGED FROM NEONATAL INTENSIVE CARE UNITS

J.H. Penticuff, Seton Medical Center, Dept. of Nursing, *1201 W. 38th St., Austin, Texas* 78705 (CMA-179)

The aim of this hospital-based perinatal project is to demonstrate the effectiveness of parent support services and the utilization of risk indicators in reducing child abuse and neglect of infants who have required neonatal intensive care. The incidence of child abuse and neglect in premature and seriously ill newborns is from three to nine times that reported among normal infants.

Risk indicators validated through project activities will allow identification of families at greatest risk for parenting dysfunction. Supportive interventions will be employed to foster parent-infant affectional ties, to reduce emotional and environmental stress, and to promote family coping.

A 12 month follow-up will assess the physical, cognitive, and relationship development as well as incidence of abuse and neglect of infants classified as high and low risk by project risk indicators.

Project co-sponsors are Seton Medical Center and Brackenridge Hospital, located in Austin, Texas. The neonatal intensive care unites of these hospitals serve a combined total of approximately 500 infants per year.

The project setting affords the evaluation of services to the tri-ethnic (Black, Mexican-American, and Anglo-American) population of metropolitan Austin and the surrounding predominantly rural multi-county area.

SUPPORTED BY U.S. Dept. of Health & Human Services, Office of Human Development Services, Admin. for Children Youth & Families funds n.a.

3.0250,

DETERMINING THE INCIDENCE OF CARPAL TUNNEL SYNDROME IN UREMIC PATIENTS ON RENAL DIALYSIS

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OBJECTIVES: Most of the previously reported studies of CTS in uremic patients on dialysis are anecdotal and include numbers of patients. None of the studies, as reported, has met rigid electrodiagnostic criteria for evaluation of CTS. Our experience to date suggests that uremic patients have a higher incidence of carpal tunnel syndrome than previously thought. The purpose of this study is to determine the incidence of CTS in the Seattle VAMC population of uremic patients on renal dialysis, using standardized electrodiagnostic techniques and recording hand and forearm temperature. Patients will be selected from a population of uremic patients who have been on renal dialysis for various lengths of time, the majority for greater than five years.

METHODOLOGY: The majority of patients complaining of symptoms which might correlate with CTS have been on dialysis 5 years plus or minus 4 months. The total VA population of renal dialysis patients is 100, and 38 of these have been on dialysis 5 years plus or minus 4 months. Of the 38, one has transferred to Tennessee, and six have had renal transplants and are eliminated from the study. We will attempt to test all of the remaining 31 patients. Twelve of the 31 have symptoms which might be found in CTS, and 19 are asymptomatic.

Any symptomatic patients who have been on dialysis less than 5 years plus or minus 4 months will also be tested. In addition, a random sample of 10 asymptomatic patients who have been on dialysis for varying times less than five years will be tested.

A DISA will be used for all testing. Rectangular pulses of 0.1 to 0.5 msec will be used with supramaximal stimulus intensity to 99 milliamps. Temperature will be measured at the midflexor wrist crease and thenar eminence using a Rochester Electromedical Thermistor with surface probe after the subject has been in the room for 15 minutes.

Median and ulnar standardized NCV techniques described by Melvin (12, 13) will be used. For median motor conduction studies, the active electrode will be placed over the opponens pollicis, half the distance between the MCP joint of the thumb and the midpoint of the distal wrist crease. The ground electrode will be placed on the dorsum of the hand and the reference electrode on the distal phalanx of the thumb. The cathode will stimulate the median nerve

8 cm from the active electrod (Text Truncated - Exceeds Capacity)

SUPPORTED BY U.S. Dept. of Health & Human Services, Office of Human Development Services, National Inst. of Handicapped Research $7,360

3.0251,

INDIVIDUAL DIFFERENCES IN SURVIVAL AND REPRODUCTION AMONG OLD COLONY MENNONITES

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This study was undertaken to seek evidence of natural selection with respect to human behavioral characteristics. The population chosen consisted of about 13,000 German-speaking Mennonites whose culture resembles in many respects that of pre-industrial European peasants.

A census-survey was made in 1967 and vital records of the church were copied. For 569 families in the file, data include complete vital records and factor scores on several dimensions of social and economic behavior. Lengthy editing processes have now been completed and final analysis is being planned. This will first, specify parameters of survival and reproduction; second, explore interrelations among vital events such as effect of infant mortality on birth intervals, third, examine the effects on fertility of such variables as wealth, medical care, and social status.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Alcohol Drug Abuse & Mental Health Admin., National Inst. of Mental Health funds n.a.

3.0252,

BEHAVIORAL PROBLEMS AND COMPETENCIES OF CLINIC-REFERRED AND NONREFERRED CHILDREN

T.M. Achenbach, U.S. Dept. of Health & Human Services, Public Health Service, Alcohol Drug Abuse & Mental Health Admin., National Inst. of Mental Health, Developmental Psychology Laboratory, *Bethesda, Maryland* 20014 (Z01 MH 00263-04 LDP)

In order to compare the behavioral problems and competencies reported for clinic-referred and nonreferred (normal) children, a survey of 1300 randomly selected parents in the Washington, D.C. area was conducted. Home interviewers administered the Child Behavior Checklist to parents of 50 boys and 50 girls at each age 4 through 16. The results have been compared with parental reports of problems and competencies for clinically referred children matched to the nonreferred children for age, sex, socioeconomic status, and race in order to provide a unique epidemiological baseline for research on child psychopathology and the effectiveness of various treatments.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Alcohol Drug Abuse & Mental Health Admin., National Inst. of Mental Health funds n.a.

3.0253,

EPIDEMIOLOGY OF PSYCHIATRIC NEED AND PRIMARY CARE

D. Mechanic, Rutgers the State University of New Jersey, New Brunswick Campus, Graduate School of Social Work, *Old Queens Bldg., New Brunswick, New Jersey* 08903 (R01 MH 33940-02)

This project examines the effects of psychological disorder and social need on patterns of medical care utilization, physician disposition of patient problems, treatments provided, and processes of referral to psychiatric services. Three samples were surveyed in a population area that was substantially rural but served by a single large multispecialty group practice: a sample of 1026 persons representative of the community population, 114 patients in this population seeking psychiatric care, and 316 Medicaid recipients residing in the same geographic area. Data from patient interviews have been merged with information from medical and pharmaceutical records for the 12-month period following interview. Psychological disorder, social need, sociodemographic characteristics, and group structure variables are used as predictors of patterns of utilization of medical and psychiatric services, disposition and referral by primary care practitioners to specialized psychiatric services, prescription of psychoactive drugs by primary care physicians and psychiatrists, and use of nonprescription drugs. Patterns are examined in relationship to various financial arrangements for services including prepaid group practice and fee for service, and whether the patient receives medical care from the centralized clinic or from its satellites. A major focus of the study is the way in which management of psychological disorder and social need by the mainstream medical care system affects patterns of subsequent utilizattion of medical resources and patient outcomes.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Alcohol Drug Abuse & Mental Health Admin., National Inst. of Mental Health $184,559

3.0254,

EPIDEMIOLOGY OF DEPRESSION AMONG AMERICAN INDIANS

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This project is a proposal to study the epidemiology of the spectrum of depressive reactions in American Indian cultures. Since there is substantial evidence that cultural differences among American Indian tribes significantly effect behavior patterns and depressive reactions, this study is designed to compare the epidemiology of depression in a major southwestern tribe, the Papago, and a tribe of the northern plains, the Oglala Sioux. The research will be sponsored by the Department of Psychiatry at the University of Oregon Health Sciences Center in affiliation with the White Cloud Center for Mental Health Research and Development for American Indians. Selected staff members of the White Cloud Center, who have developed active collaboration with the Indian communities, will become project staff through the affiliation between the White Cloud Center and the UOHSC.

The research proposal involves utilization of the Psychiatric Epidemiology Research Interview (PERI). This instrument will be pretested in the Indian communities with a lexicon development of the individual subscales. After cultural sensitization of the PERI, research application will be made to five index and one community subject group. The five index groups include patients from the medical clinic, mental health clinic, law enforcement probation service, alcohol treatment program, traditional Indian medicine men. Special consideration will be given to prevent an overprediction of psychiatric illness from high subscale scores that reflect psychophysiologic distress to physical illness.

The data analysis will provide a description of the epidemiology of the spectrum of depressive reactions in these American Indian cultures with consideration for depressive responses in physical illness, stress reactions, primary psychiatric illness, antisocial behaviors, substance abuse, and special cultural syndromes.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Alcohol Drug Abuse & Mental Health Admin., National Inst. of Mental Health $125,447

3.0255,

HOMOCYSTINURIA - METHIONINE METABOLISM IN MAMMALS

S.H. Mudd, U.S. Dept. of Health & Human Services, Public Health Service, Alcohol Drug Abuse & Mental Health Admin., National Inst. of Mental Health, Alkaloid Biosynthesis Section, *Bethesda, Maryland* 20014 (Z01 MH 00936-17 LGCB)

A survey of the health status of parents and grandparents of patients with homocystinuria due to cystathionine synthase deficiency has been completed. The aim was to determine whether the mild homocyst(e)inemia present in heterozygotes for this recessively inherited condition are at increased risk for atherosclerotic diseases: heart attacks and strokes. The information upon these relatives was compared to comparable information upon relatives of patients with either impaired phenylalanine metabolism or new mutation achondroplastic dwarfism.

Age-stratified comparison of the incidence of heart attacks and/or strokes failed to reveal significant increases consistently present in relatives of homocystinurics. Life table analyses of cumulative incidence of fatal heart attacks as a function of age likewise revealed no striking differences. No more than 5 percent of heterozygotes will have a coronary attack by age 50. These results indicate that mild homocyst(e)inemia is not an important contributory factor to atherosclerotic disease in the general population and provide no support for current hypotheses which postulate such an association.

BIBLIOGRAPHIC REFERENCES: Mudd, S.H.: Diseases of sulfur metabolism: implications for the methionine-homocysteine cycle, and vitamin responsiveness. Ciba Foundation Symposium 72: Biology of Sulfur, Excerpta Medica, North-Holland, Elsevier, 1980, pp. 239-258.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Alcohol Drug Abuse & Mental Health Admin., National Inst. of Mental Health fundc n.a.

3.0256,

STUDY OF CHILDREN AND GRANDCHILDREN OF PATIENTS WITH DEPRESSIVE ILLNESS

L. Cytryn, U.S. Dept. of Health & Human Services, Public Health Service, Alcohol Drug Abuse & Mental Health Admin., National Inst. of Mental Health, Unit on Childhood Mental Illness, *Bethesda, Maryland* 20014 (Z01 MH 00098-06 BP)

It is the long range purpose of this project to determine the frequency of affective disorders in the children of adults with unipolar and bipolar depressive illness, and to identify biological makers of a genetically transmitted predisposition to affective disorders, and to study the interaction between genetic predisposition and environmental factors in children with affective disorders. Our present project is refined replication of our pilot project reported last year. The major changes involve the inclusion of two control groups as well as a blind interviewer and rater.

BIBLIOGRAPHIC REFERENCES: McKnew, D.H. Jr., Cytryn, L., Efron, A.M., Gershon, E.S., and Bunney, W.E. Jr.: Offspring of patients with affective disorders. Brit. J. Psychiatry 134: 148-152, 1979.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Alcohol Drug Abuse & Mental Health Admin., National Inst. of Mental Health funds n.a.

3.0257,

COLLABORATIVE BIOLOGICAL RESEARCH IN SCHIZOPHRENIA

S.S. Kety, Harvard University, Boston Campus, McLean Hospital, Laboratories for Psychiatric Research, *115 Hill St., Belmont, Massachusetts* 02178 (P01 MH 31154-04)

A multidisciplinary collaborative research effort bringing new knowledge, concepts and techniques from fundamental disciplines to bear on the problem of schizophrenia and other major psychoses. The disciplines represented as major components of the program are neuroanatomy, neuropathology, genetics, neuropharmacology, psychology and clinical investigations. Research in neuroanatomy will continue to examine by anterograde- and retrograde-labelling the position of the monoamine cell groups in the overall organization of the fore- and mid-brain. A novel approach to neuropathology will utilize computer-assisted morphometric techniques for quantitative analysis of dendrite arborizations of neurons. Genetic studies will examine questions of nosology, etiology diversity, genetic and environmental factors utilizing adopted individuals and their relatives, or by the intensive study of families with a high frequency of mental disorder. Pharmacological studies will examine specific behavioral responses of the neuroleptic drugs, their diurnal rhythms, and alterations associated with estrus, pregnancy, development and aging. Psychological studies will examine smooth pursuit and saccadic eye movements, the nature of the cognitive disorder and of information processing in schizophrenic and control populations. Studies with a radioreceptor assay for neuroleptics, therapeutic approaches based on new rationales, and the development of rigorous diagnostic concepts and their epidemiological application will constitute the focus of the clinical research.

BIBLIOGRAPHIC REFERENCES: Kety, S.S., Rosenthal, D. and Wender, P.H.: Genetic relationships within the schizophrenia spectrum; evidence from adoption studies, in Critical Issues in Psychiatric Diagnosis, Spitzer, R.L. and Klein, D.F., (eds.), Raven Press, New York, 1978. Kety, S.S., Rosenthal, D., Wender, P.H., Schulsinger, F., Jacobsen, B.: The biologic and adoptive families of adopted individuals who became schizophrenic: Prevalance of mental illness and other characteristics, in The Nature of Schizophrenia, Wynne, L.C. (ed.), John Wiley and Sons, Inc., 1978.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Alcohol Drug Abuse & Mental Health Admin., National Inst. of Mental Health $525,947

3.0258,
EPIDEMIOLOGY OF RECENTLY BEREAVED WOMEN

G.W. Comstock, Johns Hopkins University, School of Hygiene & Public Health, Dept. of Epidemiology, *615 N. Wolfe St., Baltimore, Maryland* 21205 (R01 MH 31257-03)

This study has two major purposes: (1) to see if there are adverse physical and mental health effects associated with bereavement of sexagenarians; and (2) to identify factors associated with amelioration or aggravation of these health effects.

A prospective epidemiologic study is proposed of women 65 to 70 years of age; a group at high risk of becoming widowed. They will be interviewed before this event takes place and will be followed for two years after the death of the spouse. The major focus will be to study the health effects of this event, both physical and psychiatric and the factors that may mediate between the event and the effects. Data will be gathered from all of the women in this age group who are still married at the time of interview. Questions will concern health, social support systems, functioning, life satisfaction, and depression. As each woman becomes widowed, she will be matched to three non-widowed women, and they will be followed for a two year period. Each one will be interviewed five times (every 6 months) in addition to the baseline interview. Comparison will be made between the widowed and non-widowed and differences among the widow will be examined.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Alcohol Drug Abuse & Mental Health Admin., National Inst. of Mental Health $142,429

3.0259,
EPIDEMIOLOGICAL GENETICS AND FAMILY STUDY

T. Reich, Washington University, School of Medicine, Dept. of Psychiatry, *660 S. Euclid Ave., St. Louis, Missouri* 63110 (P50 MH 31302-03)

The major psychiatric disorders are both common and familial. Affected individuals tend to have immediate relatives who suffer the same type of disorder and many generations of a kindred may contain affected individuals. For some illnesses such as schizophrenia and the major affective disorders, there is evidence that both genes and environment are important. Our Center includes theoretical and clinical approaches to understanding this important phenomenon. New methods are being developed for the measurement of early environmental factors and the way in which genetic and environmental factors interact to produce disorders is also being studied. Projects which improve methods for the assessment of early family environment; a study of the genetics of pre-senile and senile Alzheimer's dementia; and several theoretical projects whose goal is the development of new statistical approaches to gene-environment interactions are included. In addition there is a core of essential personnel who offer guidance to other Center members. New Projects are being developed and will be submitted for approval.

An important Center activity is the participation of many professionals from diverse disciplines in an educational and training program. The result has been an exciting, intellectual environment and the creation of new approaches to an age old problem.

BIBLIOGRAPHIC REFERENCES: Reich, T., Rice, J., Cloninger, C.R., and Lewis, C. The contribution of affected parents to the pool of affected individuals: Path analysis of the segregation distribution for alcoholism. In The Social Consequences of Psychiatric Illness (Eds. L.N. Robins, P.J. Clayton and J. Wing). New York: Brunner/Mazel, in press, 1980. Reich, T., Suarez, B., Rice, J. and Cloninger, C.R. Current directions in genetic epidemiology. In Current Developments in Anthropological Genetics (Eds. J. Mielke and M. Crawford). New York: Plenum Press, in press, 1980.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Alcohol Drug Abuse & Mental Health Admin., National Inst. of Mental Health $299,619

3.0260,
AN EPIDEMIOLOGICAL STUDY OF ATYPICAL SCHIZOPHRENIA

M.T. Tsuang, University of Iowa, School of Medicine, Dept. of Psychiatry, *Jessup Hall, Iowa City, Iowa* 52240 (R01 MH 31673-03)

Our purpose is to gather comprehensive epidemiological data on 310 'atypical schizophrenics' in a long term follow-up and family study. Procedures designed in the Iowa 500 Research Project, a study of the major psychoses now nearing completion at University of Iowa Psychiatric Hospital (IPH), give us highly effective methods for tracing and personally interviewing subjects as well as extensive procedures for data management and analysis.

In the Iowa 500 study, we used specified research criteria to select nuclear groups of 200 schizophrenics, 100 manics, and 225 depressives from patients consecutively admitted to IPH between 1934-1944. In the same population, 310 carried a chart diagnosis of schizophrenia but failed to meet the research criteria, chiefly for short duration of symptoms, episodic course, or mixed schizophrenic and affective symptoms. These 310 atypical schizophrenics and their families, plus a stratified random sample of 176 surgical controls and their families comprise the study sample. The control group provides baseline for comparison and maintains blindness in data collection.

Our aim is to identify homogeneous subgroups within the atypical schizophrenics by analyzing all follow-up and family data. We will compare these subgroups with any homogeneous subgroups we identify within the typical groups of schizophrenia and affective disorder. Using all available information we will identify homogeneous subgroups within the major psychoses. Finally, we hope to use the results of our analysis to refine the research criteria for selecting pure subgroups in future biological and psycho-social studies.

BIBLIOGRAPHIC REFERENCES: Tsuang MT, Woolson RF, Fleming JA (1980): Schizophrenia and cancer death (Letter to the Editor). Lancet 1:8166:480-481. Woolson RF, Tsuang MT, Urban LR (1980): Data management in an epidemiological study: Experiences from the Iowa 500 field follow-up and family study. Methods of Information in Medicine 19:1:37-41.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Alcohol Drug Abuse & Mental Health Admin., National Inst. of Mental Health $255,619

3.0261,
CHROMOSOME ABNORMALITY AND BEHAVIORAL VARIATION

S. Walzer, University of Massachusetts, Medical School at Worcester, School of Medicine, Dept. of Psychiatry, *55 Lake Ave. N., Worcester, Massachusetts* 01605 (R01 MH 31897-04)

The research aims of this study are to relate the new areas of cytogenetics and human behavior genetics to problems in normal human development and psychopathology. We are investigating the nature of the relationship which might exist between the sex chromosome aneuploides in males (i.e., XXY, XYY) and subsequent personality development. Infants with these chromosome lesions and infants serving as controls were located through a chromosome screening of male neonates. These infants and children are being followed in a long-term developmental study with the aim of identifying reactive styles or developmental lags that might be related to the chromosome variations. The data, obtained through semistructured parental interviews (recorded verbatim) and direct observations of the child, are reduced to 16 operationally defined categories of behavior that represent the child's development and functioning in the most relevant aspects of psychosocial adaptation. Preliminary conclusions based on the systematic sampling method are tested independently by formal psychological testing and developmental assessments.

Considerable controversy has surrounded the issue of the possible relationship which might exist between certain sex chromosome variations and personality development. This controversy has resulted from the fact that much of the evidence suggesting such a relationship has been obtained by surveying groups of individuals who demonstrated a particular personality deviation and finding an increased incidence of specific chromosomal aneuploidy among them. The natural history of unselected individuals who carry such variations remains largely unknown. Should long-term longitudinal studies of affected individuals reveal any developmental risk associated with the variation, this knowledge can be directed to helping these individuals overcome developmental lags and realize their full developmental potentials.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Alcohol Drug Abuse & Mental Health Admin., National Inst. of Mental Health $173,916

3.0262,
EPIDEMIOLOGY OF DEPRESSION AND HELP-SEEKING BEHAVIOR

R.R. Frerichs, University of California, Los Angeles Campus, School of Public Health, *405 Hilgard Ave., Los Angeles, California* 90024 (R01 MH 32267-03)

This research consists of an epidemiolgic study of depression and help-seeking behavior among the adult population of Los Angeles County. The major objectives are to provide estimates of the prevalence and incidence of depression, and to identify causal factors and outcomes associated with this condition. The factors examined include: life event stressors, physical health status, health care utilization, medication use, and social support networks.

A sample of 1,000 adults representative of the Los Angeles County population were studied for one year. Four interviews were conducted quarterly, beginning in May, 1979. The interviews were face-to-face for the initial and final waves of data collection, and by telephone for the second and third waves. At the time of the final panel interview (May, 1980) a new control sample of 500 was interviewed to assess the reactiveness of the panel study, and to compare the two interview modes. Due to the large Hispanic community, interviews were conducted in both English and Spanish. The major instrument for classifying depression is the NIMH CES-D scale.

In addition to delineating the causes and consequences of depression, this project studies the role of social support systems on the use of community health services by individuals identified as depressed. The relationship between depression and cigarette smoking, alcohol consumption, and the use of medications were also examined.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Alcohol Drug Abuse & Mental Health Admin., National Inst. of Mental Health $102,462

3.0263,
ADOLESCENTS AND ADULTS AT GENETIC RISK FOR PSYCHOSIS

E.J. Anthony, Washington University, School of Medicine, Dept. of Psychiatry, *660 S. Euclid Ave., St. Louis, Missouri* 63110 (R01 MH 24819-07)

This present proposal represents the third stage of a prospective longitudinal study of children at high genetic risk for psychosis, during which a majority of the Ss will undergo the further developmental shift into young adult life, having passed through the critical phase of adolescence. As with the previous shift from childhood to adolescence, the transition will necessitate the shift in methodology toward a more adult form of testing. However, the central emphasis will still be on two-pronged approach to the subject, focusing on nonclinical aspects to do with life patterns, life experiences, life competences and inner life, as well as the emerging clinical aspects of problematical behavior and psychopathology, and the methods to be used will explore both areas. the five main objectives of this stage will be 1) to continue the systematic assessments of all the Ss (experimental, physical and normal controls) as they pass their respective age-gates; 2) to continue the analysis of cross-sectional differences between the various subject groups while paying special attention to the paths being followed through development; 3) to examine more fully the nature and nurture of vulnerable and resilient Ss (diagnosed as such in the furst research state) in relation to nonclinical and clinical outcomes; 4) to monitor closely the 'natural history' of the breakdown process, comparing initial with subsequent decompensations and earlier antecedents; 5) to examine in much greater detail our unique sample of offspring at high genetic risk for Manic Depression. The overall objective is still to relate the psychological and social development of the offspring to the nature and severity of the parental illness together with the degree of pathology in the nonproband parent.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Alcohol Drug Abuse & Mental Health Admin., National Inst. of Mental Health $265,266

3.0264,
NIMH COLLABORATIVE PSYCHOBIOLOGY DEPRESSION PROGRAM

M.B. Keller, Massachusetts General Hospital, Psychiatry Service, *32 Fruit St., Boston, Massachusetts* 02114 (R12 MH 25478-07)

The overall purpose of the NIMH-CRB Program is to investigate clinical, genetic, biological and psychosocial aspects of the nature and etiology of depression

and the affective disorders. The proposed investigation will employ clinical psychopathological and genetic-familial methods in a sample of over 1,000 patients overall in the collaborative projects.

The grant proposes two major sets of studies--clinical psychopathology and genetic and family studies. The basic hypotheses common to these studies is that the affective disorders are heterogeneous as regards etiology, clinical features and response to treatment. Precisely defined homogeneous nosological classes validated by multiple external correlates will facilitate identification of risk factors for epidemiological studies and verification of hypotheses as to etiology and pathogenesis.

Goals set for this current year of the study include recruitment of subjects into the study, 6 month, 12 month, 18 month and 24 month follow-up evaluations of patients already included, continued coordination of the follow-up phase for the entire study, and preliminary analyses of the 6 month, 12 month and 18 month follow-up data.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Alcohol Drug Abuse & Mental Health Admin., National Inst. of Mental Health $183,754

3.0265,
HOSPITALIZED MENTAL DISORDER IN QUEBEC & ISRAEL

J. Lasry, Jewish General Hospital, *3755 Cote St. Catherine Rd., Montreal, Quebec, Canada* H3T 1E2 (R01 MH 32430-01S1)

This cross national research concerns ethnic and class stratification and rates of first psychiatric hospitalization. Both Israel and Quebec are excellent examples of multicultural societies where ethnic stratification can be well-studied. Several Jewish ethnic groups in Israel are present in sizable populations in Quebec. This research situation allows exploration of several issues: (1) the effect of ethnic disadvantage on rate of schizophrenia, holding social class constant; (2) the relationship of immigration to rate of schizophrenia; (3) the suggested differences in rates of affective psychosis between Ashkenazic and Sephardic Jews.

As well, results reported frequently in the United States will be replicated in these two foreign settings, and other issues will be explored.

Data on first psychiatric hospitalization in the Montreal area in 1976 will be collected by examining the records of all hospitals admitting psychiatric patients. Similar data have already been collected for Israel for 1972. The data are classified in identical fashion and virtually 100% complete in Israel and Quebec. The census of Canada and Israel will be used for denominators.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Alcohol Drug Abuse & Mental Health Admin., National Inst. of Mental Health $600

3.0266,
ANOREXIA NERVOSA - PREVALENCE, DETERMINANTS, TREATMENT

P.E. Garfinkel, Clarke Inst. of Psychiatry, *250 College St., Toronto, Ontario, Canada* Zone 2B (R01 MH 32659-02)

A major problem in identifying cases of anorexia nervosa in the non-clinical population has been the lack of a well-validated, reliable instrument to measure the symptoms of the disorder. We began this area of our investigations by constructing and validating a 40 item test, the Eating Attitudes Test (EAT).

Following construction of the EAT, we administered this test to 5 groups of individuals (N equals 423). These included ballet students (N equals 183), fashion students (N equals 56), and control groups of university students (N equals 81) and music students (N equals 35) as well as patients with anorexia nervosa (N equals 68). This study was conducted in order to determine if sociocultural pressures to be thin, as exemplified by women who by career choice must focus increased attention on body size, would result in an increase in anorexia nervosa. We found anorexia nervosa to be more common in dance and modelling students than in other women of a similar age and social class. The prevalence of 7% in these groups using rigorous diagnostic criteria is higher than in a preliminary report (Garner and Garfinkel, 1978) and supports the hypothesis that individuals who must focus increased attention to a slim body are at risk for anorexia nervosa. It may also be that girls who are attracted to dance in the first place (because of a drive for activity, for example) are those predisposed to anorexia nervosa. Alternatively dance's preoccupation with the body, self-control and perfection may be important factors needed to bring out the disorder, rather than just slimness demands. This is supported by the finding that within the dance sample there was a higher risk for anorexia nervosa in those programmes in which there was greater pressure to succeed as a professional. In these groups, all cases of anorexia nervosa developed after students began to study dance. The high incidence of anorexia nervosa in the more competitive schools documents the merit of future attempts to measure more directy the role of perceived performance expectation in individual students to determine its relationship to the development of the disorder.

There has, to date, been no estimate of the prevalence of anorexia nervosa in North America and the European studies of this are only those of Crisp and Nylander. (Text Truncated - Exceeds Capacity)

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Alcohol Drug Abuse & Mental Health Admin., National Inst. of Mental Health $22,936

3.0267,
SEXUAL ASSAULT OF PROSTITUTES

M.H. Silbert, Delancey Street Foundation Inc., *2563 Divisadero St., San Francisco, California* 94115 (R01 MH 32782-02)

This proposal is designed to document the prevalence, descriptive factors, and impact of sexual assault among prostitutes, and to provide and evaluate intervention services for prostitutes to treat and control sexual assult.

The proposal is designed in two phases. The first phase will document the prevalence and descriptive factors of rape since becoming prostitutes, and the prevalence and descriptive factors of juvenile sexual exploitation prior to becoming prostitutes of 100 adult and 100 juvenile prostitutes; and will determine the needs for intervention services for prostitute victims of sexual assault.

The second phase will implement these intervention services for juvenile and adult prostitute victims of sexual assault, and will evaluate the services provided. During the process evaluation of these services, the impact of rape and juvenile sexual exploitation on prostitutes (30 adult, 30 juvenile) will be explored in depth.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Alcohol Drug Abuse & Mental Health Admin., National Inst. of Mental Health $174,159

3.0268,
THE THREE MILE ISLAND ACCIDENT - PSYCHIATRIC SEQUELAE

E.J. Bromet, University of Pittsburgh, School of Medicine, Dept. of Psychiatry/Epidemiology, *3550 Terrace St., Pittsburgh, Pennsylvania* 15261 (R01 MH 35425-01)

The purpose of this study is to assess the long-term mental health effects of nuclear incident at Three Mile Island (TMI). Unlike previously studied disasters, the incident threatened to destroy an entire region, and the ultimate outcome remains highly ambiguous. In light of the persistent danger and unusal stress caused by the incident, the psychological well-being of the TMI resident is a major public health concern.

The proposed study is an expansion of an existing epidemiological investigation of the mental health of three groups thought to have been particularly affected by the stress of TMI: mothers of preschool children living within 10 miles of the plant; mental health system clients living within 10 miles of the plant; and workers at the nuclear power plant. These groups were interviewed twice, 9 months and 1 year after the event. The proposed study will assess the long-term mental health effects of the incident by reinterviewing these cohorts at the second, third, and fourth anniversaries of the incident. Two comparison groups will be included, similar residents living near another nuclear power facility in Pennsylvania (who participated in the original study), and similar residents living near a non-nuclear electric generating plant. In addition to assessing mental health with standardized instruments, the role of social networks in modifying the impact of stress over time will be investigated. If another catastrophe occurs at TMI during the course of the study, the samples would be reinterviewed as soon as possible.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Alcohol Drug Abuse & Mental Health Admin., National Inst. of Mental Health $449,336

3.0269,
THE MIDTOWN MANHATTAN LONGITUDINAL STUDY:

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This twenty year follow-up investigation of a panel originally age 20-59 focusses on a series of life outcomes that include indicators of physical, mental, and social well-being and their changes over two decades, primarily among age, gender and generation-separated cohorts, controlling primarily for changes in labor force, socioeconomic and marital status. A central emphasis is discernment of resilience-vulnerability to psychopathology under impact of pre-1954 and post-1954 contextual changes.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Alcohol Drug Abuse & Mental Health Admin., National Inst. of Mental Health $122,688

3.0270,
STUDIES OF PERSONS AT RISK FOR DEPRESSIVE DISORDERS

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The objective of the research proposed within is to study subsyndromal depressive individuals who are at increased risk for developing major forms of depressive disorders. Three lines of research, each aimed at assessing different aspects of the risk population, are described separately but will be undertaken concurrently, where subjects are assessed on multiple measures.

Because no economical procedure is currently available to identify subjects at risk for depressive disorders, the first line of research concerns the evaluation of a first-stage case identification inventory (the General Behavior Inventory, GBI). The GBI is a self-report inventory that assesses the core behavioral characteristics of subsyndromal disorders. To proceed with its evaluation, major validation and calibration studies of the GBI are presented. These studies involve the administration of the GBI to full syndromal depressives in remission, outpatient subsyndromal cases, and outpatient personality disorder controls (RDC diagnosed). Moreover, high and low GBI scorers from the 'normal' population will be interviewed 'blind' for 'caseness' and family history, and rated on the GBI by the interviewer.

The second line of research examines a hormonal variable that may serve as a peripheral index of central predisposition to full syndromal depressive disorder. Plasma free cortisol values are assessed repeatedly (catheterization procedure) in subsyndromal and normal subjects during a 3-hour protocol. The protocol evaluates the integrity of the central inhibitory modulation of ACTH-cortisol release during rest, math-distracting noise-time pressure stress, and recovery of cortisol values.

The third line of research is aimed at exploring the defining characteristics of subsyndromal disorders and at developing an index of severity of behavioral dysfunction. The studies evaluate behavioral variation in subsyndromal and normal subjects by having all subjects rate their behavior and personal events daily for 28 consecutive days. Analyses focus on the nature of behavioral variation and its relation to stress-initiation and cortisol dysfunction.

These three lines of research will provide the empirical foundation for a prospective study of subsyndromal individuals to be initiated in the near future.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Alcohol Drug Abuse & Mental Health Admin., National Inst. of Mental Health $41,629

3.0271,
MEASURES OF UNTREATED PSYCHIATRIC DISORDER

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This research focuses on the central unsolved problem of psychiatric epidemiology, the probem of how to measure psychiatric disorders independently of treatment status in the general population. Its major aim is to test the sensitivity and specificity of the newly developed Psychiatric Epidemiology Research Interview (PERI) as a first-stage instrument to screen functional psychiatric disorders among adults in a demographically complex urban population.

To this end, we will investigate PERI's relationship to other potential screening instruments on a sample of 600 adults from the general population and calibrate PERI on a sample of 500 psychiatric patients with DSM-III diagnoses of schizophrenia and the schizophreniform psychoses, affective disorders, various types of disorder under the heading of neurosis, antisocial personality, and other selected personality disorders.

The research setting is Washington Heights, a section of Manhattan in New York City that surrounds Columbia Presbyterian Medical Center. It is a demographically complex urban area containing large percentages of blacks and Puerto Ricans as well as members of more advantaged ethnic groups.

The results should provide a major step toward the development and testing of a two-stage procedure for case identification and classification. The findings should also be important for needs assessment and for the planning and evaluation of mental health services in Washington Heights.

BIBLIOGRAPHIC REFERENCES: Bruce P. Dohrenwend, Barbara Snell Dohrenwend, Madelyn Schwartz Gould, Bruce Link, Richard Neugebauer, and Robin Wunsch-Hitzig, Mental Illness in the United States: Epidemiologic Estimates, New York: Praeger, 1980. Barbara Snell Dohrenwend and Bruce P. Dohrenwend, What is a Stressful Life Event?, in H. Selye (Editor), Guide to Stress Research, New York: Van Nostrand Reinhold Company, 1980, pp. 1-20.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Alcohol Drug Abuse & Mental Health Admin., National Inst. of Mental Health $126,121

3.0272,
CHILDREN AND FAMILIES VULNERABLE TO MENTAL DISORDERS

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The major overall objective of this program is to study families with children believed to have varying degrees of risk for later mental disorder as well as for intermediate outcomes (assessed in terms of degrees of competence versus psychiatric dysfunction). Risk for dysfunction in these children is based upon the diagnosis of a serious mental disorder that has required hospitalization in at least one parent; alternative risk indices based upon deviant family communication patterns also are being studied and can be compared with parental diagnosis as a risk variable. The vulnerability of the children was assessed during the initial evaluations with psychophysiologic measures, psychological tests, and clinical studies, both current and historical.

During the past year, 34 families participated (or are now involved in) our 3-year followup. This brings the total followup to 94 families as of 9/1/79. Five additional families who had move out of town were located and have agreed to participate in any feasible manner. Thus far 88 percent of the 113 families contacted have agreed to participate in the followup.

During the coming year, analysis of data from the initial evaluation and the completion of followup data collection will occupy major attention in this program. Analysis and interpretation of data across substudies are now of special interest. For example, study of the relationship between diagnostic data about the parents will be compared with family interaction measures as predictors of school performance, child psychophysiologic indices, and psychological test measures of the children.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Alcohol Drug Abuse & Mental Health Admin., National Inst. of Mental Health $267,284

3.0273,
MENTAL ILLNESS IN ENGLAND

R. Neugebauer, Columbia University, Graduate School of Arts & Sciences, Dept. of History, *Broadway & W. 116th St., New York, New York* 10027 (R03 MH 35850-01)

The proposed investigation has a set of substantive and methodological goals. Substantively, it is a study of the incidence of certified cases of psychiatric disorder in 16th and 17th century England. The records of legal incompetency hearings constitute the major documentary basis of this project. These records, representing referrals to the Court of Wards and Liveries, (1540-1660), the only national institution in pre-industrial England concerned with the protection of the mentally ill, permit an analysis of fluctuations in the size, social class, sex, age, geographic and diagnostic composition of cases of possible and of certified psychiatric disorder over a hundred-year period. The contributions of institutional, political and socioeconomic factors to these fluctuations will be examined. Suggestive estimates of rates of psychiatric disorder among English landowners in specific counties will also be attempted. In addition, the reports of insanity hearings will provide some information regarding the theories held by the examining commissioners and the jury regarding the etiology of psychiatric disorder, while information on the persons making referrals will provide insight into social and familial responses to deviant behavior.

Methodologically, the study aims to assess the value of a biostatistical technique of estimating the size of an original historical population based on extant incomplete lists of population members. The technique, while widely used in work on animal censuses and in some epidemiological investigations, is almost unknown in historical epidemiology and medical and social history.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Alcohol Drug Abuse & Mental Health Admin., National Inst. of Mental Health $16,069

3.0274,
THE EPIDEMIOLOGY AND DYNAMICS OF ADOLESCENT LONELINESS

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This is a study of the epidemiology and etiology of adolescent loneliness in a national sample of youth. The descriptive objectives include: (1) examining the multidimensionality of loneliness as experienced by American youth so as to establish the multidimensionality of loneliness as experienced by American youth so as to establish the nature and meaning of this experience; (2) establishing the incidence of particular forms or dimensions of loneliness, both for the general adolescent population and for specific age, sex, class, and ethnic subpopulations; (3) describing patterns for change in the degree and form of loneliness across time for different age, class, race, and sex groups; and (4) describing the form and frequency of certain responses to loneliness.

The explanatory objectives involve a test of a general theorectical model specifying precipitation and predisposing factors in the emergence of loneliness. Basically, loneliness is viewed as the result of (1) weak or attenuated internal bonds; (2) weak or attenuated external bonds (deficits in social relationships); and (3) precipitating factors associated with developmental changes experienced during adolescence.

The data include three national surveys with a youth panel (N equals 17349) completed in 1977, 1978, and 1979. Planned analyses include a number of multivariate taxonomic methods, comparative factor analyses, multiple regression, and age-cohort analyses employing t-tests and ANOVA techniques.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Alcohol Drug Abuse & Mental Health Admin., National Inst. of Mental Health $86,827

3.0275,
AGGRESSION AND PSYCHOPATHOLOGY - A 20 YEAR FOLLOW-UP

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This is the third phase of a longitudinal study of the psychosocial development of aggressive behavior. Subjects first seen in 1960 included the entire third grade population (N equals 875) of a semi-rural county in New York State. They were seen in the classroom for a series of group tests and questionnaires. Personal interviews were conducted with 85% of their mothers and 71% of their fathers to determine learning conditions in the home which would relate to aggression of children in school as rated by peers. In 1970 interviews were held with 427 of the original subjects; peer ratings were repeated and, along with other measures, self-ratings of aggressive behavior and the MMPI were administered. Arrest records and state hospital admissions statistics were also employed. Among the best predictors to aggression after 10 years were violence of preferred television programs at age eight, social mobility orientation of parents, and evidence of the internalization of society's standard of behavior. Findings have been reported extensively. A third phase is now planned in which it is expected that 300 of the original subjects will be reinterviewed as well as their spouses and any children they might have between ages six and ten. Arrest data and state hospital data will again be sought. Measures of psychopathology as well as interpersonal skills, vocational, intellectual and social competence and television habits will be related to past and current aggression and early socialization data. Longitudinal data from the three different phases will be analyzed to test causal hypotheses. Intergenerational effects will be of interest.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Alcohol Drug Abuse & Mental Health Admin., National Inst. of Mental Health $106,727

3.0276,
PATTERNS OF DIFFERENTIAL RESPONSIVENESS TO STRESS

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While most stress researchers would agree that stress-provoking life crises and chronic stressful life situations both can lead to feelings of psychological distress, we know that even the most sophisticated scales of stressful events or situations explain only small percentages of observed variance in subjective mental health in community samples. For some time now it has been known that this predictive power could be increased substantially by taking into consideration individual differences in responsiveness to stress; that is, by recognizing that some people are much more vulnerable than others the emotional damage that can result from a stressful experience. However, we do not yet understand the underlying dynamics of these individual differences.

The proposed work seeks to investigate patterns of differential responsiveness to stress empirically, as a way of increasing our understanding of these dynamics. This is to be done by studying a variety of existing epidemiological data sets across a consistent set of sociodemographic contrasts. Detailed study of differential responsiveness patterns across these contrasts and across a number of different stress domains will be followed by hypothesis testing aimed at differentiating contending interpretations of the patterns observed.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Alcohol Drug Abuse & Mental Health Admin., National Inst. of Mental Health $42,652

3.0277,
STRESS, ILLNESS, AND COPING IN A RURAL CONNECTICUT TOWN

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Our primary objective is to ascertain the levels, prevalence and disposition of psychiatric disorder and emotional distress in a small, rural community, and examine their relationship to three variables which have been implicated in the epidemiological literature as being linked to psychiatric disorder: social stress, social support and personality. We are assessing present and past levels of disorder in our study sample through the use of the NIMH Diagnostic Interview Schedule (DIS). Social stress is being measured through: (1) the assessment of the stress of social role performance, and (2) the tabulation of recent life change events. Social support is being measured by a social network assessment instrument, the Pattison Psychsocial Kinship Inventory. Personality is being assessed by two objective tests: (1) the Personality Research Form and (2) the Jackson Personality Inventory. Information about disposition of and coping with disorder will be derived from open-ended case history interviews and interviews with key informants.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Alcohol Drug Abuse & Mental Health Admin., National Inst. of Mental Health $26,555

3.0278,
GENDER DIFFERENCES IN SICK-ROLE BEHAVIOR

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The purpose of this study is to examine social stress and sex-role socialization as related to gender differ-

ences in sick-role behavior. As a point of departure we propose to synthesize two approaches prominently used to explain gender differences. One approach emphasizes differential stress associated with male and female roles in explaining gender differnces in rates of illness; the other emphasizes traditional differences associated with the socialization of men and women as the basis for explaining gender differences in reporting illness and in seeking health care. Analyses will be based on interview data collected in three large household surveys conducted between 1967 and 1971. The last was a national survey and all were probability samples. All three surveys included questions about stress and emotional distress, as well as use of medically prescribed medications, alcohol, and other modes of coping with distress. The work is expected to enhance our understanding of sick-role behavior and provide a firm basis for analyzing and interpreting data currently being collected in a second national survey.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Alcohol Drug Abuse & Mental Health Admin., National Inst. of Mental Health $13,686

3.0279,

TIME SERIES ANALYSIS OF TREATED BEHAVIORAL DISORDER

C.D. Dooley, University of California, Irvine Campus, Public Policy Research Org., Dept. of Social Ecology, *Irvine, California* 92664 (R01 MH 34578-01)

A time series approach will be taken to treated mental disorder with the only comprehensive case register in the United States, the Monroe County Register of New York State. The epidemiology of psychiatric admissions will be studied in a way which clarifies the contributions of trends, seasonal cycles, and community variables such as economic and demographic change. Monthly admission counts will be generated for the 11 years from 1962 through 1972 for first and later admissions, public and private providers, in and outpatient treatment, and age, sex, and social status groups. In addition, suicide, economic, and other community monthly time series will be obtained. Time series analyses (including Box-Jenkins and other methods) will be used to address several questions regarding the relative contributions of predictors to admissions, the relationship of admissions and suicides, the relationship of different admissions series (e.g., public vs. private), the relationship of economic variables to admissions between demographic groups, and the relative importance of community predictors with and without detrending and deseasonalizing.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Alcohol Drug Abuse & Mental Health Admin., National Inst. of Mental Health $114,694

3.0280,

FAMILY STUDY OF AGORAPHOBIA AND PANIC DISORDER

R. Noyes, University of Iowa, School of Medicine, Dept. of Psychiatry, *Jessup Hall, Iowa City, Iowa* 52240 (R03 MH 34645-01)

The proposed research will compare the prevalence of various psychiatric disorders among the relatives of patients with agoraphobia and with panic disorder. For purposes of this comparison all available first-degree relatives of a group of approximately 20 agoraphobic and 20 panic disorder patients that have been matched for age and sex will be personally interviewed by a research assistant according to a structured format. DSM-III diagnoses will then be established by two psychiatrists through independent and blind review of data from interviews. Where relatives are unavailable for interviews, information from remaining relatives will be pooled for diagnostic purposes. Because the size of the sample for this project is limited the results will be preliminary in nature. They should, however, further the comparison of psychiatric illness patterns among agoraphobic and panic disorder relatives and lead, eventually, to a determination of whether these are separate illnesses or a single disorder.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Alcohol Drug Abuse & Mental Health Admin., National Inst. of Mental Health $4,350

3.0281,

CHILDREN AT RISK FOR AFFECTIVE DISORDERS

W. Beardslee, Harvard University, Boston Campus, Massachusetts General Hospital, *32 Fruit St., Boston, Massachusetts* 02114 (R01 MH 34780-01)

OBJECTIVES: 1) to determine the correlations of different types and severity of depressive illness in parents and the characteristics of their children at different stages of development; 2) to identify psychosocial and genetic factors which either exacerbate or mitigate the deleterious effects of growing up with a psychiatrically ill parent; 3) to identify psychiatric symptoms and syndromes and adaptational difficulties in children which may be early indicators that a child may go on to develop an affective disorder; 4) to identify neuropsychological abnormalities in children which may be precursors of later psychiatric disorder; 5) to assess the frequency of affective disorder, other psychiatric disorders, and adjustment difficulties and to carefully describe such clinical manifestations in a group of children whose parents have been carefully assessed and found to be suffering from affective disorders; 6) to assess the impact of life events on the coping skills of children at high risk for affective disorders; 7) to identify a cohort of children that will be particularly suitable for longitudinal follow-up; 8) to design, on the basis of our initial findings, models of intervention that can subsequently be tested.

Additional information gained through the proposed study will be: 1) a clinical analysis of the types of problems experienced and demonstrated by children at different stages of development and in different life circumstances; 2) the relationship of certain types of affective illness in the parents to possible specific syndromes in the children; 3) the relative strength of genetic versus environmental factors in the production of later illness.

Finally, the data gathered by the proposed study can be used as a basis for a long term follow-up study documenting the possible precursors, onset and course of affective disorders as well as shedding new light on the developmental origins of later personality structure.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Alcohol Drug Abuse & Mental Health Admin., National Inst. of Mental Health $58,933

3.0282,

EPIDEMIOLOGICAL SCALES - WELL-BEING VS. DEPRESSION

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To date, scant attention has been paid to the possible overlap between sociological efforts to measure the quality of life or well-being of the public and epidemiological efforts to measure public mental health. Sociological measures of the quality of life were developed in response to problems perceived with the fixed-answer scale developed to measure depression, anxiety, or other psychological disturbances. The initial questions devised to measure life satisfaction resulted in responses heavily concentrated on the most favorable answers, but cumulative research by sociologists has resulted in scales that succeed in eliciting a wider range of answers. Despite criticism even within the field of mental health, the use of brief psychological scales has continued because of the tremendous economies in time, money and research effort. The constant development of new scales of this sort has been attended by much discussion about what they really measure. The analysis we propose would address the similarities and differences of two scales currently in widespread use, one developed to measure depression in the general population and the other to measure overall well-being and satisfaction with various domains of life. The data to be used for this analysis come from two telephone surveys: one of 700 women who experienced a particularly stressful health crisis ad the second, a sample of comparable women from the general population. The proposed research will analyze the correlation of two scales for both populations for individual items and across various demographic sub-groups. Validity of the scales will be tested by investigating their consistency with other measures of depression, recovery and normal life functioning among study respondents. In addition, possible effects on scale responses from telephone interviewing will be investigated.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Alcohol Drug Abuse & Mental Health Admin., National Inst. of Mental Health $66,409

3.0283,

THE EPIDEMIOLOGY AND DYNAMICS OF ADOLESCENT LONELINESS

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This is a study of the epidemiology and etiology of adolescent loneliness in a national sample of youth. The descriptive objectives include: (1) examining the multidimensionality of loneliness as experienced by American youth so as to establish the nature and meaning of this experience; (2) establishing the incidence of particular forms or dimensions of loneliness, both for the general adolescent population and for specific age, sex, class, and ethnic subpopulations; (3) describing patterns of change in the degree and form of loneliness across time for different age, class, race, and sex groups; and (4) describing the form and frequency of various responses to loneliness, i.e., coping strategies.

The explanatory objectives involve a test of a general theoretical model specifying precipitating and predisposing factors in the emergence of loneliness. Basically, loneliness is viewed as the result of (1) weak or attenuated internal bonds; (2) weak or attenuated external bonds (deficits in social relationships); and (3) precipitating factors associated with developmental changes experienced during adolescence.

The data include three national surveys with a youth panel (N equals 1734) completed in 1977, 1978, and 1979. Planned analyses include a number of multivariate taxonomic methods, comparative factor analyses, multiple regression, and age-cohort analyses employing t-tests and ANOVA techniques.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Alcohol Drug Abuse & Mental Health Admin., National Inst. of Mental Health $9,929

3.0284,

EPIDEMIOLOGY OF SCHIZOPHRENIA IN CROATIANS

E.F. Torrey, U.S. Dept. of Health & Human Services, Public Health Service, Alcohol Drug Abuse & Mental Health Admin., National Inst. of Mental Health, Noyes Division, *2700 Martin Luther King Ave., c/o St. Elizabeths Hospital, Washington, District of Columbia* 20032 (R03 MH 34159-01)

A unique data base exists which may shed light on the relative importance of genetic versus environmental causes of schizophrenia. Studies over the last decade have proven that the northwestern corner of Croatia has a high schizophrenia and manic depressive psychosis prevalence rate. Immigrants from this part of Croatia settled in northern Minnesota.

Using Minnesota State Hospital records, it is proposed to ascertain the schizophrenia and manic depressive prevalence rates for both first and second generation Croatian immigrants. This will be compared with the rates for other immigrant groups in Minnesota and with native-born Americans. Since the town of origin of the immigrants is available through insurance records, the immigrants from the high prevalence Croatian area can be compared with those from the rest of Croatia. Furthermore a case register exists in Zagreb for all of Croatia, enabling contemporary comparisons to be made between immigrants and those who remained behind in specific areas of Croatia. The possible importance of age of immigration can also be examined.

The research should yield important data for analyzing various etiological theories of schizophrenia.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Alcohol Drug Abuse & Mental Health Admin., National Inst. of Mental Health $9,415

3.0285,

FAMILY SUPPORTS AMONG HEALTH-THREATENED WORKERS

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When a family member is threatened by the possibility of a serious illness, emotional effects extend deeply into family life. Other primary group members and family relationships may also be severely threatened. Supportive relationships among family members may not be forthcoming at this time of personal and family stress--the very time when they are needed most. This study has two main purposes: to learn more about the effects of health threats on family life; and to determine the effectiveness of

family support in reducing morbidity among a population exposed to a serious disease agent.

Study subjects will be selected from a group of shipyard and longshore workers exposed to asbestos, which causes severe pulmonary disorders and is a known carcinogen. A sample of 1075 workers who were screened in 1978 for asbestos-related disease will be questioned about the effects of this health threat on family life. Data will be obtained in the following areas: family supportiveness and family competency; predispositions toward the handling of crisis; family and personal responses to the knowledge of exposure to a potentially life-threatening illness. Additional data on control variables will be collected, including: refinement of measures of asbestos exposure; exposure to other job related noxious substances; personal health habits; overall health status. X-ray readings will be used as measures of morbidity.

History of supportiveness among family members and psychological predispositions of the workers toward crisis are expected to relate to the responses families make to the asbestos health threat. Supportiveness of family is also expected to be a significant factor in reducing morbidity among the exposed workers.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Alcohol Drug Abuse & Mental Health Admin., National Inst. of Mental Health $127,323

3.0286,

APPLICATIONS OF PHARMACOKINETICS IN CLINICAL PSYCHIATRY

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Stated briefly, our objectives are as follows: a) to investigate changes in drug metabolism associated with the aging process by delineating the relative importance and interrelationships of selected pathways (e.g., dealkylation, hydroxylation, glucuronidation) in older persons taking specific (model) benzodiazepines selected to illuminate each pathway. Younger adults will be studied for comparative purposes; b) to determine blood levels for benzodiazepines in patients receiving emergency room care for benzodiazepine overdosage; to assess the relationship between blood levels and morbidity; and to evaluate the usefulness of these levels for clinical care and treatment planning; c) to continue our studies of drug interactions; d) to investigate the development of tolerance (physiological) to benzodiazepines by studying changing threshholds to amobarbital-induced bilateral gaze nystagmus in subjects taking benzodiazepines for varying amounts of time; e) to continue to improve the practicing clinician's understanding of rational therapeutic approaches by extending our educational efforts in clinical psychopharmacology.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Alcohol Drug Abuse & Mental Health Admin., National Inst. of Mental Health $251,801

3.0287,

MIGRATION, SOCIAL SUPPORT, AND MENTAL ILLNESS

W.H. Kuo, Utah Higher Education System, University of Utah, School of Social & Behavioral Sciences, Dept. of Sociology, *1400 E. 2nd S., Salt Lake City, Utah* 84112 (R01 MH 33492-01A1)

A survey of Asian-Americans in Seattle, Washington, is planned in which their social stresses caused by the life changes following migration, assimilation, and discrimination will be studied with special attention to the mediating roles played by social suport networks in reducing these migrants' mental health problems. Personal interviews will be conducted with Chinese, Japanese, Filipinos, and Koreans in order to find out what elements of migration are most damanging to their mental health, the prevalence rates of their psychological distress, the nature and the fashion to which social networks are utilized in combating their day-to-day adjustment problem to the U.S. society. Multivariate analysis techniques will be used to analyze the relationship between migration and mental illness.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Alcohol Drug Abuse & Mental Health Admin., National Inst. of Mental Health $123,405

3.0288,

SURVEY OF CLIENTS SERVED IN COMMUNITY MENTAL HEALTH CENTERS - SECOND YEAR IMPLEMENTATION

Unknown, Abt Associates Inc., *55 Wheeler St., Cambridge, Massachusetts* 02138

The Community Mental Health Center (CMHC) program of the National Institute of Mental Health (NIMH) (created in 1963 by PL 88-164) has sponsored the development of some 650 CMHCs in the United States. Centers funded under PL 94-63 are required to provide 12 essential services (including inpatient, outpatient, partial care, emergency, and consultation and education services) to a defined catchment area. The extent to which CMHCs meet their mandated NIMH objectives is an appropriate area for evaluation for individual CMHCs and for the Federal program. Part of the evaluation process involves the use of Inventory of Comprehensive Community Mental Health Centers (ADM 25-3) which is a statistical document required of federally funded CMHCs and submitted annually to the Division of Biometry and Epidemiology (DBE). It gathers data on the CMHCs and their clients, including facility information on organizational components, staffing, funding, expenditures, staff hours devoted to consultation and education activities and aggregate client data by race, sex, age and diagnosis. However, the need exists for a 'comprehensive information base for program description' including a client-based survey. The objective of this contract is to refine the design of the survey of clients in CMHCs and to implement the survey in 32 additional CMHCs. Specific Requirements: Task I - Develop a management plan to implement the survey methods and procedures previously developed. 1. Data items to be collected on admissions, terminations, and on services delivered. 2. Definitions of CMHC, CMHC unit, CMHC patient, CMHC admission, CMHC termination, episode, and other related terms. Task II - Induct the study sample. Task III - Operation and management of the survey.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Alcohol Drug Abuse & Mental Health Admin., National Inst. of Mental Health $372,994

3.0289,

PROFILE - BLACK MALES AT RISK TO LOW LIFE EXPECTANCY

R.E. Dennis, Meharry Medical College, School of Medicine, Dept. of Psychiatry, *1005 18th Ave. N., Nashville, Tennessee* 37208 (R01 MH 26702-05)

The aim of this project is to create a psychological and social profile of three groups of young (ages 18 to 35) black men believed to be at risk to low life expectancy: a sample of 200 men drawn from a random sample of the general household population in majority black urban areas of Nashville, Tennessee and a sample of 150 felons convicted of homicide and interviewed while incarcerated. A social survey questionnaire and battery of selected psychological tests will be administered and the results assessed in light of mortality and morbidity trends for young men of this ethnic group. Those trends suggest that life expectancy already now, has in the most recent decade been on the decline, largely due to increases in violent deaths--accidents, homicides, and suicides. A panel of policy makers is to assist in the formulation of intervention strategies based on research findings, and aimed at increasing the life expectancy and quality of life for young black men.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Alcohol Drug Abuse & Mental Health Admin., National Inst. of Mental Health $110,400

3.0290,

PHYSICAL VIOLENCE IN AMERICAN FAMILIES

M.A. Straus, University System of New Hampshire, University of New Hampshire, School of Liberal Arts, Dept. of Sociology & Anthropology, *Durham, New Hampshire* 03824 (R01 MH 27557-05)

Continued analysis of data on a nationally representative sample of 2,143 families is proposed. Work to date has provided the most accurate (and in some cases the only) incidence rate statistics on physical violence between family members, including, child-abuse, wife-beating, husband-baating, violence by children toward each other, and violence by children towards parents. Further analysis is needed because the work to date has been largely descriptive analyses of incidence data and analysis of two-variable relationships, and because a number of important issues are still to be investigated. Eleven needed analyses are described. Examples of the questions which these are designed to answer are: (1) What is the relationship between the balance of power between husband and wife and the use of physical violence? How is this affected by such factors as the social class of the couple, and the degree to which the wife is economically independent of the husband? (2) What accounts for group differences in rates of family violence? Among the group differences to be studied (because work to date shows important differences) are the region of the country, socioeconomic status, and race. (3) Is involvement in a primary group community of friends and kin associated with a lower level of family violence, and why? (4) We have found a strong relationship between growing up in a violent family and being violent to one's spouse and children. What about those who do not follow this pattern? Do they have family patterns which will suggest ways to break the generation to generation cycle of violence? The importance of finding answers to questions such as these stems from the extremely high violence rates demonstrated by this project. This adversely affects the quality of family life and is part of the explanation to the high level of violence in the society. There is clearly a need for continued research which can suggest policies to reduce family violence.

BIBLIOGRAPHIC REFERENCES: Straus, Murray A. Measuring intrafamily conflict and violence: The Conflict Tactics (CT) scales. Journal of Marriage and the Family 41:75-88. 1979. Straus, Murray A. Social stress and marital violence in a national sample of American families. Symposium on Forensic Psychology and Psychiatry, New York Academy of Sciences Annuals of the New York Academy of Sciences. 1980. In press.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Alcohol Drug Abuse & Mental Health Admin., National Inst. of Mental Health $105,364

3.0291,

LONG-TERM EPIDEMIOLOGICAL STUDY OF BEHAVIOR DISORDERS

H.R. Huessy, University of Vermont & State Agricultural College, School of Medicine, Dept. of Psychiatry, *85 S. Prospect St., Burlington, Vermont* 05401 (R01 MH 27881-05)

426 second-graders have been followed to age 22 to see how behaviors associated with minimal brain dysfunction in early school years relate to later academic and social performance. Interviews at age 22 have been completed and data analysis has begun.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Alcohol Drug Abuse & Mental Health Admin., National Inst. of Mental Health $99,265

3.0292,

EPIDEMIOLOGIC STUDY OF BEHAVIOR PROBLEMS IN CHILDREN

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Three objectives define this total population study of behavior problems in preschool children. The first objective is to determine the prevalence of behavior problems in 3-year-old children; the second, to examine the stability and change of behavior problems from the preschool age to school age; and the third, to investigate the origins of behavior problems, in children under the age of 3 years. The sample is drawn from a register of families with preschool children in permanent residence on Martha's Vineyard Island, Massachusetts.

A prevalence study, conducted in 1978-79, selected 14% of the total population of 3-year-olds to have a behavior problem. Initial emphasis was placed on the validity of the methods used to identify children with behavior problems. Currently, a variety of home environment and temperamental characteristics of the children are being correlated with behavior problems. A follow-up of these same children is scheduled for 1981-83, as they complete first grade. At the same time a longitudinal study beginning in infancy is beginning to investigate the roles of family stress and infant temperament in the origins of behavior problems.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Alcohol Drug Abuse & Mental Health Admin., National Inst. of Mental Health $91,389

3.0293,

GENETIC STUDIES OF DEPRESSIVE DISORDERS

M.M. Weissman, Yale University, School of Medicine, Dept. of Psychiatry, *333 Cedar St., New Haven, Connecticut* 06510 (R01 MH 28274-05)

Based on a collaborative proposal between the Yale University Departments of Psychiatry and Human Genetics, and the National Institute of Mental Health, Adult Psychiatry Branch, Psychogenetics Unit, in May, 1976 we were awarded a five-year grant (to be completed July 31, 1981) to conduct a family-genetic study using epidemiologic techniques.

All interviewing of probands and relatives has been completed and in the fifth year of this proposal, we expect to: (1) complete diagnosing all first and second degree relatives on the basis of all available information, i.e., including information obtained from the interviews and medical records, and information gathered by family history. (These are the best estimate of diagnosis necessary for genetic analyses.); (2) complete setting up SAS files that will contain all the data which have been collected; (3) prepare summary files which include data collected both at Yale and NIMH; (4) conduct studies to evaluate the reliability of the Family History Method, and the Best Estimate Diagnosis; (5) conduct test-retest reliability studies of the K-SADS-E, the diagnostic interview for children of probands under the age of 18; (6) continue the biological and linkage studies; (7) complete programming for genetic analyses according to several new models recently developed; (8) continue theoretical and evaluative studies on variety of genetic models; (9) start clinical, epidemiological, and genetic analysis.

We are applying for a three-year competitive renewal which will include the complex data analyses for this project and the write-up of our findings.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Alcohol Drug Abuse & Mental Health Admin., National Inst. of Mental Health $190,418

3.0294,

ASSESSING SITUATIONAL FACTORS IN VIOLENT BEHAVIOR

H.J. Steadman, State Dept. of Mental Hygiene, Special Projects Research Unit, *44 Holland Ave., Albany, New York* 12208 (R01 MH 28850-04)

The main objectives of this research are to: (1) develop, via self-reports, the relative rates of violence among former mental patients, ex-offenders, and the general population; (2) identify the situational factors surrounding such violence; (3) examine differences in the effect of situational and other variables on violence among ex-patients, ex-offenders and the general population; and (4) assess the utility of an impression management theoretical framework in understanding which situational factors may impact upon violence and aggression. Ultimately, this research will contribute to both the substantive knowledge of violence and aggression and the more appropriate use of predictions of violence in a variety of mental health and criminal justice settings.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Alcohol Drug Abuse & Mental Health Admin., National Inst. of Mental Health $102,819

3.0295,

A STUDY OF AFFECTIVE DISORDERS AMONG OLD ORDER AMISH

J.A. Egeland, University of Miami, School of Medicine, Dept. of Psychiatry, *1400 N.W. 10th Ave., Box 520875, Coral Gables, Florida* 33152 (R01 MH 28287-04)

The objective of this research is to study selected etiologic questions about the bipolar and unipolar forms of affective disorder. The Old Order Amish population serves as an ideal type of human laboratory to determine homogeneous sub-samples of types of affective disorder and for establishing heritability. The Project is studying data from multigenerational pedigrees with large sibships of confirmed bipolar and unipolar probands. Clinical work will seek linkage with a variety of marker traits (biochemical and hematological parameters) and these data will be subjected to linkage analysis. Also, pedigree analysis will be done to test hypotheses regarding the mode of genetic inheritance. Another objective of the research is to consider selected behavioral and environmental factors in the pathogenesis of affective disorders. Affectively disturbed individuals and their unaffected relatives will be compared according to demographic, behavioral and symptomatic data. These putative factors will be examined to question why the illness is manifest in given individuals who may share a common genetic predisposition with other well relations. A sub-study will deal with all known suicides in terms of the absence or presence of: a) a diagnosis of affective disorder; b) a positive family history among first and second degree relatives; and c) the impact of selected cultural and psychogenic factors. The long-term goal of these various objectives is to clarify questions about the causation (etiology) and classification (diagnosis) of affective disorder.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Alcohol Drug Abuse & Mental Health Admin., National Inst. of Mental Health $195,364

3.0296,

STRESS AND PERSONALITY INTERACTIONS IN HEALTH/ILLNESS

S.R. Maddi, University of Chicago, Graduate School, Dept. of Behavioral Sciences, *5801 S. Ellis Ave., Chicago, Illinois* 60637 (R01 MH 28839-04)

This renewal application is for an extension of the original study. In the original study, hypotheses were confirmed that hardiness (comprised of the personality variables of commitment, challenge, and control) interacts with stressful life-events such that it decreases their tendency to produce subsequent illness. The design was prospective and hence the causal inference is justified.

The present extention study expands the data base by continuing testing of subjects from the original study and adding subjects who are female, from other minority groups, and non-executive (contrasting with original sample). Both questionnaire and interview procedures will be used. The general aim of the questionnaires is to obtain from over 1500 subjects information concerning the personality variables of hardiness, coping techniques of transformational and regressive sorts, social support systems (social participation, social centrality, status consistency), stressful life events, illness and demographics. From existing medical records, information will be obtained regarding constitutional predisposition to and physical indices of illness. All data will be monitored over two testing sessions, separated by one year. Analyses will test hypotheses concerning the interaction of various of these resistance resources in dampening the debilitating effects of stress. These data will also be analyzed to determine age patterning. The interview study will attempt to determine the antecedents (in early experiences) and the consequences (in coping techniques) of the hardiness components.

This extension study is the next step needed in reaching the goal of developing educational and psychotherapeutic procedures whereby persons can be aided to increase in hardiness and thereby have an alternative to avoiding stressful life events in the attempt to remain healthy.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Alcohol Drug Abuse & Mental Health Admin., National Inst. of Mental Health $54,573

3.0297,

SEX DIFFERENCES IN MORBIDITY AND HEALTH ACTIONS

L.M. Verbrugge, University of Michigan, Ann Arbor Campus, Inst. for Social Research, Dept. of Biostatistics, *P.O. Box 1248, Ann Arbor, Michigan* 48109 (R01 MH 29478-04)

Health surveys consistently find that women have higher rates of illness, disability days, health services use, and medicine use than men. The principal goals of this research are to provide thorough explanatory analyses of sex differences in health and to define models for testing sex differences in both physical and mental health. Three general hypotheses about male-female differences in health are tested: (1) illness behavior (different propensities to perceive symptoms, evaluate them, and take curative actions), (2) acquired risks of illness and injury due to social roles, life styles, and stress, and (3) reporting behavior. As part of this research, we will examine some methodological features of health indicators and also analyze the daily dynamics of health events (asking how mood and special events trigger symptoms and health actions). The data source is the Health In Detroit Study, conducted in 1978 under a research grant (MH 29478) from the Center for Epidemiologic Studies. The study was designed specifically to explain sex differences in health. A probability sample of white adults in the Detroit metropolitan area was chosen. After an initial interview (n equals 714), respondents kept a Daily Health Record for six weeks. Each day they reported symptoms, restricted activity, medical/dental visits, medicines and treatments, communications with peers about symptoms, mood, and special events of the day. At the end of the diary period, a Termination Interview was conducted. The proposed grant will support comprehensive analysis of the Health In Detroit data. The research has theoretical and methodological significance for identifying (1) reasons for longstanding differences in the health of men and women, as reported in health surveys, (2) features of prospective reports, self-reports, comprehensive health indicators, and daily measures of health, and (3) factors which precipitate symptoms and which channel people into health services use and self-treatment.

BIBLIOGRAPHIC REFERENCES: Verbrugge, L.M. Female illness rates and illness behavior: testing hypotheses about 1979 sex differences in health. Women and Health, 4(1), Spring, 61-79. Verbrugge, L.M. Health diaries. Medical Care, forthcoming. 1979.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Alcohol Drug Abuse & Mental Health Admin., National Inst. of Mental Health $159,705

3.0298,

NATIONAL TRENDS IN PSYCHOTHERAPEUTIC DRUG USE

G.D. Mellinger, Inst. for Research in Social Behavior, *456 22nd St., Broadway Grand Plaza, Oakland, California* 94612 (R01 MH 29819-04S1)

The objectives of the studies described in this proposal are (1) to replicate and extend the 1979-71 national study of psychotherapeutic drug use in order to assess trends in drug acquisition and use, emotional distress, situational stress, cultural values bearing on medical care, attitudes toward psychotherapeutic drug use, and alternative ways of coping with distress: (1) to evaluate the methods used in the earlier study to classify persons according to levels and types of psychic distress, and to refine these methods for use both in the 1979 national study proposed and for general use in surveys of mental health; and (3) to provide accurate numerical bases for assessing implications of existing and future data on serious adverse reactions associated with particular psychotherapeutic drugs, and to collect data on occurrence of less serious adverse reactions that are not reported to physicians.

These objectives will be accomplished through two studies: (1) a methodological and pilot study using samples of (a) medical and psychiatric outpatients (N equals 200) and (b) the general population (N equals 287), who will be evaluated psychiatrically by clinicians and also interviewed at home by survey interviewers. Classification of psychic distress, especially anxiety and depression, based upon responses to a symptom checklist in the survey situation will be compared with clinical evaluations; (2) a national survey of the adult U.S. population aged 18 to 79 (N equals 3000). In this survey, data will be obtained on psychic and somatic distress; life crisis and other stressful life circumstances; use of psychotherapeutic drugs, alcohol, illicit drugs; other ways of coping with distress; attitudes about drug use, the medical system, and mental illness; beliefs about appropriate ways of dealing with psychic distress; and ocurrence of adverse drug reactions. Special attention will be given to these issues as they apply to older persons (69-79).

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Alcohol Drug Abuse & Mental Health Admin., National Inst. of Mental Health $65,397

3.0299,

DETERMINANTS OF OUTCOME OF SEVERE MENTAL DISORDER

N. Sartorius, World Health Org., Division of Mental Health, *1221 Ave. Appia, Geneva 27, Switzerland* (R12 MH 29969-04)

This proposal describes a comparative prospective incidence study of broadly defined schizophrenic illness in 11 catchment areas in nine countries. The individuals identified in the process of case-finding will be assessed in a standardized manner, with the aim to document in detail their history, mental state, diagnostic classification, and social functioning. A two year follow-up of all patients will be undertaken to obtain data about course and outcome of the disease. Concurrently with this, hypotheses about the relationship between life stress, interaction in the family, and the relapse rate will be tested, and social and ethnographic information about the catchment areas collected in order to identify ecological correlates of incidence, relapse rates, and rates of disabil-

ity associated with schizophrenia. Characteristics of treatment of the patients in different centers will be described in a standardized manner. Anciliary evidence which might increase the explanatory power of the theoretical model underlying the study design, will also be collected from other sources of information. This will include use of disease registers in some of the centers to establish associations between schizophrenia and certain physical diseases, such as cancer.

The study aims to provide new knowledge about schizophrenia and other mental disorders; to develop further methods for cross-cultural and epidemiological studies in the field of mental health; to maintain and strengthen a network of centers collaborating in such studies; and to provide knowledge necessary for better management of mental disorders.

BIBLIOGRAPHIC REFERENCES: Sartorius, N., Jablensky, A. and Shapiro, R. (1978) Cross-cultural differences in the short-term prognosis of schizophrenic psychoses. Schizophrenia Bulletin, 4, 102.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Alcohol Drug Abuse & Mental Health Admin., National Inst. of Mental Health $250,000

3.0300,
STRESSFUL LIFE EVENTS, SOCIAL SUPPORT, AND ILLNESS

A. Dean, Union University, Albany Medical College, School of Medicine, Dept. of Psychiatry, *47 New Scotland Ave., Albany, New York* 12208 (R01 MH 30301-04)

The aim of this study is to examine, in a longitudinal design, the causal patterns among stressors, social support and illness (physical and psychiatric disturbances). The study is designed to collect data in two waves from the same respondents in a representative sample of the normal population in the Tri-City area (Albany-Schenectady-Troy, New York). The first wave was collected in the Spring of 1979. The present investigation provides for a one-year follow-up (Spring 1980).

Specifically we are examining, causally, the potential intervening effect of social support on the relationship between stressors and illness. Two major research questions under examination are the extent to which stressors present in time 1 will affect illness in time 2.

Further, the history of illness, sociodemographic variables, and measure of internal control will be taken into account in an examination of these relationships. This elaboration would allow an investigation into the contributions of stressors and social support to illness relative to other causal (instrumental) variables.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Alcohol Drug Abuse & Mental Health Admin., National Inst. of Mental Health $211,589

3.0301,
GENETICS OF SCHIZOPHRENIA

M. Baron, New York State Psychiatric Inst., Dept. of Medical Genetics, *722 W. 168th St., New York, New York* 10032 (R01 MH 30608-02)

Genetic analysis is a promising avenue in psychiatric research. Defining a psychogenetic substrate would greatly enhance validating criteria for illness classification and would contribute to morbid risk prediction. Recent advances in quantitative genetics, diagnostic and biologic concepts of mental illness permit, for the first time, a critical test of genetic hypotheses of schizophrenia. A spectrum of schizophrenia-related states will be defined by matching the morbidity risk for mental disorders among first-degree relatives of schizophrenics with comparable data on normal controls. Illness subforms within the heterogeneous schizophrenia spectrum will be determined by current diagnostic and prognostic concepts. Family data on platelet monoamine oxidase activity, claimed to identify vulnerability to some schizophrenic subsets, will also be gathered. Recently formulated multiple-threshold models of inheritance will be applied to the data, assuming that liability thresholds can be defined by clinical and/or biological subtypes. Modes of inheritance, illness susceptibility and subsumption of disease-forms under a single genetic diathesis will thus be examined. The proposed strategy has not as yet come under investigative scrutiny in schizophrenia research.

BIBLIOGRAPHIC REFERENCES: Baron, M. and Levitt, M., Platelet monoamine oxidase activity: Relation to genetic load of schizophrenia. Psychiatry Res. 3:69-74, 1980. Baron, M., Perlman, R., Levitt, M. Paranoid schizophrenia and platelet MAO activity. Amer. J. Psychiatry, 137:1465-1466, 1980.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Alcohol Drug Abuse & Mental Health Admin., National Inst. of Mental Health $120,571

3.0302,
MENTAL HEALTH RESEARCH CENTER SCHIZOPHRENIA STUDY

R.P. Liberman, University of California, Los Angeles Campus, Neuropsychiatric Inst., *760 Westwood Plaza, Los Angeles, California* 90024 (P50 MH 30911-04)

The Clinical Research Center consists of a 'core' research project that aims to provide a longitudinal, prospective, long-term, follow-through study of the course of schizophrenia from the time of initial illness episode. Repeated measures are taken of sociodemographic, economic, social network, familial, social competence, attentional, and electrodermal variables which are evaluated for their utility in (1) predicting relapse, exacerbation or remission; (2) revealing abnormalities during periods of time when a patient is in remission vs. in relapse; and (3) generating information on factors which contribute to relapse or successful adjustment in the community. Connected to this core study are five separate projects in three program areas — Family Studies, Clinical Psychopharmacology, and Social Rehabilitation. Studies of treatment research include clinical trials of family therapy and life skills training. Studies of clinical psychopharmacology include tests of dose-response relations in neuroleptic therapy. Studies of families include a concurrent and predictive validity study on communication style and expressed emotion, and a study of family factors in the course of schizophrenia among Mexican-Americans.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Alcohol Drug Abuse & Mental Health Admin., National Inst. of Mental Health $359,100

3.0303,
CLINICAL RESEARCH CENTER STUDY OF AFFECTIVE DISORDERS

D.J. Kupfer, University of Pittsburgh, School of Medicine, Dept. of Psychiatry, *3550 Terrace St., Pittsburgh, Pennsylvania* 15261 (P50 MH 30915-04)

Depression is the most common disabling psychiatric illness and the source of enormous human suffering. Depressive symptoms can be identified in over half of all patients seen in psychiatric practice and it is well known that only a small proportion of individuals suffering milder forms of depression ever seek medical attention. That depression feature almost inevitable in the wake of adverse life situations is accepted as part of the human condition. Depressive symptoms, however, also occur in association with chronic illnesses, or as sequelae of both acute and chronic illnesses and injuries, and are often observed in individuals who abuse alcohol, other central nervous system depressants, or narcotics. The Department of Psychiatry (WPIC) of the University of Pittsburgh Medicaa School in collaboration with the Departments of Psychology, Biological Sciences, and Pharmacology has established a MHCRC to investigate the etiology, epidemiology, and treatment of affective disorders. The MHCRC is providing the essential structure and fiscal core support in developing an integrated, multidisciplinary program of investigation, research training, and clinical service. The award of an MHCRC has substantially strengthened our clinical teaching and research programs; a number of scientific disciplines which were not represented are now included; the core support systems (clinical core, biostatistical core, administrative core, technical core, informed consent core, educational core, grants support core and core laboratories) essential for facilitating the integration of participating scientists and programs have been established and the productivity of the faculty has been visibly enhanced. Our clinical research program is organized around the following major themes: psychobiologic investigations; psychosocial factors (assessment and treatment); relationship between developmental stages and affective disorders; epidemiological aspects; and technological improvement of assessment and diagnosis. The basic research activities of the MHCRC is discussed around the four themes of cell-to-cell communication; neural plasticity; stress; and preclinical aspects of depression. In addition a series of new investigations will be developed under the aegis of the MHCRC.

BIBLIOGRAPHIC REFERENCES: Kupfer, D.J., Spiker, D.G., Coble, P.A., McPartland, R.J.: Amitriptyline and EEG sleep in depressed patients I: drug effect. Sleep 1:149-159, 1979. Kupfer, D.J., Coble, P.A., Kane, J., Petti, T., Conners, C.K.: Imipramine and EEG sleep in children with depressive symptoms. Psychopharmacology 60:117-123, 1979.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Alcohol Drug Abuse & Mental Health Admin., National Inst. of Mental Health $580,105

3.0304,
NIMH-WHO STUDY ON THE DETERMINANTS OF MENTAL DISORDERS

A.J. Marsella, Queens Medical Center, Mental Health Services, *1301 Punchbowl St., Honolulu, Hawaii* 96808 (R12 MH 31016-02S1)

The purpose of the present project is to investigate the relationship of various psychosocial variables to the etiology, incidence, disability profile, course, and outcome of schizophrenia. The psychosocial variables under study include macrosocial variables (e.g., social structure, migration rates, health service utilization), microsocial variables (e.g., family structure and communication, social networks, family perceptions of the patient), and individual difference variables (e.g., demographic variables, life stresses, psychiatric treatment history, developmental history). The project is part of the World Health Organization's international collaborative study on the psychosocial determinants of schizophrenia and is being conducted simultaneously in England, Denmark, Czechoslovakia, India, Colombia, Nigeria, Japan, and the United States (Honolulu, Rochester). A major phase of the project involves a two year epidemiological study of first episode schizophrenic disorders in the various research sites using standardized research instruments and procedures.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Alcohol Drug Abuse & Mental Health Admin., National Inst. of Mental Health $36,720

3.0305,
NATURE AND EXTENT OF MODERATE DRINKING IN EX-ALCOHOLICS

J.E. Helzer, Washington University, School of Medicine, Dept. of Psychiatry, *660 S. Euclid Ave., St. Louis, Missouri* 63110 (R01 AA 03852-03)

We propose to carry out an epidemiological study of treated alcoholics to estimate the number who, five to ten years after treatment, have been social drinkers for at least three years. A consecutive series of 1,000 ex-patients who were released from hospital inpatient or outpatient treatment at least five years previously and who received a diagnosis of primary or secondary alcoholism at that time will be ascertained. We will review the subsequent inpatient and outpatient records of these patients, dividing the population into two groups: those with no records of having received additional psychiatric or medical treatment for alcoholsim or its complications within these facilities in the past three years, and those who do have such a record. We will locate and personally interview a random sample of the latter group and all of the former group. For those who on self-report meet our criteria for social drinking for all of the past three years, we will also interview a close family member and survey all subsequent treatment records to confirm their report. For those in whom the self-report of social drinking is confirmed, we will locate an interview and age- and sex-matched control living in the same city block as the subject, to enable us to compare drinking patterns of ex-alcoholics with those of persons who have never had a drinking problem.

We intend to describe the nature of the drinking of ex-alcoholics, correlates of social drinking, the environment in which social drinking can persist, and the methods that ex-alcoholics use to maintain their ability to drink socially.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Alcohol Drug Abuse & Mental Health Admin., National Inst. on Alcohol Abuse & Alcoholism $153,861

3.0306,
EPIDEMIOLOGY OF SEVERE ALCOHOLISM IN ROCKLAND COUNTY

C.E. Siegel, Rockland Research Inst., Evaluation Methodology Unit, *Orangeburg, New York* 10962 (R01 AA 03772-02)

The purpose of this study is to continue the investigation of the factors which relate to the development and treatment of severe alcoholism (as defined by necessity for inpatient hospital admission) in a subur-

ban county, so as to develop recommendations aimed at improving the effectiveness and efficiency of public services. Using available data from an ongoing computerized psychiatric information system an examination of treatment patterns, both inpatient and outpatient will be carried out to 1) describe the service rendered, 2) to relate service patterns in conjunction with clinical and sociodemographic variables to effectiveness measures, 3) to assess the direct cost burden contrasting different treatment modalities to maintain a patient in community, and 4) to compare service and costs between two different treatment facilities, a state mental hospital and a community mental health center.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Alcohol Drug Abuse & Mental Health Admin., National Inst. on Alcohol Abuse & Alcoholism $53,666

3.0307,

ROLE AND ROLE CONFLICT IN WOMEN'S DRINKING PRACTICES

H.L. Metzner, University of Michigan, Ann Arbor Campus, School of Public Health, Dept. of Epidemiology, *Ann Arbor, Michigan* 48104 (R01 AA 03593-01S1)

The objectives of this study are to ascertain the drinking practices of woman in selected contrasting occupation groups and to determine how these practices relate to their work and family roles and the presence of role conflict. Five hypotheses will be tested predicting that more women will drink, drink more, and will be heavy drinkers: (a) who are in traditionally male occupations compared to those in traditionally female occupations; (b) who are exposed to socially approved job-related drinking; (c) who experience conflict among their work, family and other roles; (d) who have little social support in handling their problems; and (e) who feel inadequate in one or more of their roles. Women will be studied who are in the high risk situations described by the above hypotheses but who appear resistant to the risk of heavy drinking in order to find out those characteristics related to their lesser vulnerability. Alcohol use as a method of coping with stress and tension will be explored in relation to other preferred coping methods and these correlates determined.

A total of 1500 women will be studied, 300 in each of five occupation groups: professional or technical women in a traditionally male occupation; a similar category of workers in a traditionally female occupation; operatives or service workers in a traditionally male occupation; a similar category of workers in a traditionally female occupation; and married housewives not employed outside the home. The employed women will be selected from lists and the housewives by a dwelling unit probability sample. The data will be collected by a personal interview conducted by trained interviewers in the respondent's homes.

Multivariate analysis will be employed taking into account the known and anticipated complexity of the relationhips between drinking practices and psychosocial variables.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Alcohol Drug Abuse & Mental Health Admin., National Inst. on Alcohol Abuse & Alcoholism $15,387

3.0308,

NEUROBIOLOGY, GENETICS, EPIDEMIOLOGY AND ALCOHOLISM

S.B. Guze, Washington University, School of Medicine, Dept. of Psychiatry, *660 S. Euclid Ave., St. Louis, Missouri* 63110 (P50 AA 03539-02S1)

This is an application for an Alcoholism Research Center to carry out studies on the neurobiologic, genetic, and epidemiologic bases of alcoholism. The application comprises a core program and seven separate research projects. The Center will provide facilities and opportunities for research training related to alcoholism in a wide variety of disciplines; and residents in a number of medical specialties.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Alcohol Drug Abuse & Mental Health Admin., National Inst. on Alcohol Abuse & Alcoholism $164,285

3.0309,

SOCIAL EPIDEMIOLOGY OF ALCOHOL PROBLEMS

W. Winkelstein, University of California, Berkeley Campus, School of Public Health, Dept. of Social & Administrative Health Sciences, *Berkeley, California* 94720 (P50 AA 03524-03S1)

Four separate research projects are a part of the research center grant: 1. A study of community responses to alcohol problems involves description and analysis of all agencies dealing with alcohol problems in a study community. Formal treatment agencies are included, as are organizations such as AA, but also included are police, clergy and others who encounter alcohol problems. Community surveys of general populations will be included if possible. 2. An Historical Study of Alcohol Control policies in the U.S. is being undertaken using a combination of historical research methods and analysis of various official records. The intent is a description of the actors and interests who have played significant roles in the development of U.S. policies regulating alcohol use in the years since the turn of the century. 3. The Study of the Structure and Political Economy of the Alcoholic Beverage Industry makes use of published and unpublished data on production and distribution of alcoholic beverages plus materials from trade publications, various secondary sources, etc., to describe the interplay of production, consumption and regulation in the years since the repeal of Prohibition. 4. A study of Alcohol Use and Casualties is concerned with the relationships between alcohol use and such things as accidents, crime, and other casualties. Both aggregate level and individual level data (as from surveys) will be used to describe empirically the relationships among the rates of consumption and problems.

Projects 2-4 are part of an international study coordinated by WHO European Office which coordinates research on these same topics in Canada, Finland, Ireland, Japan, Netherlands, Poland, Switzerland and in the U.S.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Alcohol Drug Abuse & Mental Health Admin., National Inst. on Alcohol Abuse & Alcoholism $478,736

3.0310,

CENTER FOR THE STUDY OF ALCOHOLISM

R.U. Massey, University of Connecticut, Health Center, School of Medicine, Dept. of Psychiatry, *Farmington Ave., Farmington, Connecticut* 06032 (P50 AA 03510-03)

In a series of related and interrelated studies, we propose to examine genetic, behavioral, biochemical and psychopathological aspects of alcoholism. In a follow-up study of factor analytically derived typologies of male and female alcoholics, we propose to develop a multidimensional prediction model of treatment outcome empirically derived from an extensive data base of behavioral, sociological, psychopathological, demographic and pedigree assessments obtained from large sample of alcoholic patients. In some individuals, this will include a systematic assessment of tolerance. Patient outcome will be assessed periodically utilizing a broad range of outcome criteria and using a life insurance table approach to the assessment of 'risk' and 'treatment impact'. Separate prospective studies of antidepressant and lithium treatment will be carried out in a similarly designed format.

In addition to pedigree assessments, we propose to carry out a comparative prospective longitudinal study of young adult children of alcoholic and nonalcoholic individuals.

Finally, studies on the importance of stimulus control of drinking behavior in alcoholics and normal subjects will focus on respondent and operant conditioning in alcoholics. These studies will also be carried out in a clinically relevant context.

Findings from the proposed work should contribute to improved alcoholism treatment and prevention strategies and to greater understanding of the multivariate nature of the disorder.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Alcohol Drug Abuse & Mental Health Admin., National Inst. on Alcohol Abuse & Alcoholism $778,651

3.0311,

THE ETIOLOGY OF ALCOHOLISM

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This prospective, multiple cohort, longitudinal study of the etiology of alcoholism has as its objective the elucidation of those antecedent factors in the individual which confer an increased risk of developing alcohol problems. Since we believe it likely that addiction to alcohol, and to other drugs, results from an intermingling of constitutional and environmental influences, our assessment of individuals employs measures from a variety of disciplines (e.g. sociology, psychology, physiology, biochemistry) to characterize our subject population. Now in its third year, the study completed intake of the first wave of 475 adolescents in February 1980, equally divided as to sex and as to birth cohorts of 1961, 1964 and 1967, and has more than half completed the second wave of participants of birth years 1962, 1965, and 1968. In about April of 1982, Wave 1 will be retested, as will other Waves at 3-year intervals to age 24, and thereafter at 6-years intervals. The data base consists of about 5,000 items per subject and is now in the preliminary stages of statistical and other analysis; because initial intakes are of different ages, we shall also be able to provide cross sectional analyses of the data. We expect that our results in the near future will be useful in strategies of prevention and in the guidance of public policy relating to alcohol and drug use.

BIBLIOGRAPHIC REFERENCES: Friedman, H.J., Carpenter, J.A., Lester, D. and Randall, C.L. Effect of (alpha)-methyl-p-tyrosine on dose-dependent mouse strain differences in locomotor activity after ethanol. J. Stud. Alc. 41: 1-7, 1980. Lester, D., Pandina, R.J., White, H.R. and Labouvie, E.W. The Rutgers health and human development project: longitudinal study of alcohol and drug use. In: Longitudinal Studies in the United States. Eds.: Mednick, S. and Harway, M. In press, 1980.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Alcohol Drug Abuse & Mental Health Admin., National Inst. on Alcohol Abuse & Alcoholism $796,406

3.0312,

PATHOLOGIC & TOXIC EFFECTS OF ALCOHOL

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Our interdisciplinary team will conduct studies in patients as well as in our experimental models of alcoholic injury in rats and baboons in which liver lesions seen in the alcoholic (including cirrhosis) were reproduced. We plan to assess biochemical differences between alcoholics and nonalcoholics and to apply these findings to the validation of a blood test for alcoholism. Alterations of alcohol metabolism and the role of protein retention, acetaldehyde toxicity and immunological reactions in the development of alcoholic liver diseases will be determined. The nature of the abnormality in collagen metabolism will be evaluated. We plan to study the pathogenesis of alcoholic fatty liver and to develop a blood test which might enable us, in a population of heavy drinkers, to detect those whose alcoholic intake has resulted in significant liver damage beyond the fatty liver stage. We will also try to define a precirrhotic lesion which might allow us to predict which alcoholics might develop cirrhosis, thereby enhancing our effectiveness in the prevention of this complication. Other attempts at prophylaxis will include the definition of nutritional and preexisting medical conditions that favor the development of cirrhosis and portal hypertension when associated with heavy drinking. Pathogenesis of alcohol induced muscle, intestinal and pancreatic lesions will be assessed, including the carcinogenic role of alcohol. Involvement of microtubular alterations in chromosomal abnormalities and their link to the fetal alcohol syndrome will be determined. Androgen and estrogen abnormalities associated with alcoholism will be evaluated through measurements of hormone levels and clearance rates in the blood enzyme activities in the liver. Our baboon model will be made available as a resource to other interested investigators. The ultimate goal is the application of the newly acquired knowledge to the successful prevention and treatment of alcohol related diseases.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Alcohol Drug Abuse & Mental Health Admin., National Inst. on Alcohol Abuse & Alcoholism $643,511

3.0313,

GENETIC AND EXPERIMENTIAL ANTECEDENTS OF ALCOHOLISM

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The study has two objectives: (1) Investigate the relative influence of genetic and experiential factors in the development of drinking patterns, psychopathology, and personality traits, by comparing adolescents of alcoholic parentage with controls of nonalcoholic parentage in a 15-year follow-up of an extensively studied obstetrical cohort. (2) Use this information as a data base for subsequent follow-up of the cohort into adulthood to identify high-risk factors antedating the onset of drinking problems and other psychopathology.

The sample consists of 300 male individuals (age 15-17) who were in a group of 9,182 children studied perinatally and during the first year of life by physicians at the University of Copenhagen, Denmark. Two-hundred subjects had a parent treated for alcoholism. The other 100 subjects are controls matched for age, sex, and socioeconomic class of the parent. Phase 1 (this grant) involves studying the children just as they are entering the age of risk for the development of drinking problems. The examination includes interviews with the parents; a psychiatric and psychosocial interview of the children; neuropsychological and psychological tests; a neurological examination; psychophysiological and neurophysiological recordings; and biochemical studies. Phase 2 of the study involves periodic reexamination of the subjects over a period of 10-15 years to identify factors that predict drinking problems and other psychopathology in later life.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Alcohol Drug Abuse & Mental Health Admin., National Inst. on Alcohol Abuse & Alcoholism $126,282

3.0314,

A PROSPECTIVE STUDY ON FETAL ALCOHOL SYNDROME

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The proposed project is a six year, prospective study on the fetal alcohol syndrome. The overall goals of the study are to determine the incidence of fetal abnormalities secondary to excessive alcohol consumption, and to examine the efficacy of intensive alcoholism treatment in reducing the frequency of fetal anomaly. Four phases are proposed. The first is a Discovery and Screening Phase (2 years) using the Michigan Alcoholism Screening Test (MAST) as part of the high risk screening conducted by the prenatal clinic at Cleveland Metropolitan General Hospital (CMGH). During this period, pregnant women scoring positively and negatively on the test will be identified. Concurrently, the Treatment and Prenatal Monitoring Phase (2 years 9 months) will consist of randomly assigning positive MAST responders to high intensity and low intensity treatment and an equal number of negative responders to a non-alcoholic comparison group. In the low intensity group, routine prenatal monitoring and Alcoholics Anonymous are the only treatment modalities to be employed. In the high intensity treatment group, identified women will be enrolled in an intensive abstinence-oriented treatment program consisting of individual counselling, specialized group counselling and referred to Alcoholics Anonymous. Fetal outcome will be assessed in the low-intensity treatment group, the high intensity treatment group, and the non-alcoholic comparison group. Subgrouping will determine the results for individuals who accept or reject treatment. The prenatal monitoring will consist of monthly evaluations of volume and pattern of alcohol intake using the Volume Pattern Index; social, physical and economic factors using the Data Base Sheet for Alcohol Related Problems; monthly dietary assessment, monthly blood alcohol levels and routine prenatal monitoring as part of the antenatal clinic visit to CMGH through parturition. The Postnatal Outcome Analysis Phase (3 years) will involve physical, neurological and psychological examination of all study infants (alcohols and controls) to be done at birth, and ages 6 months, 1 year, 2 years, and 3 years. The Statistical Analysis Phase (9 months) will be major analysis on the data collected during the first three phases of the study. Quarterly reporting will occur throughout the six years of the study.

BIBLIOGRAPHIC REFERENCES: Alcohol Abuse During Pregnancy: An Epidemiologic Study. Sokol, Miller and Reed. Alcoholism: Clinical and Experimental Research. 4:135-145, 1980.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Alcohol Drug Abuse & Mental Health Admin., National Inst. on Alcohol Abuse & Alcoholism $176,481

3.0315,

THE ROLE OF ALCOHOL IN MIGRANT POLYNESIAN ADAPTATION

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This cross-cultural comparative study examines the role of alcohol, and in particular peer drinking groups, in the urban adaptation of Samoan, Cook Islander, and Maori migrants to Auckland, New Zealand. Our specific aims are: 1) To describe their typical patterns of peer group drinking behavior in public bars, based on systematic observational procedures, and to test hypotheses concerning the relationship between size and composition of the drinking groups and amount of alcohol consumption. 2) To identify and classify sequences of critical incidents in these settings which are likely to lead to interpersonal conflict and violence. 3) To conduct a survey interview among samples of these Polynesian migrants and a white comparison group in similar socio-economic circumstances, to test hypotheses concerning the relationship between background experience and personality, the choice of various adaptive strategies for coping with urban stress including participation in peer drinking groups, and various psychological/physiological/psychosomatic stress symptoms. 4) To compare the results among Polynesian and white New Zealanders with the role of alcohol in the urban adaptation of Navajo Indian migrants to Denver, Colorado.

BIBLIOGRAPHIC REFERENCES: Graves, Theodore D. & Graves, Nancy B. 1980 Kinship ties and the preferred adaptive strategies of urban migrants. In S. Beckerman & L. Cordell (eds.) The Versatility of Kinship. New York: Academic Press, pp. 195-217.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Alcohol Drug Abuse & Mental Health Admin., National Inst. on Alcohol Abuse & Alcoholism $33,578

3.0316,

A STUDY OF ALCOHOL AVAILABILITY AND ALCOHOL ABUSE

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In the most simplistic sense, the abuse of alcohol is related to its availability, i.e., if there is no alcohol available, no consumption occurs and no abuse is possible. However, the number of factors which affect or influence consumption and abuse are multiple.

Many studies of alcohol abuse show positive correlation between availability and abuse. While it is unlikely that correlational findings are causal, that is, availability directly causing abuse, there do exist positive relationships. These relationships are most likely complex networks of interrelated variables which affect one another over time. There have been few research efforts to examine the complex relationships between availability and abuse as a total or 'whole.'

This project seeks to solve these limitations by undertaking a three-year study of the relationships between availability and abuse through the use of a computer-based model which will integrate in a wholistic manner the most significant variables. The focus of this project is to explore the feasibility of and to test the capability of computer-based model to incorporate the best available knowledge and experience about alcohol availability and abuse. The project will carry out sensitivity analysis with the model to locate those variables which are most sensitive to change over time (i.e., would be most affected by changes in other variables), and to carry out simulation experiments to plot the projected effects of changes in the significant and most powerful variables in the model and to prepare reports on findings.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Alcohol Drug Abuse & Mental Health Admin., National Inst. on Alcohol Abuse & Alcoholism $82,058

3.0317,

HEREDITY, ALCOHOL USE, TEMPERAMENT & CHD RISK FACTORS

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The purposes of this study are to continue developing a survey approach to sampling sets of families in a given population to estimate the amount of genetic contribution to a variety of health-related variables for the purposes of (1) removing the effects of the genetic variance from alcohol-related traits and testing for environmental relations and (2) creating models for estimating heritability of given traits of interest.

The first objective then is methodological: (1) to validate the 4-person Family Set Method by use of genetic markers, and (2) vary the composition of Family Sets to include multiple sibs and first cousins and compare results on genetic markers to simple four-person Sets. The second objective would be to estimate the roles of nature-nuture in alcohol usage, cardiovascular health-risk factors, and specific temperaments, e.g., Extraversion-Introversion and Neuroticism. The third objective is to statistically standardize or remove the genetic effects, if any, and test for relationships among alcohol usage, temperaments, family behavior, health risk factors and demographic categories.

The study sample will be Family Sets (Index, sib, first cousin, unrelated person) drawn from (1) Cardiovascular Exam I (1960-61), and (2) from Cardiovascular Exam II (1963-65). About 265 Sets (after losses) are available with questionnaires collected in 1977 with data on alcohol usage, temperament, and health habits.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Alcohol Drug Abuse & Mental Health Admin., National Inst. on Alcohol Abuse & Alcoholism $4,000

3.0318,

PROBLEM DRINKING, DELINQUENCY, AND MATURATIONAL REFORM

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The proposed research is a renewal of an ongoing study investigating the dimensions and determinants of adolescent problem drinking and delinquency involvement. Our principal concerns are the study of social maturational development and reform as this relates to involvement in and the cessation of adolescent problem drinking; and the impact of legal intervention in the lives of adolescents. The major focus is upon differential degrees of involvement in and attachment to conventional social institutions and people, and commitment to conventional goals. We also focus on various personal controls and belief systems relating to the law, and the perceived consequences of alcohol use and abuse. The research is a panel study involving a cohort of youth from a medium-sized community in the Pacific Northwest. Data sources a questionnaire survey, and school and juvenile court records. Primary goals include theoretical development and refinement, and policy recommendations.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Alcohol Drug Abuse & Mental Health Admin., National Inst. on Alcohol Abuse & Alcoholism $36,189

3.0319,

TOBACCO USE BY ALCOHOLICS

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This project is part of a broader program (AA 03510).

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3.0320,

A PROSPECTIVE STUDY OF CHILDREN OF ALCOHOLIC PARENTS AND A MATCHED CONTROL GROUP

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3.0321,

AN ANALYSIS OF THE DEMOGRAPHIC AND ATTITUDINAL CORRELATES OF ADOLESCENT DRINKING

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The Laboratory of Epidemiology and Population Studies is mandated to conduct and sponsor research in areas appropriate to an understanding of the etiology and natural history of alcohol abuse and alcoholism. As part of this responsibility for developing a program of basic and applied epidemiological research, a systematic review of the psychosocial correlates relating to adolescent drinking behavior is required. The Contractor will provide baseline data on a national level for adolescent drinking levels and problems associated with drinking and provide information for further understanding of the circumstances of adolescent drinking as well as demographic and attitudinal correlates. The purpose of this project is to provide current information on U.S. adolescents, ages 13 to 18. The information must include but not be limited to knowledge, attitudes and behavior pertaining to alcohol consumption and alcoholism among American adolescents.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Alcohol Drug Abuse & Mental Health Admin., National Inst. on Alcohol Abuse & Alcoholism $31,572

3.0322,

A LONGITUDINAL STUDY OF CHILDREN OF DRINKING MOTHERS

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The interest in the effects of drinking during pregnancy has grown rapidly following the early publications on the fetal alcohol syndrome by Jones and Smith in 1973. The results of various studies to date suggest an adverse relationship of heavy maternal alcohol use during pregnancy on the offspring. There still remains, however, some unanswered questions such as: 'What is the effect of moderate drinking on the offspring? What are the possible synergistic effects of alcohol use with other substances such as smoking? What are the long term development effects of maternal alcohol use on the offspring? Does termination of maternal drinking during the early stages of pregnancy reverse possible adverse effects on the offspring? A five-year prospective study of 1,320 children ages 2 to 5 is proposed to provide information to help answer these questions. The 1,320 children are to be selected from an ongoing study of 10,000 pregnant women on whom we already have extensive prenatal, labor delivery and birth information. For each participate we will annually assess the home environment, parent-child interactions, demographic and psychosocial factors by means of a home interview. Physical and mental characteristics on each child will be assessed by a pediatric nurse and a psychometrician at the first and fourth year at a visit to our clinic. The study design calls for three different comparison groups which will provide data to determine the role that alcohol use during pregnancy played on subsequent development characteristics. By being able to provide data concerning the possible harmful effects of drinking during pregnancy on the offspring, information will be made available that can be used to initiate prevention programs to hopefully reduce morbidity and disability and cut the cost of care of premature infants in the community.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Alcohol Drug Abuse & Mental Health Admin., National Inst. on Alcohol Abuse & Alcoholism $9,817

3.0323,

FAMILY DETERMINANTS OF THE COURSE OF ALCOHOLISM

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A follow-up study has been proposed to further investigate a theoretical model of chronic alcoholism in the family called the life history model. This model was suggested by data from an initial study in which the interactional behavior of 31 alcoholic families was observed in three settings (home, multiple family discussion group (MFG), and family laboratory). When these families were divided into three different alcohol life phases as suggested by the theoretical model (stable wet, stable dry, and transitional phases), selected dimensions of interactional behavior in all three settings were found to vary in association with the family's alcohol phase.

The follow-up study addresses two questions: (1) whether a family's behavior pattern will change if its alcohol phase changes; and (2) the influence of family 'personality' variables on the differential course of chronic alcoholism using the life history concept.

The follow-up study will re-examine behavior in our original sample of alcoholic families two years after the first data collection period. A three month panel of data collection again includes home observation and discussion group settings. In addition, extensive clinical interview data and questionnaire data about family functioning is collected. Findings from the follow-up study are to be combined with the original findings to further advance the life history model of the alcoholic family. This model is intended to suggest a typology of alcoholic families with predictive power regarding prognosis and treatment of choice for families with alcoholic members.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Alcohol Drug Abuse & Mental Health Admin., National Inst. on Alcohol Abuse & Alcoholism $135,214

3.0324,

ALCOHOL ABUSE AMONG PACIFIC/ASIAN AMERICANS

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This study will assess the alcohol drinking patterns of Asian Americans in the United States. It proposes to gather information on drinking practices in the home country, and to survey a sample of Chinese, Japanese, Koreans, and Philipinos concerning their current attitudes and drinking practices. The study will also focus upon problem behavior associated with alcohol. The second year of the research will concentrate on other Asian American groups, such as the Samoan, other Pacific Islanders, Cambodians, and Vietnamese.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Alcohol Drug Abuse & Mental Health Admin., National Inst. on Alcohol Abuse & Alcoholism $136,137

3.0325,

INHERITANCE OF BEHAVIOR AND METABOLISM IN ALCOHOLISM

R.J. Cadoret, University of Iowa, School of Medicine, Dept. of Psychiatry, *Jessup Hall, Iowa City, Iowa* 52240 (R01 AA 04750-01)

An adoption study design will be used to test hypotheses about the inheritance of alcoholism. Two groups of adoptees will be followed up and compared: Group A) 100 adoptees without alcoholism in their biological families. All were separated at birth from biologic relatives. Data collected will be personal interviews with adoptive parents, structured psychiatric interview with adoptees, laboratory testing of alcohol metabolism in adoptees, school, medical and therapeutic records of adoptees. Group A and Group C will be compared to test the following hypotheses: 1) adoptees from alcoholic biologic background (Group A) will have a higher incidence of alcoholism than the control adoptees (Group C), Group A adoptees will metabolize oral ingestions of alcohol (as measured by acetaldehyde and ethanol concentrations) differently than Group C adoptees, 3) Group A adoptees will have a higher incidence of adolescent antisocial behavior than Group C adoptees. All researchers will remain blind to biologic background of adoptees.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Alcohol Drug Abuse & Mental Health Admin., National Inst. on Alcohol Abuse & Alcoholism $180,240

3.0326,

PROBLEM DRINKING IN WOMEN:

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Studies of women's drinking and drinking problems have been limited mainly to atheoretical analyses of small clinical samples, using bivariate data analysis. The research proposed here would overcome these limitations by a national survey of antecedents, patterns, and consequences of women's drinking, allowing multivariate analyses based on a complex theoretical model.

The model contains three major sets of antecedents of women's drinking: (1) personality characteristics (drinking related motives, beliefs, and self-restraints); (2) perceived social environment (value supports, drinking norms, drinking opportunities and models); and (3) life experiences (deviant behavior, affective disorders, sexual functioning, OB-GYN disorders, stressful life events). The antecedents affect amounts and frequencies of women's drinking, contexts of drinking, and personal and social consequences of drinking.

Evaluating the model and sex differences in drinking will involve interviewing national samples of 500 women who drink moderately or heavily, 500 women who drink lightly or abstain, and 500 men. A pretested questionnaire will use previously validated measures plus new queries about aspects of women's drinking not covered by previous surveys. Path analysis of the data will be supplemented by analyses of demographic subgroups and intergroup comparisons (e.g., between sexes).

Identifying the complex influences on women's drinking and drinking problems will help prevention and treatment programs become better targeted to the special needs of women with drinking problems.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Alcohol Drug Abuse & Mental Health Admin., National Inst. on Alcohol Abuse & Alcoholism $126,373

3.0327,

ALCOHOLISM TRANSMISSION VIA FAMILY RITUAL

S.J. Wolin, George Washington University, School of Medicine & Health Sciences, Dept. of Psychiatry & Behavioral Sciences, *2121 Eye St. N.W., Washington, District of Columbia* 20037 (R01 AA 01454-06S1)

This continuation application proposes a second study on family factors involved in the intergenerational transmission of alcoholism. In the initial study, families with alcohol abuse in two generations--transmitters--have been compared with families having only parental generation affected--non-transmitters. The characteristics of ritual behavior in daily life have been compared in both groups. The transmitter group has been found to develop a preponderance of rituals involving alcohol abuse, subsuming the normal ritual functions in family living. These families have been labelled 'subsumptive,' distinguishing them from 'distinctive' families where normal ritual behaviors do not include alcohol abuse. In transmitter families selective sibling involvement appears related to a second family factor--the continuation or rejection of the family's heritage. This is particularly true at the time of offspring marriage when the selection of a family identity for the new couple will normally allow one origin family or the other to predominate as the family of heritage.

In the proposed study we have revised our structured interviews and criteria for subject population to perform a within-family sibling comparison. The objective will be to assess the likelihood that each married child will repeat in the successive generation his parent's alcoholism. Siblings will be compared as to the subsumptiveness of their origin families and their family identity selection. Subjects will include thirty transmitter families with approximately ninety married couples and their parents, when available. Individual and conjoint couple interviews will be standardized and a manual will be prepared for rating origin family type and family identity selection. Drinking patterns of all family members will be separately assessed and scaled. A rating of the likelihood for alcoholism transmission for each sibling will then be compared with actual drinking behavior to evalu-

ate the relationship between alcohol abuse rituals, family identity and the recurrence of alcoholism.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Alcohol Drug Abuse & Mental Health Admin., National Inst. on Alcohol Abuse & Alcoholism $21,483

3.0328,
DRINKING AND CONDITIONED ANXIETY

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Research is proposed to examine the relationship between drinking and 'conditioned anxieties' such as cognitive dissonance (Festinger, 1957) and guilt, that are aroused by behaviors and events which contradict an individual's internalized values and self-concepts. The approach taken in this research is social psychological in the sense that it examines a set of social situational and interpersonal antecedents that by producing a particular type of negative affect, may foster drinking. It is specifically proposed that tensions such as dissonance and guilt may increase self-regulated drinking because of its actual and reputed ability to induce positive affect, and that by reducing these tensions, drinking may eliminate subsequent efforts to rectify their causes. Two experiments bearing on the relationship between drinking and cognitive dissonance, which provided preliminary support for this reasoning, are described. Four investigations are proposed to examine the following issues: 1) the replicability of the preliminary findings and their generalizability across different drinking habits, 2) whether the observed effects are mediated physiologically through the pharmacological effects of alcohol, or cognitively, through expectations, 3) whether the predicted effects generalize to the relationship between drinking and guilt, 4) whether personality traits of the subjects in these experiments can be identifed which may predispose alcohol abuse in situations laden with conditioned anxiety. Results from this research should help to 1) gain a clearer understanding of the relationship between drinking and negative affect, 2) broaden social psychological theories of consistency processes to incorporate the possibility of self-induced positive affect as response to psychological inconsistency, 3) provide initial data relevant to identifying a subpopulation of alcohol abusers and potential abusers who are especially susceptible to drinking in response to conditioned anxieties.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Alcohol Drug Abuse & Mental Health Admin., National Inst. on Alcohol Abuse & Alcoholism $12,583

3.0329,
ALCOHOL INTAKE DURING PREGNANCY:

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Studies of offspring of chronic alcoholic women have revealed a pattern of malformation with accompanying brain dysfunction termed fetal alcohol syndrome. Prospective study of a cohort of 500 infants (selected from 1529 consecutive pregnancies) indcates that offspring of heavy social drinkers compared to controls had poorer learning on neonatal operant tasks and poorer habituation, as well as more dysmorphic features suggestive of fetal alcohol syndrome, although some of these findings were confounded with a nicotine/alcohol interaction. Unusual brain findings similar to those found in offspring of chronic alcoholic mothers were also found, although sample size was very small.

The purpose of the presnt study is to re-examine the same cohort of 500 infants again at age 4 years to study the effects of heavy social drinking duing pregnancy on cognitive, motor and language development, on growth parameters and morphological development, and on behavior and neuropsychological function.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Alcohol Drug Abuse & Mental Health Admin., National Inst. on Alcohol Abuse & Alcoholism $34,382

3.0330,
LIFE PROBLEMS AND ALCOHOL USE IN AN URBAN POPULATION

R.W. Hingson, Boston University, School of Medicine, Dept. of Socio Medical Sciences, *80 E. Concord St., Boston, Massachusetts* 02215 (R01 AA 02133-05)

We propose to extend data analysis in our study of life stress and drinking practices in the Boston metropolitan area. Possible relationships between life satisfactions, problems, major events, and drinking practices will be analyzed, based on a longitudinal study of more than 1000 Boston area residents surveyed at four points in time over a 2 1/2-year period. (The final wave of data collection in the project will be completed in June, 1980.) The longitudinal design of our study with multiple data collection points offers us an unprecedented opportunity to explore relationships between changes in life satisfactions and situations and changes in drinking practices. Because our data have been collected at four points in time, we will be able to make a preliminary exploration of whether the changes individuals report in their drinking reflect oscillation around their usual drinking patterns or consistent shifts to heavier or lighter drinking. We also can explore whether changes in life situation precede or follow changes in drinking.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Alcohol Drug Abuse & Mental Health Admin., National Inst. on Alcohol Abuse & Alcoholism $74,543

3.0331,
TEN YEAR PROSPECTIVE COMMUNITY STUDY OF TEEN SMOKING

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This application requests support for analyses of community-wide prospective, longitudinal data, already in hand, on the origins of cigarette smoking by teenagers from a poor, black, urban community. The focus of the study will be on the developmental factors--both sociological and psychological--important to cigarette smoking behavior.

Our major areas of study will be: (1) the early and continuing impact on teenage smoking of peer and family structure, social interaction within and outside the family, and psychological atmosphere of the family; (2) the longitudinal relationships of social role performance (or social adaptation as we have defined it) and psychological well-being to the origins of cigarette smoking; (3) the early and continuing factors influencing smoking by teenagers in contrast to (a) psychiatric symptoms and psychological well-being generally; (b) the use of alcohol and drugs; (c) school achievement; and (d) antisocial behavior.

The data on the teenagers and their families are community-wide, longitudinal, and epidemiological, having been collected prospectively from the time the children were in first grade (1966-1967) until ten years later when they were 16-17 years old. Data collected on the study population include extensive social adaptational and psychological information in first grade and at the ten year follow-up. Other data such as IQ and school grades have also been gathered.

These analyses are aimed at furthering our understanding of the early social and psychological origins and developmental paths leading to smoking.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Alcohol Drug Abuse & Mental Health Admin., National Inst. on Drug Abuse $114,892

3.0332,
EPIDEMIOLOGIC STUDIES IN DRUG DEPENDENCE

P.H. Hughes, University of Chicago, Pritzker School of Medicine, Dept. of Psychiatry, *5801 S. Ellis Ave., Chicago, Illinois* 60637 (P01 DA 00250-080016)

This project is part of a broader program (DA 00250).

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Alcohol Drug Abuse & Mental Health Admin., National Inst. on Drug Abuse funds n.a.

3.0333,
GROUP HOME TREATMENT AND ADOLESCENT DRUG ABUSE

C.J. Braukmann, University of Kansas, Lawrence Campus, School of Liberal Arts & Sciences, Dept. of Human Development, *112 Bailey Hall, Lawrence, Kansas* 66045 (R01 DA 02313-02)

The aims of this research are: (1) to evaluate the effects of group home placement on drug use of delinquent youths, and (2) to analyze the relationship between drug use and various behavioral influences. Subjects for the study will be 100 treatment youths from 14 Kansas group homes, and a comparison group of youths who were named by the treatment youths as their friend at the time of placement. A self-report questionnaire will be used to measure the drug use of treatment subjects (a) during the year and the month prior to placement, (b) each month during treatment, and (c) once each month for 6 months following treatment. Data on the drug use of comparison youths will be collected on the same schedule. The effects of the group home will be examined by group comparisons as well as comparisons across pre, during and post treatment conditions. Characteristics of the group home families, as well as of the natural families of the friend sample, will be measured by youth and parent questionnaires. The group-home families will be periodically measured through direct behavioral observation; the natural families of 30 friends of the group-home youths will also be observed directly. Questionnaire and direct behavioral measures will emphasize parental adult reinforcing value and social teaching. Questionnaire data will also be collected concerning the experienced or anticipated differential consequences for drug use which are provided by peers or school teachers, or which are personal (physical or psychological) in nature. All treatment youths will also be asked to name their best friend in the group-home once each month in order to see if entering youths select friends that are similar to themselves in drug use or come to match the drug use of their friends. The data on parental adult influences, differential consequences, and peer drug use will be used in correlational analyses, with subjects' drug use as the primary outcome variable.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Alcohol Drug Abuse & Mental Health Admin., National Inst. on Drug Abuse $146,448

3.0334,
DRUG ABUSE TREATMENT AND SUBSEQUENT CRIMINAL BEHAVIOR

L.A. Shuerman, University of Southern California, School of Letters Arts & Sciences, *3551 University Ave., Los Angeles, California* 90007 (R01 DA 02387-02)

The main objective of the study is to examine the impact of drug abuse treatment on subsequent criminal behavior of opiate users. Information for the study is provided by two automated data bases. One file consists of all opiate drug abuse clients serviced by the Los Angeles County Drug Abuse Program; the second consists of the entire State of California Arrest Citation and Offender Disposition file maintained by the Bureau of Criminal Statistics. Both data bases cover the same four-year period.

An important aspect of the study is that it will for the first time integrate on a large scale clients in opiate treatment programs (e.g., over 15,000 cases) with all official criminal justice information. In this way, then, the actual magnitude of this particular group's criminal activity can be assessed with a sample size which is large enough to control for many important research issues. The analysis is designed to include the following comparisons: between groups, within groups, and between treatment populations. The first general category involves the comparison between the treated drug abusers, the general population, and the offender population. The second category of comparison utilizes an Offender-Based Transaction system and concentrates on comparisons between types of offenders and their various dispositions within the criminal justice system on the basis of an addict-no-addict distinction. The third comparison is within the drug treatment system and examines the impact of various programs as related to reduction in criminal activity.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Alcohol Drug Abuse & Mental Health Admin., National Inst. on Drug Abuse $110,677

3.0335,

DRUG ABUSE AND OTHER DEVIANT ADAPTIONS TO STRESS

H.B. Kaplan, Baylor College of Medicine, School of Medicine, Dept. of Psychiatry, *1200 Moursund Ave., Houston, Texas* 77025 (R01 DA 02497-02)

This prospective longitudinal survey study will test and appropriately reformulate theoretical models representing mutually interacting, psychosocial influences upon the adoption, maintenance, reduction, escalation, and discontinuance of drug abuse patterns as well as each of a broad range of other deviant adaptations to life events between early adolescence and young adulthood. 'Other deviant adaptations' include modes of functional psychiatric disorders, interpersonal violence, alcohol abuse, suicidal behavior, 'prosocial acting out,' stealing, and vandalism as well as independently determined indices of self-rejection and correlated subjective distress. The models will consider common influences upon drug abuse and other modes of deviance as well as influences that are 'unique' to the explanation of drug abuse patterns and other deviant responses considered individually. Data on the mutually interacting variables said to influence deviant adaptations (including coping/defensive patterns, personal values, social positions, life events, and specified early deviant adaptations as these influence other deviant outcomes at a later date) were collected in the course of an earlier longitudinal study of 9,335 7th graders who responded to a questionnaire in 1971, 1972 and 1973. Data on intervening and current deviant adaptations and their consequences, intervening life events, and other theoretically relevant variables will be collected by follow-up semi-structured household interviews with the same subjects first interviewed in their early adolescence. The follow-up interviews will be completed over a three-year period when the subjects will be young adults (generally 22 and 26). The mathematical analysis will entail structural equation models (and their functional equivalent for qualitative variables).

BIBLIOGRAPHIC REFERENCES: H.B. Kaplan, Conceptual Issues in Marijuana Decriminalization Research. In T.J. Glynn and L.G. Richards (eds.), Methodology in Marijuana Policy Research. Rockville, Mary.: National Institute on Drug Abuse, 1981, in press. H.B. Kaplan, Sociodemographic Factors, Mental Health Status and Mental Health Care. In S. Moffic and G.L. Adams (eds.), The Clinician's Manual on Mental Health Care: A Multidisciplinary Approach, Reading, Mass: Addison-Wesley, 1981, in press.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Alcohol Drug Abuse & Mental Health Admin., National Inst. on Drug Abuse $242,456

3.0336,

A NEW TECHNIQUE FOR MEASURING HEROIN PREVALENCE

I.H. Cisin, George Washington University, Columbian College of Arts & Sciences, Dept. of Sociology, *2121 Eye St. N.W., Washington, District of Columbia* 20037 (R01 DA 02553-01)

The objective of the proposed methodological research is to improve the validity of prevalence estimates concerning heroin use and other highly stigmatized behaviors. This goal is pursued through the development and trial of a new data collection/estimation technique which has been designed to reduce the problem of respondent denial in surveys of particularly sensitive behaviors. This new technique has been provisionally termed the 'item count technique.'

The conventional wisdom for minimization of question threat has proved inadequate for the study of behaviors such as heroin use; indeed, the available evidence indicates that official figures on heroin use may underestimate true prevalence by substantial margins. Since 1965, a number of innovative approaches have been developed with the purpose of reducing the problem of respondent denial. These indirect survey-based estimation techniques allow a statistically unbiased estimate of a sensitive behavior without requiring the respondent to articulate a direct response to the sensitive question. The newest and most promising technique in this series is the item count technique devised by the Social Research Group. Experience with previously reported techniques (e.g., randomized response) has revealed a variety of problems encountered in the field--problems which may undermine the overall validity of resulting estimates. In contrast, the strikingly simple item count technique is capable of avoiding all serious field-application problems.

The development and preliminary evaluation of the item count technique is proposed here in terms of the lifetime prevalence of heroin use. The proposed work includes (1) item development based on pretesting in both 'normal' and high-drug-use residential areas, and (2) a relatively inexpensive test of the technique's performance in a large-scale survey application. Heroin prevalence estimates obtained via the new procedure will be compared with existing conventional and indirect estimates.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Alcohol Drug Abuse & Mental Health Admin., National Inst. on Drug Abuse $82,099

3.0337,

MEDICAL EXAMINERS PROJECT

J.T. Weston, Forensic Sciences Foundation Inc., *225 S. Academy Blvd., Suite 201, Colorado Springs, Colorado* 80910

One of the major tasks of the National Institute on Drug Abuse (NIDA) is the identification of drug abuse patterns, including the measurement, estimation, and assessment of the size and location of the Nation's drug abuse population. Direct measurement of drug abuse is possible only when people become identified through some external events, such as, hospitalization, entry into a drug abuse treatment program, death from a drug-related cause, arrest, and the like. It is not possible to identify, and therefore to count, drug abusing persons who do not become identified in these ways or who do not admit to drug abuse when questioned in a general population survey. Therefore, lacking the ability to directly measure the total drug abusing population, estimates of this population must be based on drug abuse indicators, i.e., measurements of those drug abusers who are identified. The commonly used drug abuse indicators include, hospital's records, drug abuse treatment program data, and medical examiner reports. In order to interpret and study the implications of medical examiners' reports on a national level, a consistent reporting procedure must be developed. Specifically, consistent definitions of a drug-related death must be set forth and the procedures used to determine these deaths must be detailed. The purpose of this procurement is to develop and pilot test a procedure manual to be used by medical examiners in reporting drug abuse related deaths. Objectives: 1. Identify current problems in the determination and reporting of drug involved deaths by medical examiners. 2. Develop a manual of standardized reporting definitions and operating procedures for medical examiners for determining drug related deaths. 3. Test the feasibility of implementing standardized definitions and procedures for a period of six months among a panel of medical examiners.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Alcohol Drug Abuse & Mental Health Admin., National Inst. on Drug Abuse $224,507

3.0338,

RESEARCH CENTER - STUDIES OF DRUG DEPENDENCE AND ABUSE

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The Drug Abuse Research Center has continued: 1) to provide a formal structure designed to encourage the cooperation of basic research scientists and clinical researchers in problem-oriented research, 2) to encourage communication among basic research scientists working in related fields, 3) to promote the development and/or expansion of certain key areas in drug abuse research, and 4) to provide an interdisciplinary educational environment for students and faculty interested in various areas of drug abuse research. The philosophy of the Research Center is that drug abuse is a complex problem which needs to be studied on a variety of levels ranging from a drug's sub-cellular actions through its sociological impact. It is impossible for any single department, let alone an isolated individual, to possess the expertise to study drugs at all these levels. The Research Center has been to provide a formal structure for encouraging interaction between scientists and clinicians from several academic departments, all of whom are working in areas related to drug abuse. Current research includes: studies of drug self-administration in infra-human primates as well as man; studies of the sensitivity of current and former methadone dependent humans to alcohol and amphetamines; neurochemical studies of drugs of abuse; metabolism of drugs of abuse in animals and man.

BIBLIOGRAPHIC REFERENCES: Woolverton, W.L., Kandel, D. and Schuster, C.R.: Tolerance and cross-tolerance to cocaine and d-amphetamine. J. Pharm. Exp. Therap., 205, #3, 1978. Woolverton, W.L., Kandel, D. and Schuster, C.R.: Effects of repeated administration of cocaine on schedule-controlled behavior of rats. Pharm. Biochem. Behav., 9, 327-337, 1978.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Alcohol Drug Abuse & Mental Health Admin., National Inst. on Drug Abuse $403,519

3.0339,

LONGITUDINAL STUDY OF TEENAGE AND YOUNG ADULT DRUG USE

G.M. Smith, Massachusetts General Hospital, *32 Fruit St., Boston, Massachusetts* 02114 (R01 DA 00065-09)

Our objective is to study antecedents and sequelae of drug use among teenage students and young adults by analyzing a comprehensive, 13-year longitudinal data base collected from 2,500 subjects. Those subjects were in grades 5-10 when our study began in 1969. Between 1969 and 1976, measures were obtained regrading use of illicit drugs, alcohol, and cigarettes; attitudes toward and knowledge about drug use and drug users; attitudes toward cigarette smoking and cigarette smokers; personality; grade point average; school attendance; and school suspensions. Follow-up studies to be performed by mailed questionnaire during 1979-1982 will collect information regarding post high school substance use and significant life events. Topics covered will include current and past use of illicit drugs, alcohol, and cigarettes; education and work experience since high school; social and family adjustment; health and hospitalizations; accidents; attitudes; life satisfactions; personality; interpersonal relations; and deviance.

BIBLIOGRAPHIC REFERENCES: Smith, G.M. Perceived Effects of Substance Use: A General Theory. In: Dan J. Lettieri, Mollie Sayers, Helen Wallenstein Pearson (Eds), Theories on Drug Abuse: Selected Contemporary Perspectives, Superintendent of Documents, U.S. Government Printing Office, Washington, D.C., 1980, pp. 50-58.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Alcohol Drug Abuse & Mental Health Admin., National Inst. on Drug Abuse $148,466

3.0340,

MAINTENANCE OF THE DAEDAC DATA BASE

S. Sells, Texas Christian University, Inst. of Behavioral Research, *P.O. Box 29010a, T.C.U. Station, Fort Worth, Texas* 76129

The Drug Abuse Epidemiology Data Center (DAEDAC) is a research archive of studies and original data files. In the early stages, DAEDAC acquisitions were confined mainly to studies concerning incidence, prevalence, morbidity and mortality associated with the use of illicit drugs. Since its inception in November 1973, DAEDAC has developed into an extensive and richly endowed data source for research and information on the epidemiologic and social science aspects of drug abuse, illicit and licit, in the U.S. with an international component being added in 1979. To be comprehensive and current, it is necessary to continually build upon the existing files with new data and studies. The DAEDAC maintains two types of files: The Original Data File and the Aggregate File. The Original Data File contains coded raw data from original drug surveys, evaluation studies and drug abuse epidemiology studies. The Aggregate File is a computerized file of research literature containing bibliographic citations, summaries and data tables coded from research reports, studies and journal articles on drug abuse. The objectives of this contract are: a. Acquisition, preservation and maintenance of original drug abuse data files; b. Organization and documentation of data files to facilitate secondary analysis; c. Acquisition and maintenance of a library of research reports of special interest to professionals and administrators working in the drug abuse field; d. Development and maintenance of a computer file with retrieval software to provide bibliographic citations, statistical tables, and abstracts concerning drug abuse problems addressed in the research literature; e. Provision of data, analyses, bibliographies, special reports, and other information based on archive holdings to NIDA staff in response to specific research and technical questions; f. Development of a report describing DAEDAC and its holdings; g. To provide for uninterrupted operation of the DAEDAC archive; and h. To provide for the transfer of the DAEDAC archive, including files, software, documentation and

the library of reports to any group or organization as selected by NIDA.
SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Alcohol Drug Abuse & Mental Health Admin., National Inst. on Drug Abuse $704,979

3.0341,
CENTER FOR SOCIOCULTURAL RESEARCH ON DRUG USE--PROGRAM
E. Josephson, Columbia University, School of Public Health, Dept. of Sociomedical Sciences, *600 W. 168th St., New York, New York* 10032 (P01 DA 01097-07)
The objectives of this program project are to contribute to understanding of the factors associated with initiation into drug behavior, changes in that behavior, and the consequences of such behavior, especially in the period between adolescence and young adulthood, and to understanding of national, cultural and ethnic differences in drug behavior and the societal responses to that behavior. To achieve those objectives, two follow-up studies have been initiated (Kandel's follow-up, nine years after initial contact with them, of a representative subsample of former 10th and 11th grade high school students and of absentees in New York State, and Comitas' cross-national comparison of the consequences of cannabis use in several cultures where earlier ethnographic studies had been done); two new studies have been started (Lukoff and Brook's study of personality, peer and family influences on the onset, development and consequences of drug use among adolescents of high school age, and Josephson's study of drug policy with particular reference to recent changes in U.S. policy regarding marijuana); and further analysis of data collected earlier has been undertaken (Kandel's cross-national analysis of factors associated with adolescent drug use, based on comparative studies conducted in France and in Israel in 1977-78, Lukoff and Kleiman's analysis of the life cycle of treated heroin addicts, and Brunswick's analysis of longitudinal data on the effects of drug use on the health of young black adults).
SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Alcohol Drug Abuse & Mental Health Admin., National Inst. on Drug Abuse $554,281

3.0342,
IMIPRAMINE TREATMENT OF DEPRESSED METHADONE PATIENTS
H.D. Kleber, Addiction Prevention Treatment Foundation Inc., *98 Park St., New Haven, Connecticut* 06511 (R01 DA 01660-04)
Following a three-year survey of the prevalence of depression in methadone maintained patients, the Depression Unit and the Drug Dependence Unit began a collaborative, double-blind, randomized trial of imipramine in the treatment of acutely depressed patients. This proposal requests additional funds in order to complete the intake and treatment phase of the clinical trial; to conduct a six-month and one-year follow-up of patients involved in the treatment phase; and to complete data analysis of both the treatment and follow-up phases. The objectives of the follow-up are to ascertain the clinical course, symptoms and social functioning outcomes following the research treatment; determine enduring effects of the treatment, both immediate and delayed; measure intercurrent events and help-seeking patterns following the treatment, determine patient expectation, satisfaction and perception of the treatment, and determine any negative effects of introducing a potential drug of abuse to a drug dependent population.
SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Alcohol Drug Abuse & Mental Health Admin., National Inst. on Drug Abuse $54,752

3.0343,
INHALANT ABUSE AMONG YOUNG NATIVE AMERICANS
E.R. Oetting, Colorado State University, School of Natural Sciences, Dept. of Psychology, *Fort Collins, Colorado* 80523 (R01 DA 01853-03)
This project is a continuation of a series of studies examining the extent and nature of drug abuse among American Indian young people. Data are collected by anonymous surveys administered in reservation school. Two survey forms are used--one for 4th-6th graders and another for 7th-12th graders. Special areas of research interest include: 1)Instrument development; 2) Inhalant abuse; 3) PCP abuse; 4) Longitudinal data to determine precursors of drug use; 5) Community characteristics predictive of extent and pattern of drug use; 6) Trends in drug use over time; 7) Patterns of spread of drug use.
In addition to exploring the above areas of research, detailed reports of drug use patterns are provided to the participating schools.
SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Alcohol Drug Abuse & Mental Health Admin., National Inst. on Drug Abuse $193,419

3.0344,
U.S.-MEXICO PROGRAM OF RESEARCH IN INHALANT ABUSE
M. Korman, University of Texas, Health Science Center at Dallas, Graduate School of Biomedical Sciences, Dept. of Psychology, *5323 Harry Hines Blvd., Dallas, Texas* 75235 (R01 DA 01977-02)
This investigation proposes to study various groups of U.S. and Mexico inhalant users in a series of joing and related studies focusing on young adults. We aim to: 1) Complete an ethnographic study of inhalant use consisting of (a) an analysis of individual users; b) an analysis of the social context; (c) an analysis of the institutional framework which interfaces with inhalant users. 2) Evaluate the relationship of inhalant use and aggressive behavior; investigate aggressive responses in relationship to such variables as degree of frustration, range of coping strategies available, degree of impulsivity. Examine a number of personality variables to assess underlying psychological mechanisms. 3) Investigate the relationship of the development of tolerance for inhalants to patterns of inhalant use. 4) Describe the extent of psychological dependence upon, and commitment to inhalant use. Relate to sex and ethnic differences. 5) Quantify the extent of physical dependence upon inhalants and relate to patterns of use; chart clinical picture of withdrawal. 6) Evaluate biomedical and neuropsychological status of heavy inhalant users in comparison to other drug users.
SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Alcohol Drug Abuse & Mental Health Admin., National Inst. on Drug Abuse $149,847

3.0345,
SUBSTANCES ABUSE - SPONTANEOUS ABORTION & FETAL DEFECT
Z.A. Stein, New York State Psychiatric Inst., *722 W. 168th St., New York, New York* 10032 (R01 DA 02090-02)
An epidemiologic, cytogenetic, and pathologic study is being carried out to examine the relation of spontaneous abortion and fetal anomalies to use of alcohol, aspirin, heroin, methadone, marijuana and tranquilizers. Substances which are associated with spontaneous abortion will be identified through a comparison of exposure histories among women with spontaneous abortions (cases) and among women who deliver after 28 weeks gestation (controls). The mechanisms underlying the associations between specific substances and spontaneous abortions will be elucidated through a comparison of the karyotypic and morphologic characteristics of the conceptions of exposed and unexposed parents. Further understanding of fetal pathogenesis will be obtained through examination of selected characteristics of the live births from the control series in relation to exposure.
BIBLIOGRAPHIC REFERENCES: Kline, J., Stein, Z., Susser, M. and Warburton, D.: Environmental influences on early reproductive loss in current New York City study. In Proceedings of the Tenth Annual Birth Defects Symposium, Albany, New York, 1979 (in press, 1980b). Kline, J., Shrout, P., Stein, Z., Susser, M. and Warburton, D.: Drinking during pregnancy and spontaneous abortion. Lancet (in press, 1980a).
SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Alcohol Drug Abuse & Mental Health Admin., National Inst. on Drug Abuse $220,980

3.0346,
EFFECT OF THC ON FEMALE REPRODUCTIVE PHYSIOLOGY
S.J. Gross, Receptor Research Inst., *218 N. Boyle Ave., Los Angeles, California* 90033 (R01 DA 02132-02S1)
The effects of marijuana on female reproductive physiology are unknown. Although some animal studies indicate a variety of neuro-endocrine abnormalities and possible teratogenicity, no controlled study has been reported in humans. Since quantitative assessment to support anecdotal information is now possible by our separate assays for delta 9-THC, the psychoactive ingredient of marijuana, and its metabolites, we have undertaken a prospective study of the effects of marijuana on women.
Female marijuana users (250 pregnant and 1000 non-pregnant) will be compared to non-user groups. Menstrual irregularities and other abnormalities of reproductive physiology will be investigated in non-pregnant females. Antepartum, labor, delivery and neonatal problems will be compared in marijuana users and matched controls.
The newborns will be analyzed by normal pediatric milestones for at least 18 months.
In all phases of the work, anecdotal clinical data will be weighed against accurate laboratory measurements. The results should permit an unbiased evaluation of immediate and long-term marijuana effects on female reproductive physiology.
SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Alcohol Drug Abuse & Mental Health Admin., National Inst. on Drug Abuse $17,500

3.0347,
SUBSTANCE ABUSE AMONG HYPERACTIVE BOYS AT ADOLESCENCE
J.P. Loney, University of Iowa, School of Medicine, Dept. of Psychiatry, *Jessup Hall, Iowa City, Iowa* 52240 (R01 DA 02134-02S2)
This is a supplement to a comprehensive longitudinal study of substance abuse in: (1) a sample of 135 hyperkinetic boys referred for outpatient psychiatric evaluation between 1967 and 1972, treated with CNS stimulant drugs and followed up at adolescence between 1973 and 1975; and (2) a sample of 100 hyperkinetic boys referred for outpatient psychiatric evaluation between 1973 and 1978, not treated with a CNS stimulant drug, and followed up at adolescence between 1978 and 1981. third sample of 50 hyperkinetic boys referred between 1973 and 1978, but treated with a CNS stimulant, is also being followed up at adolescence between 1978 and 1981.
The supplementary investigation will duplicate the adolescent follow-up battery in 100 randomly-selected classmates of the non-medicated hyperkinetic boys and 50 randomly-selected classmates of the concurrent medicated hyperkinetic boys, thus providing normative comparison groups. The present study will answer questions and the prevalence, predictors, and patterns of substance attitudes and use in drug-treated and non-drug-treated hyperkinetic boys and in their classmate controls.
SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Alcohol Drug Abuse & Mental Health Admin., National Inst. on Drug Abuse $27,694

3.0348,
PATTERNS OF COCAINE USE - AN INTERDISCIPLINARY STUDY
P.J. Cleckner, University of Miami, School of Medicine, Dept. of Psychiatry, *1400 N.W. 10th Ave., Box 520875, Coral Gables, Florida* 33152 (R01 DA 02144-02)
A number of concerns have arisen about the rapid increase in cocaine use in the United States. The overall purpose of this study is to examine this problem and to investigate how social and cultural factors influence drug use in general and cocaine use in particular.
Specifically, this project is investigating sociocultural variations in cocaine use patterns in Dade County, Florida. An interdisciplinary approach which combines both theory and method of sociology and anthropology is being employed.
The particular aims of the study, which are designed to fill gaps in the recent cocaine research, include: 1. The development and refinement of a typology of cocaine use patterns. 2. A comparison of the cocaine use patterns employed by Black, Cuban and White members of tri-ethnic population, and by male and female groups. 3. A comparison of cocaine use patterns of users in drug treatment programs with the patterns of cocaine users in the community who have never been in treatment. 4. An investigation of social control and social learning factors which may influence the stabilization of cocaine use at a particular level or use pattern.
During the first year of the project, 192 cocaine users will be interviewed and these data will be computerized. During the second year extensive analysis

will be conducted. In addition, 48 respondents will be interviewed in detail.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Alcohol Drug Abuse & Mental Health Admin., National Inst. on Drug Abuse $151,591

3.0349,

A PANEL STUDY OF ADOLESCENT SUBSTANCE ABUSE CAREERS

E.R. Morrissey, University of Washington, Alcoholism & Drug Abuse Inst., *Seattle, Washington* 98195 (R01 DA 02151-03)

This research is a continuation of a project consisting of a follow-up of 1473 adolescents who have been previously interviewed regarding drug and alcohol use patterns and related problems. The project will isolate factors which contribute to the development of substance abuse problems in late adolescence and to their persistence into early adulthood. All of the high risk subjects, originally contacted when they were referred for alcohol counselling or held in juvenile court detention, are being interviewed in the follow-up study. The treatment agencies in which the baseline data were collected will cooperate in recontacting their clients.

Four specific sets of factors will be examined as predictive of stable heavy alcolol and drug intake and of the development of resultant problems. Independent variables hypothesized to relate to substance abuse outcomes are: (1) prior psychiatric diagnoses; (2) seriousness of deviant history; (3) initial levels of substance intake and related problems and (4) sex role attitudes and behaviors. The effects of these independent variables will be examined controlling for the type of intervention to which the youths were initially subjected, and for demographic characterisics.

An assessment of the effects of these variables will allow for: (1) an evaluation of the relative importance of psychiatric and social histories in the development of symptoms of alcoholism or drug abuse in early adulthood; and (2) the establishment of psychiatric diagnostic criteria for alcoholism and drug abuse which will be useful in screening youthful populations.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Alcohol Drug Abuse & Mental Health Admin., National Inst. on Drug Abuse $38,518

3.0350,

THE PHENCYCLIDINE USER - A LONGITUDINAL STUDY

D.B. Graeven, California State University & Colleges, California State University, Hayward Campus, School of Arts Letters & Social Sciences, Dept. of Sociology, *25800 Carlos Bee Blvd., Hayward, California* 94542 (R01 DA 02293-02)

This study involved interviews with 200 phencyclidine users. The research design included interviews with heavy and lighter chronic users as well as a group of recreational users. Respondents were obtained through local drug using contacts and snowball sampling techniques were used.

The objectives of the research are to: 1) examine patterns of use and change in use patterns, 2) describe the perceived motivation for use, reason for quitting, and perceived effects of phencyclidine, and 3) determine health and behavioral changes in the user that are related to phencyclidine use. Data analysis will begin in March, 1980.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Alcohol Drug Abuse & Mental Health Admin., National Inst. on Drug Abuse $54,950

3.0351,

EPIDEMIOLOGY STUDY CENTER

M. El Alamy, Ministry of Health, *Bilbais, Egypt* (03-340-C)

To establish one epidemiologic center for applied field research. Research projects will be conducted within the center on a systematically designed population base with special emphasis on diseases of particular concern to the Egyptian people.

Establishment of a study in diarrheal diseases over the first five-year period of implementation of the Epidemiology Study Center.

Use of the Epidemiology Center and data emanating from the Center for health planning, training, and manpower development.

Development of mid-level personnel in administration, epidemiology, biostatistics, laboratory technology, and field research.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Center for Disease Control $484,400

3.0352,

A STUDY OF POST TRANSFUSION HEPATITIS IN EGYPT

H. El Sayed, Ain Shams University, *Abbassia St., Cairo, Egypt* (03-339-C)

To determine the incidence and etiology of post transfusion hepatitis in Egypt. To determine the impact of prior hepatitis B infection in transfusion recipients on ensuing acquisition of hepatitis B and the effect of nationwide hepatitis B testing of donor blood on control of post transfusion hepatitis.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Center for Disease Control $160,180

3.0353,

SEROEPIDEMIOLOGY OF PARASITIC DISEASES - IMPROVEMENTS IN METHODOLOGY, SKIN TEST, CONSULTATION, AND FIELD STUDIES

H.M. Mathews, U.S. Dept. of Health & Human Services, Public Health Service, Center for Disease Control, Bureau of Lab., Parasitology Division, *1600 Clifton Rd. N.E., Atlanta, Georgia* 30333 (CDC/BL/P-0010)

PROJECT DESCRIPTION: Epidemiologic techniques are used to measure intensity and distribution of parasitic diseases and to evaluate the effect of control treatment. The detection of specific antiparasitic antibody in human sera is a good method for assaying the prevalence of parasites in a population, particularly where etiologic diagnosis is difficult, time consuming, or unrewarding as in malaria, amebiasis, toxopiasmosis, chagas' disease, and schistosomiasis. A skin test antigen for schistosomiasis is prepared and provided to the Peace Corps and physicians on request for this reagent. This project will attempt to improve detection systems for greater sensitivity and specificity, using newly developed tests such as ELISA and countercurrent electrophoresis. The results of the project will provide medical and public health authorities in the United States and developing countries a more accurate picture of the prevalence of parasites in their populations. The overall goal is the utilization of efficient means of disease control detection devices by public health authorities.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Center for Disease Control, Bureau of Lab. funds n.a.

3.0354,

FIELD AND LABORATORY STUDIES OF PLAGUE ECOLOGY

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PROJECT DESCRIPTION: Field and laboratory studies are conducted to identify key reservoir and vector species involved in the epizootic amplification of plague and related zoonoses and their transmission to man. Ecological factors and interactions among vectors, pathogens, reservoirs, and other elements of the environment will be studied and defined in terms of human risk, using key factor analysis to isolate and define viable educational, environmental, and chemical approaches to the prevention and control of plague and related disease.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Center for Disease Control, Bureau of Lab. funds n.a.

3.0355,

HOST-PARASITE RELATIONSHIPS, IN VITRO CULTIVATION OF PARASITIC ORGANSISMS, AND IMPROVEMENTS IN IMMUNODIAGNOSIS OF PROTOZOA

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PROJECT DESCRIPTION: Protozoan diseases, such as amebiasis, giardiasis, amebic meningoencephalitis, malaria, and pneumocystis, cause a great deal of morbidity and, occasionally, mortality throughout the world. Many aspects of the epidemiology and host-parasite relationship of protozoan parasites need to be clarified. New methodology for the cultivation of parasitic protozoa is needed for the production of specific antigens for serodiagnosis. The specific diagnosis of these diseases needs to be improved. In vitro axenic and polyxenic cultivation and in vivo animal experiments to prepare antigens and to evaluate new diagnostic procedures are being done. The goal of these studies is to increase our understanding of parasitic diseases and improve techniques with which to better organize resources for their identification and control.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Center for Disease Control, Bureau of Lab. funds n.a.

3.0356,

PROSPECTIVE POPULATION-BASED STUDY OF SCHISTOSOMA MANSONI (BOQUERON)

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PROJECT DESCRIPTION: The long-term community study of infection with Schistosoma mansoni in Parcelas de Boqueron terminated after the last annual survey conducted during January-April 1980. Egg output by the infected community residents was quantitated as in previous years. Analysis of data suggests that adult S. mansoni worms in this population have a half-life greater than 10 years - much longer than previously believed. Clinical morbidity attributable to infection with S. mansoni was reassessed among a cohort of individuals first examined in 1975. population-based double-blind trial to evaluate the safety and efficacy of oxaminiquine as an anti-schistosomal drug was conducted in outpatients in Boqueron during June 1980.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Center for Disease Control, Bureau of Lab. funds n.a.

3.0357,

COLORADO TICK FEVER STUDIES

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PROJECT DESCRIPTION: Surveillance of Colorado tick fever (CTF) includes diagnostic testing of approximately 300 suspect patients. Detailed studies of the pathophysiologic effect of CTF infection are being made on 4 to 6 patients annually. Ecologic and epidemiologic studies to evaluate the risk of human exposure to CTF include evaluation of (a) type of camping activities which results in acquisition of vector ticks, (b) chances of developing CTF among defined camper populations, and (c) the level and natural history of CTF infection in mammal and tick hosts in defined recreational areas. Approximately 25 strains of CTF virus from different hosts and geographic regions are being analyzed for variations in antigenic and genetic characteristics.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Center for Disease Control, Bureau of Lab. funds n.a.

3.0358,

AEDES AEGYPTI SURVEILLANCE IN RELATION TO DENGUE VIRUS ACTIVITY IN PUERTO RICO

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PROJECT DESCRIPTION: Frequently, outbreaks of vector-borne diseases can be anticipated, if sufficiently detailed information on the abundance of the vector is available. The objectives of this projct are to (1) collect data on aedes aegypti abundance at different times of the year, (2) correlate A. aegypti abundance with changes in dengue virus transmission rates and with changes in environmental parameters, such as rainfall and temperature, and (3) use the data collected to develop a predictive model of dengue activity.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Center for Disease Control, Bureau of Lab. funds n.a.

3.0359,

STUDIES ON MONKEYPOX AND OTHER DISEASES TO DETERMINE THEIR INFLUENCE ON PUBLIC HEALTH SITUATION AFTER SMALLPOX IS ERADICATED (ABBREV)

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PROJECT DESCRIPTION: Since 1970, 36 cases of human monkeypox have been detected in west and central Africa. Although monkeys and other animals in the vicinity of human monkeypox cases were found to have vaccinia antibodies, monkeypox virus has been isolated from a free-living wild animal. Also, a pox-virus has been isolated from organs taken from two rodents and two nonhuman primates during the course of field studies near human monkeypox cases. The viral isolants have been called 'whitepox' virus and are indistinguishable from variola virus by the laboratory tests now used. The purpose of the study is to continue the surveillance of smallpox-like disease due to monkeypox and other poxviruses in humans and, eventually, to determine the natural history of monkeypox and related animal poxviruses (e.g., whitepox) by describing and indexing the fauna near cases of human poxvirus diseases and by identifying monkeypox and other animal poxviruses by serologic and virologic surveys of the selected animal populations. The study includes the determination of the biologic characteristics and the pathogenicity of newly discovered poxviruses.

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SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Center for Disease Control, Bureau of Lab. funds n.a.

3.0360,

BIOLOGY AND IMMUNOLOGY OF SCHISTOSOMA MANSONI

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PROJECT DESCRIPTION: The life cycle of Schistosoma mansoni is maintained routinely in Bagg Swiss mice and Biomphalaria glabrata snails in the laboratory to provide material for the preparation of antigens and for training and demonstration purposes. The snail colony provides B. glabrata for the S. mansoni life cycle and for sentinel animal work. Promising new immunodiagnostic techniques and/or antigens are evaluated using the serum bank and extensive parasitological data back-up of the prospective study of S. mansoni infection in Parcelas de Bouqueron community. The circumoval precipitin test with S. mansoni eggs as antigen is utilized as the reference immunodiagnostic test.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Center for Disease Control, Bureau of Lab. funds n.a.

3.0361,

SOUTH AMERICAN ARBOVIRUS STUDIES

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Cooperative studies in Equador and Argentina are designed to obtain information on the prevalence of human infection and disease caused by arboviruses of public health importance in the United States and which are known to occur in these two countries. Arthropods and vertebrates are being studied to determine those hosts responsible for virus persistence and periodic epidemic-epizootic transmission. Similarities and differences in endemicity and disease occurrence for St. Louis, western, eastern, and Venezuelan equine encephalitis viruses in the United States and these two neotropical countries are contrasted. These cooperative studies also provide the basis for training and the establishment in South America of additional competent public health scientists to conduct studies of arboviral problems.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Center for Disease Control, Bureau of Lab. funds n.a.

3.0362,

ST. LOUIS ENCEPHALITIS AND RELATED FLAVIVIRUS STUDIES

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These studies are designed to evaluate the role of virus and host variation in determining the different geographic and ecologic patterns of St. Louis encephalitis and related flaviviruses. The natural variation of flaviviruses is being evaluated by analysis of genetic, pathobiologic, and immunologic factors. Geographically and ecologically representative virus strains are being evaluated with respct to intrinsic factors of virus structure, molecular biology, pathogenicity, vertebrate host specificity, and types of host immune responses. Substructural viral elements are analyzed by immunochemical methods. These studies will provide information to explain the absence of SLE epidemics in tropical America, the milder appearance of the disease in the far western U.S. and will elucidate the viral genetic factors which modulate virulence.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Center for Disease Control, Bureau of Lab. funds n.a.

3.0363,

LASSA FEVER FIELD PROJECT - SIERRA LEONE

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Project is designed to define patterns of Lassa Virus Infection in populations of Eastern Sierra Leone where disease is endemic. Epidemiology of infection and disease is under investigation. Definitive clinical evaluation of severe form of the disease is being obtained. Studies on pathogenesis of disease in man as well as attempts to intervene are being conducted. Through NIH-University collaboration, a prospective study of biology of Lassa Virus in rodents is in progress.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Center for Disease Control, Bureau of Lab. funds n.a.

3.0364,

STUDY OF THE ECOLOGY AND PATHOGENESIS OF PERINATAL VIRAL INFECTIONS

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Laboratory and field investigations are being conducted to better define the ecology and pathogenic events in human infections with Rubella, measles, CMV, and Herpes simplex viruses. This project includes surveys to define the incidence and prevalence of these infections, investigations of modes of transmission, studies of the immunopathologic responses, and evaluations of vaccine efficacy and disease prophylaxis.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Center for Disease Control, Bureau of Lab. funds n.a.

3.0365,

ENVIRONMENTAL STUDIES OF SALMONELLA, LEGIONNAIRES' DISEASE BACTERIA, AND OTHER PATHOGENIC BACTERIA

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A major gap in our knowledge of Legionnaires' Disease epidemiology is the source of the etiologic agent and the mechanisms by which human infections occur. This information is essential for the disease prevention and control. We are investigating possible environmental sources of the organism and defining the conditions under which the bacteria survive or multiply. Environmental strains are compared with human strains in respect to morphological, cultural, biochemical, serological, and pathogenic attributes. We are also studying the serological relationship of the legionella to other water and soil bacteria that may be isolated and the ability of salmonella and arizona to survive as free-living organisms on the surfaces of living vegetation. We are also developing better methods for isolation and detection of salmonella from water. Salmonellosis is a major public health problem, with an estimated 2 to 2-1/2 million cases per annum in the U.S., many of which are related to water contact.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Center for Disease Control, Bureau of Lab. funds n.a.

3.0366,

MORTALITY, MEDICAL, AND REPRODUCTIVE STUDY OF LEAD WORKERS

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MORTALITY STUDY OF LEAD WORKERS: Lead phosphate administered subcutaneously to rats has resulted in the induction of renal tumors. Renal tumors in rats have also been induced by lead acetate-containing diet. Lead oxide appears to act synergistically with benzo(a)pyrene in pulmonary tumorigenesis in Syrian hamsters, since lead is reportedly cumulative in the lung. Workers in lead smelters and battery plants may breathe or ingest lead as a result of poor work hygiene practices. Possible carcinogenic or co-carcinogenic effects deserve examination. Although the authors of a study concerning carcinogenesis among lead battery plant workers concluded that their results do not support a specific cancer risk, the data indicate that such a risk may be present. In order to further assess the possible excess cancer risk related to lead exposure, a further retrospective cohort study is planned on workers exposed to lead and its compounds. A contract for establishing a master file and doing follow-up was given to Westat, Inc. The cohort has been identified and follow-up is under way.

REPRODUCTIVE STUDIES: Since as early as the mid 1800s, the effects of lead exposure on human reproduction have been observed. In 1860, Constantin Paul collected case histories on the reproductive effects in both male lead workers and their wives and in women workers who have had exposure to lead. Recently, Lancranjan et al, (1975), in a study of 150 male lead battery plant workers found that those in groups strongly affected by lead exposure had 'decreased fertility due to anthenospermia (reduced viability of sperm), hypospermia (both reduced numbers), or teratospermia (malformed), frequently associated.' All these reports suggest effects of lead on reproduction through both male and female exposure. Two reproductive history studies are being done, one to examine the effects on the male, and one to examine the effects on the female worker. Most of the data for the study of male workers have been collected, coded, and prepared for analysis. The study population for the study of effects of lead exposure on women workers has not yet been selected. Due to external delays, and due to limited personnel at NIOSH, this study will be postponed one year. (Text Abridged.)

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Center for Disease Control, National Inst. for Occupational Safety & Health $131,000

3.0367,

MORBIDITY & INDUSTRIAL HYGIENE STUDY OF FIBROUS MINERAL WORKERS - NCI

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Industrial hygiene and medical examinations of all talc facilities have been completed. All raw data has been received, and analysis and reports are being written. Preparations have begun for industrial hygiene examinations of the attapulgite clay industry.

FROM LAST FY'S EXECUTIVE SUMMARY: Exposure to asbestos has long been recognized as being associated with pulmonary pathology. Due to this demonstrated carcinogenicity, industry has begun utilizing materials other than asbestos in their processes. These substitute materials, however, are similar to asbestos in their morphology and chemical/physical properties.

While a great deal of health research exists about asbestos, insufficient evidence exists on the pernicious effect of the substitute materials on the respiratory system. A thorough investigation is warranted to ascertain the resultant exposure to these substitute materials.

Concentrating on talc but studying other fibrous minerals as well, representative samples of those exposed to these materials in production or secondary use will be studied through the use of questionnaire, x-ray and measurement of respiratory function. The results will be coordinated with industrial hygiene surveys at the places studied.

Studies on workers involved in attapulgite clay deposits to be finished in FY 80.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Center for Disease Control, National Inst. for Occupational Safety & Health $20,900

3.0368,

MORBIDITY AND IH STUDY OF WORKERS EXPOSED TO SULFUR OXIDES AND NITROGEN OXIDES

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The purpose of this study is to develop dose-response relations of both an acute and chronic nature for the various species of sulfur and nitrogen compounds in support of health standards development. The two essential interdependent parts of this study are the measurement of dose and of response. A measure of environmental dose will be obtained by personnel sampling for the compounds under investigation. Measurement of worker response include a questionnaire on demographic variables and respiratory symptoms, chest x-rays, and pulmonary function. A sample of the workers will be tested before and after work for changes in pulmonary function. Environmental measures will be taken concurrently. Levels of exposure that produce chronic effects will be estimated from total work history and environmental sampling at the time of the medical survey. Data collected from 5 salt mines showed a slight association of changes in pulmonary function over the shift with NO2 concentrations. Data from over 200 workers exposed to H2SO4 mist and controls is now being analyzed. Data on over 300 workers exposed to diesel exhaust has been collected.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Center for Disease Control, National Inst. for Occupational Safety & Health funds n.a.

3.0369,

MORTALITY AND INDUSTRIAL HYGIENE STUDY OF WORKERS EXPOSED TO DYES - NCI

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In response to public and congressional concern about the carcinogenicity of chemical components of oxidative and 'coal tar' hair dyes, the IWSB reviewed the possibility of investigating the mortality experience of cosmotologists; however, an extensive review of records from state licensing bureaus and national cosmotologists organizations found the available data inadequate to conduct a comprehensive epidemiological or industrial hygiene study of cosmotologists as an occupational group.

Another occupational group exposed to oxidative dyes includes animal fur dyes. Since the turn of the century, furriers have been using phenylenediamine in their dyeing processes (the same chemical used as an intermediate in hair dyes). Therefore, the IWSB has jointly undertaken with NCI a retrospective cohort mortality study of fur dyers in New York City area.

The records of the Joint Board of the Fur, Leather and Machinists Workers Union (FLM) have been chosen as the principal data source. Due to the restricted nature of the records, the study was limited to retirees (pensioners) on whom the most complete documentation was kept. Follow-up for the cohort is continuing, mainly through the Social Security Administration.

A second union, Local 3 of the Fur Floor Workers Union has been contacted for possible inclusion in the study. A records assessment determined the local to be an excellent data source for a mortality study of all workers including active, terminated and retirees. Their data on retirees could be used to supplement those of the FLM due to the similarities in ethnic background, geographical location of the shops and jobs performed.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Center for Disease Control, National Inst. for Occupational Safety & Health $57,000

3.0370,

MORTALITY, MEDICAL, AND INDUSTRIAL HYGIENE STUDY OF WORKERS EXPOSED TO TOLUENE - NCI

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Recently, toluene has received much attention for its potential long term health effect due to occupational exposure. TSCA (Toxic Substance Control Act) has listed toluene for further study, and CIIT (Chemical Industry Institute for Toxicology) has listed toluene as a first priority for study.

Toluene is a chemical of major use in U.S. industry today. In 1970, it was estimated that 694 million gallons of toluene were produced and approximately 100,000 workers were potentially exposed. In addition, it is expected that toluene will be substituted for benzene in many industrial processes.

Investigators have noted the acute toxic properties of toluene which include effects on the nervous system, liver, blood cells and chromosome changes. Of specific interest, exposed workers have exhibited depressed erythrocytes, hepatomegaly, macrocytosis, and chromosome breaks and aberrations. Furthermore, chromosome changes have also been noted in exposed rats.

The current federal standard is 200 ppm as an 8-hour TWA with an acceptable ceiling level of 300 ppm and acceptable maximum peaks above the ceiling of 500 ppm are allowed for 10 minute durations. However, controlled exposure of human subjects to 200 ppm for 8 hours produced mild fatigue, weakness, confusion, lacrimation, and paresthesias. Since chronic exposures may cause damaging effects, NIOSH has recommended a limit of 100 ppm (TWA) with a ceiling of 200 ppm for a ten minute sampling period.

This project will involve a retrospective cohort mortality analysis of an occupational population to determine whether or not there are any long term chronic health effects from toluene exposure. The first phase of the investigation will be a feasibility study to determine extent of exposure, to characterize the work enviornment, and to assess the feasibility of conducting the mortality portion of the study. A plan for a cross-sectional medical study is also being proposed.

During FY 79, walk-through surveys of labeling, adhesive, and shoe manufacturers were conducted where toluene is used as a major solvent.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Center for Disease Control, National Inst. for Occupational Safety & Health $139,000

3.0371,

OCCUPATIONAL DISORDERS OF THE WRIST

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Information obtained during the last three years by NIOSH indicates that hand and wrist disorders such as carpal tunnel syndrome and tenosynovitis resulting in medical treatment, absenteeism, and reassignment occur with high frequency, particularly among female workers. Jobs requiring repetitive motions of the hands and arms and those requiring high finger and wrist forces while in awkward hand and arm positions have historically been associated with these kinds of disorders.

In FY 80, techniques developed under a NIOSH sponsored grant (An Investigation of Occupational Wrist Injuries in Women, #2R01 OH00679-04) will be used to study high risk jobs identified in FY 79. Frame-by-frame analysis of films of jobs, electromyography, and sensory and motor ability tests are examples of the measures that will be implemented to identify and analyze hazardous elements of these jobs. PEB will utilize a consultant to develop the capability to perform such evaluations.

Further, different high incidence industries will be studied on a free-for-service basis using the methods described. The feasibility of conducting long term in-plant evaluations of intervention strategies such as work methods and tool design and worker evaluation will also be determined from these individual plant studies.

In FY 79 efforts were limited to identifying high risk jobs which need to be studied. Upholstery stitchers, small engine and small appliance assemblers, and electronic component assemblers were among the highest incidence jobs found and constitute the Population at Risk.

Ultimately, this work will lead to a safety and health guide for jobs involving a high risk of hand and wrist musculoskeletal disorders.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Center for Disease Control, National Inst. for Occupational Safety & Health $65,400

3.0372,

NEUROBEHAVIORAL INTERACTIONS OF SPRAY PAINT AGENTS

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Chemicals found in spray painting such as solvents, alcohols, aliphatic and aromatic hydrocarbons have typically been evaluated for their toxicity on an individual basis. Yet exposures in this operation involve more than one agent. The intent of this project is to investigate possible interactive effects of select chemicals found in spray painting utilizing neuro-behavioral response measures. The population at risk is approximately 400,000 spray painters. Two separate investigations, using human test subjects, are planned: (1) An in-house laboratory study of the behavioral and neurologic effects from various single and combination inhalation exposures to toluene and methyl-ethyl-ketone plus ingestion of ethyl alcohol. The resulting interaction study will focus on work activities of spray painters which involve general alertness, eye-hand coordination and timing. During FY 79, preparatory work was completed for subject testing. (2) A contract field study of the neurobehavioral effects on spray painters of chronic inhalation exposures to solvents found in paint sprays. Work places involving spray painting and a comparable, but non-exposed control population will be identified. Suitable psychoneurobehavioral tests will be administered. Specific solvents will be identified in the spray paint work environment and appropriate air samples will be obtained. Biochemical body-burden indicators will be obtained along with health and work histories to provide data on the extent of the chronic exposures.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Center for Disease Control, National Inst. for Occupational Safety & Health $349,145

3.0373,

CONFERENCE ON SHIFT WORK AND HEALTH

M. Colligan, U.S. Dept. of Health & Human Services, Public Health Service, Center for Disease Control, National Inst. for Occupational Safety & Health, Division of Biomedical & Behavioral Science, *4676 Columbia Pkwy., Cincinnati, Ohio* 45226 (VOB-B21-273)

During FY 79, a conference involving more than 40 international scientists representing 10 countries was held in conjunction with the the Office of Naval Research (IA-79-10) to examine the effects of variations in work-sleep schedules on health and performance. Shift work (particularly rotating shift schedules) and extended working hours were shown to disrupt individual circadian rhythms, sleep/restfulness cycles, and family adjustment. Contributed papers and discussions at this conference offered the most comprehensive multidisciplinary view of the state of art regarding the health and safety consequences of shift work currently available. Work on this project during FY 80 will consist of preparing the Conference proceedings for publication. The proceedings document is slated to be published as a NIOSH report during the Summer, 1980.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Center for Disease Control, National Inst. for Occupational Safety & Health $5,480

3.0374,

REGISTRATION OF DISEASE AND EXPOSURE COHORTS

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The Illness Effects Section (IES) currently maintains or is developing a number of disease (angiosarcoma of the liver, berylliosis) and exposure (kepone, OSHA-regulated carcinogens, DBCP) registers. The relative importance of each register differs given program or scientific considerations. The purpose of the project incorporates three major objectives: (1) Develop a common Data Management Structure. Each disease and exposure register has similar requirements for maintenance and technical administration. We propose to standardize the various activities associated with the collection, maintenance, and utilization of the IES register-based data. (2) Edit and Update existing computer-based data files. The independent development of the registers necessitates a complete edit of the current data files. Supplemental information will be obtained, consistent with the standardization mentioned previously. (3) Support the Development of the DBCP Register. The IES contributions to NIOSH associated activities with the DBCP episode were programmed as support to HETAB during FY 78. The IES commitments for future activities during FY 79 and FY 80 require an independent administrative and technical accounting. Activities are outlined for the 2-year period October 1, 1978, through Sept. 30, 1980. Although proposed as a 2-year program effort, the prospective direction of Disease and Exposure Cohort Registration assumes an administrative and technical commitment to continuous monitoring.

FY 79 Accomplishment: DBCP - A master file was created and vital status ascertainment has begun. BCR - The Beryllium Case Registry contract has been awarded and plans instituted for an audit of the existing file.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Center for Disease Control, National Inst. for Occupational Safety & Health $78,000

3.0375,

REGISTRY-BASED OCCUPATIONAL CANCER SURVEILLANCE - PHASE I

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The purpose of this project is the development of pilot efforts in population based occupational cancer surveillance. Prospective surveillance of the population and its occupational and industrial subpopulations is necessary to both (a) identify high risk populations and (b) follow-up known occupational and industrial sub-groups which are an unusually high risk of cancer occurrence. The former element relates directly to NIOSH's program of Industry-wide Studies. The early identification of 'suspect' occupational or industrial group assists in establishing priorities for future occupational studies. The follow-up of known or suspect groups seeks to verify and extend findings from initial surveillance and industry-wide study efforts. This sequence of early identification, industry-wide study, and prospective follow-up impacts directly on both criteria development and OSHA standards development.

FY 79 ACCOMPLISHMENTS: The Project protocol has been developed, reviewed, and modified. The Federal Reports Act clearance for the project's questionnaire was initiated.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Center for Disease Control, National Inst. for Occupational Safety & Health $67,000

3.0376,

ASSOCIATION OF PARENTAL OCCUPATION WITH CHILDHOOD CANCER CASES - NCI

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Current studies of the association between industrial agents and reproductive effects have focused on health outcomes prior to and including delivery. For those pregnancies resulting in 'normal' live births, it is possible that later (after one year) adverse effects such as neoplasms could be directly associated with exposures from agents identified in the occupational/industrial groups of the mother and/or father of a child.

The purpose of this proposed project is to survey childhood cancer cases in an attempt to provide an overview of associations between certain malignant neoplasms and parental occupational/industrial groups and to suggest studies of specific occupational/industrial groups that indicate excess cancer risk for workers' offspring.

The work on the project would be carried out under contract. The contractor would abstract, code, and analyze a data set of childhood cancer cases to accomplish the define purposes of the project.

FY 79 ACCOMPLISHMENTS: An interagency agreement between the Food and Drug Administration and NIOSH was completed.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Center for Disease Control, National Inst. for Occupational Safety & Health $17,000

3.0377,

ACCESS TO NIOSH DATA BASE - INFORMATION PROFILE DEVELOPMENT - NCI

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The NIOSH data base continues to provide important inputs to a wide spectrum of data users. It functions as a locator file for occupational groups at risk due to potential exposures. It also produces national estimates of numbers of workers potentially exposed to any of more than eight thousand chemical and physical agents.

This project supports the development of information profiles from the data base for chemicals, occupations, and industries.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Center for Disease Control, National Inst. for Occupational Safety & Health $200,000

3.0378,

MAPPING CHEMICAL EXPOSURES - ATLAS OF POTENTIAL RISK - NCI

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A cooperative effort with NCI has produced a useful procedure for graphically portraying the geographical distribution of potential occupational exposures in a format similar to that found in the NCI Atlas of Cancer Mortality for U.S. Counties 1950-1969.

This project supports the continuing utilization of these techniques in collection and analysis of data in an overall program of surveillance designed to deliver intelligence in a form appropriate for dissemination.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Center for Disease Control, National Inst. for Occupational Safety & Health $167,000

3.0379,

MEDICAL AND INDUSTRIAL HYGIENE STUDY OF WORKERS EXPOSED TO ADRENOCORTICAL STEROIDS

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A number of adrenocortical steroids are being manufactured in the United States by a number of drug companies. These steroids are extremely potent drugs. They have been shown to produce a number of detrimental effects in patients receiving them. These effects include hypertension, elevated blood sugar, acne osteoporosis, hirsutism, menstrual difficulties and other changes. From our preliminary studies of workers exposed to estrogen preparations, we know that effects are occurring in workers exposed to these potent hormones. A study reported with British Medical Journal has demonstrated adrenocortical suppression in workers manufacturing a synthetic glucocorticoid. The authors of this study believe that workers involved with manufacturing synthetic steroids are a risk despite their adherence to recommended precautions.

A cross-sectional medical/environmental study is underway to determine if health problems are occurring in the manufacture of adrenocortical steroid preparations in this country. If health problems are demonstrated to be present, it is anticipated that the data obtained will be of considerable assistance in determining safe levels of exposure to these agents.

So far, manufacturers of dexa and betamethasone have been identified and each questioned about numbers of workers potentially exposed, etc. If a cohort cannot be identified for dexa- and betamethasone manufacturers of prednisone, the next potent class of steroids will be similarly approached.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Center for Disease Control, National Inst. for Occupational Safety & Health $69,000

3.0380,

MORTALITY, MEDICAL, AND INDUSTRIAL HYGIENE STUDY OF WORKERS EXPOSED TO PCBS - NCI

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Polychlorinated biphenyls (PCBs) are a class of chlorinated aromatic hydrocarbons that are widespread in the environment, are highly stable, and tend to bioconcentrate in the food chain. Their current use is primarily limited to close systems in the electrical industry as insulating material in capacitors and transformers. Reports of adverse health effects in humans and animals accidentally exposed to PCBs, and the demonstration of carcinogenic effects in certain animals from certain PCBs, have necessitated an evaluation of the toxicology of this class of compounds. In laboratory animals, structural function changes in the liver have been noted as well as heptic tumor induction in certain species. Other documented effects have included gastrointestinal, endocrinological, hematological and embryotoxic effects. In humans, the syndromes of chloracne, and Yusho neonatorum have been extensively documented.

A determination of the health effects from exposure to PCBs is being assessed by (1) a retrospective mortality study of a cohort of occupationally exposed workers; (2) a cross-sectional medical survey of a cohort of currently employed workers; (3) a detailed industrial hygiene survey.

The mortality study is well under way; follow-up is near completion on the two study cohorts exposed to PCBs. The medical surveys have been completed and data analysis is in progress. The industrial hygiene surveys on all plants that were included in the mortality study and medical study have been completed.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Center for Disease Control, National Inst. for Occupational Safety & Health $23,000

3.0381,

CANCER SURVEILLANCE OF OCCUPATIONAL COHORTS IN A WESTERN SMSA - NCI

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This project proposes the examination of cancer incidence patterns among selected occupational cohorts in the greater San Francisco-Oakland SMSA. Numerous unions and collective bargaining organizations maintain data on constituent members. Given existing data on known and suspected carcinogenic hazards present in the environment of these cohorts, the existence and applicability of union data facilitates the study of the occupational cohorts for unusual cancer incidence. Linkage of data such as this with data on cancer incidence in geopolitically defined populations provides direct comparison of cancer risks for selected occupational groups. The results of such efforts will assist industry-wide studies in identifying groups at risk and thus encourage a

finer characterization of the occupational environment. These activities will benefit NIOSH programs in criteria document development and OSHA's program of standard setting. This particular project also explores the methodologic and technical problems associated with population-based cancer surveillance. The nature of the study necessitates a cooperative effort between the SEER participant in the Bay Area and NIOSH. A contract will be developed for basic data collection, update, edit, and preliminary analysis.

FY-79 accomplishments: Seven unions, representing 16 union locals or approximately 9400 individuals, have been identified for study. Data files are being constructed to facilitate cancer registry linkage and cancer incidence determination.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Center for Disease Control, National Inst. for Occupational Safety & Health $9,000

3.0382,
MORTALITY AND INDUSTRIAL HYGIENE STUDY OF NEW AGENTS - III - NCI

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Newly suspected hazardous agents are continually emerging. This project is designed to gather preliminary information, conduct preliminary and complete industrial hygiene surveys and to initiate epidemiological studies when possible. The industrial hygiene component of the studies will be contracted out for study of these new agents. Epidemiological evaluations will be conducted by inhouse personnel. The essentials of the study will be in three tasks: 1) develop protocol and review literature, 2) schedule and conduct initial field surveys, 3) schedule and conduct detailed industrial hygiene studies. Under the proposed contract three broad agent categories are assigned to the contractor for literature evaluations and recommendations as to specific agents within these categories for study. These agent categories are wood preservatives and two other agents to be named in FY 80. A 30-month contract has been awarded to Stewart-Todd Associates with a performance period from Sept. 28, 1978 to April 27, 1981. All of the work on wood preservatives has been completed in FY 79 except for the preparation of the final report and completion of in-depth surveys.

Two previous NIOSH contracts for similar studies have been awarded for studies of vinyl halides, epichlorohydrin, fluorocarbons, ethylene dibromide, ethylene oxide, toluene and zeolite.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Center for Disease Control, National Inst. for Occupational Safety & Health $63,000

3.0383,
MEDICAL, INDUSTRIAL HYGIENE, AND REPRODUCTIVE STUDIES OF WORKERS EXPOSED TO ESTROGENS

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Estrogens are a group of synthetic and natural hormones having serious potential effects on exposed workers. NIOSH hazard evaluation studies which were carried out in chemical and pharmaceutical manufacturing plants indicated that male workers developed gynecomastia and female workers experienced intermenstrual bleeding. It has been documented that women taking oral contraceptives have an increased risk of thromboembolism, cerebral vascular disease, and myocardial infarction. It has also been noted that estrogens may be carcinogens (e.g., increased incidence of endometrial cancer among women on estrogen replacement therapy. DES is a transplacental carcinogen/teratogen to the offsprings).

A cross-sectional medical/industrial hygiene study has been initiated to study health problems of workers exposed to estrogens and to attempt to determine a safe level of exposure to these agents. During the second quarter of FY 79, a workshop was held (in lieu of the tripartite meeting) which was attended by representatives of the pharmaceutical manufacturing plants and a substantial amount of information was collected on manufacturing processes, employee profiles, etc. Five of these plants were selected for in-depth study; four of these manufacture oral contraceptives using synthetic estrogens and one proccesses conjugated estrogens of natural origin. It was also determined that there is no longer a plant in the U.S. which chemically manufactures DES in bulk and that pharmaceutical preparations containing DES are manufactured only sporadically. Because of this, it was decided that occupational effects of DES exposure will not be studied in this project. Feasibility determinations regarding the mortality study of workers occupationally exposed to products containing estrogens have been completed in all but one plant. The remaining company has been contacted and a walk-through survey date is being negotiated.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Center for Disease Control, National Inst. for Occupational Safety & Health $151,000

3.0384,
MEDICAL, REPRODUCTIVE, AND INDUSTRIAL HYGIENE STUDY OF EFFECTS OF EXPOSURE TO CS2

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Carbon disulfide is used in the xanthation of cellulose to produce viscose rayon, as a solvent for sulfur or as a diluent for sulfur chloride in vulcanizing rubber, as a solvent for ribber cement, as an insecticide, as a solvent for phosphorous, fats, oils, resins, and waxes, in the manufacture of optical glass and is encountered in the destructive distillation of coal.

The toxicity of carbon disulfide (CS2) has been recognized for many years and generally is associated with central nervous system effects such as loss of memory, excessive irritability, vertigo, melancholia and in severe cases, dementia. More recent studies indicate an increase mortality and morbidity from cardiovascular disease and sexual impairment in both men and women.

The study of this agent has the following phases: 1. A study of mutagenesis by administering reproductive history questionnaire to the wives of workers. 2. A cross-sectional medical study to investigate the adverse health effects in workers exposed to carbon disulfide. 3. An industrial hygiene study to determine present CS2 exposure levels and estimate working lifetime exposures.

Data collection for the medical study and reproductive history has been completed. Industrial hygiene data collection was completed in the month of May, 1979. Percentage of worker participation in the medical study has been about 65%. Coding of the data began in May, 1979, and continued through FY 79.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Center for Disease Control, National Inst. for Occupational Safety & Health $101,000

3.0385,
MULTIPLE MYELOMA AND BRAIN TUMORS IN PHYSICIANS

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Studying the etiology of these two cancers and their correlation in physicians, a relatively homogenous population which is unique in having a high probability of exposure to repeated low-dose radiation and infections and good medical histories. The design is a case-control study with controls comparable by age, race, sex, and year of death selected from total physician deaths over fifteen years. An equal number of living controls will also be selected. Risk factors identified in previous studies will be examined by telephone interviews with next-of-kin, physicians associates, or physicians if a case-control. There will be special emphasis on determining the exact number of years of exposure to radiation and the estimated dose levels by year or dosimetry data. Questions concerning patient contacts, personal characteristics and medical history will be included. Information on residence, type of training and specialty are available from AMA records. A multi-variate analysis of data will be used to determine association of each of these cancers with radiation, infection, or other factors.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Center for Disease Control, National Inst. for Occupational Safety & Health $110,422

3.0386,
OCCUPATIONAL HEALTH RISKS OF WORKERS IN ATOMIC PLANTS

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The purpose of this research is to determine the occupational risks among workers in an atomic energy facility. A major objective is to study the long-term delayed biological effects of low-level ionizing radiation in a normal adult industrial population, who have been chronically exposed to fractionated doses of low-level ionizing radiation over a span of years.

The study is a prospective epidemiological evaluation of workers employed since 1944 and in succeeding years to be followed for cause of death identification through 1979, in which known radiation measurements have been made and recorded on a uniform basis during the entire period of employment. The National Social Security System is utilized for the identification of the deceased and the state vital records provide the cause of death data.

A control population for the Hanford employees matched to the 35,000 atomic worker population has been established and will be processed simultaneously through Social Security with the employees for the identification of mortality data. Previous analyses have been confined to Hanford employees, 1976.

Successive cohort analyses of employee populations, with simultaneous control of employment exposures, employment patterns, occupations, and external and internal radiation measurements will be carried out.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Center for Disease Control, National Inst. for Occupational Safety & Health $220,291

3.0387,
MORTALITY EXPERIENCE OF WORKERS EXPOSED TO HALOETHERS

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Chloromethyl-methyl ether (CMME) and bis-chloromethyl ether, an impurity (2-8%) in commercial CMME, are alkylating agents having diverse use in the chemical industry. Animal studies have demonstrated that both compounds are potent lung carcinogens. A retrospective cohort study of occupational exposure to CMME was initiated in 1972 to evaluate the human carcinogenicity of these compounds. The initial survey showed a clear excess of respiratory cancer among the CMME-exposed workers, and a strong exposure-response relationship. Other findings among the exposed workers were a considerable number of respiratory cancers at early ages (before age 45), an excess among both smokers and nonsmokers, and an inverse relationship between dose and respiratory cancer latency. Particularly because of the latter finding, another mortality survey is underway to better characterize the risk for those with lower exposure levels. The survey will include all seven major CMME producer and user firms in the USA for the time period 1948-1979. An estimated 2000 CMME-exposed workers and 3500 unexposed workers will be available for study.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Center for Disease Control, National Inst. for Occupational Safety & Health $53,326

3.0388,
THE ROLE OF ATOPY IN OCCUPATIONAL SKIN DISEASE

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The objectives of this grant concern two areas. Regarding the role of atopy in occupational dermatitis the objectives are as follows: to demonstrate the incidence of atopy among the closed cases of Workmen's Compensation in the State of South Carolina for the fiscal year July 1, 1976 to June 30, 1977; to

determine the incidence of atopy among the parents and family of the closed cases; and to demonstrate the level to which employers are aware of the existence of atopy at the time of hiring employees in those plants in which a closed case of Workmen's Compensation involving skin disease occurred.

Regarding the delivery of effective dermatologic intervention at the time of the active case of occupational dermatitis, the objectives are as follows: to identify contributing factors such as nature of inplant irritants or allergens, degree of personal protection used, and work practice routine involved by those employees who represented closed cases of Workmen's Compensation attributed to skin disease; to determine the interval between development of the occupational skin disease and referral to trained personnel; to determine the level of medical and/or credibility between information gleaned from the employees representing the closed cases themselves and the employers of the closed cases; and to determine the ultimate disposition of the closed cases with respect to continuance, transferral, or termination at the place of employment.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Center for Disease Control, National Inst. for Occupational Safety & Health $44,122

3.0389,

HUMAN METABOLISM OF HALOTHANE - MECHANISMS OF TOXICITY

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There is growing concern about chronic exposure of operating room personnel and acute exposure of patients to inhalation anesthetics. Recent epidemiological and long-term rat testing data have implicated the inhalation anesthetics in a variety of toxic reactions including liver necrosis, cancer, teratogenicity, and bone marrow defects. Many anesthetics have structural similarities to known toxic compounds such as vinyl chloride and 1, 2-dichloro-2-bromopropane. We have chosen to study halothane as a representative of the halogenated hydrocarbon inhalation anesthetics because of our previous experience with its urinary, volatile, and cellular-bound metabolites. In our previous studies we have demonstrated that human metabolism of halothane is different from that in rats and monkeys. Therefore, we propose to study metabolism in humans directly.

We have developed the methodology to purify human cytochromes P-450 to homegeneity and to reconstitute these cytochromes P-450 along with human cytochrome P-450 NADPH-reductase into a phospholipid vesicle system that is capable of carrying out metabolism like that in liver chromosomes. Because of the well-defined nature of this system, we will be able to define exact pathways of anesthetic metabolism as well as to differentiate the pathways dictated by the various cytochromes P-450 produced by several enzyme-inducing agents. We will use this human liver preparation to study production of volatile metabolites as well as binding of highly reactive intermediates to proteins and phospholipids of the liver cell. Studies in rats have associated production of toxic metabolites and liver necrosis with pretreatment by certain enzyme-inducing drugs followed by metabolism of anesthetics under anaerobic conditions. We will attempt to correlate toxicity in animals and humans with specific metabolic pathways occurring in the liver. A goal will be to define those conditions to which patients and operating room personnel should not be subjected in order to prevent significant toxic metabolism.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Center for Disease Control, National Inst. for Occupational Safety & Health $128,326

3.0390,

EPIDEMIOLOGIC METHODS - U.S. URANIUM MINERS

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The proposed study would use probabilistic models of cellular carcinogenesis, combined with maximum likelihood statistical procedures for estimation of model parameters, to analyze lung cancer mortality among U.S. uranium miners. The parameters used in the models aad estimated from the data would have biological interpretations. They would be used to examine the following issues: 1) the dose-response relationship for exposure to radon daughters, particularly as it applies to low level exposures; 2) the nature and extent of interaction between radiation and smoking exposures in respiratory carcinogenesis; 3) the presence or absence of dose rate effect; 4) the effect of age at start of irradiation upon subsequent lung cancer risk; 5) the evolution of risk after termination of exposure.

Particular attention will be paid to implications for risk due to occupational radiation exposures at the current standards.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Center for Disease Control, National Inst. for Occupational Safety & Health $9,998

3.0391,

VIBRATION AND INDUSTRIALLY RELATED LOW BACK DISEASE

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Epidemiologic and mechanical studies suggest that cyclic loading (i.e. vibration) is an important etiologic risk factor in the development of degenerative disc disease. Posture, spinal stiffness, asymmetric spinal loading, and abdominal tone appear to influence the effects of vibration. Disability is more common in patients with certain personality traits. By analysis of a general practice population and questionnaire survey, we are defining the role of cyclic loading in the broader perspective of low back pain (LBP). Subgroups with and without back pain, with and without significant vibrational loadings are being identified. These subgroups are to be investigated by questionnaire and by standardized physical examination for spinal stiffness, posture, straight leg raising, and neurologic abnormality. Psychologic factors will be evaluated by computerized modified Minnesota Multiphasic Personality Inventory (MMPI) and pain drawing. Objective radiographic analysis will correlate low back pain with postural, congenital, disc space height and facet characteristics. By case studies, the environmental vibrational stresses, lifting requirements, and asymmetric loading configurations imposed on the spine will be analyzed. The role of vibration will be further studied in the laboratory using a vibration simulator. Exposure particular at risk populations will be studied using a vibration exposure meter. Safety recommendations will be given for vibrational loadings.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Center for Disease Control, National Inst. for Occupational Safety & Health $271,534

3.0392,

HYPERSENSITIVITY LUNG DISEASE IN ANIMAL WORKERS

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Veterinarians and animal house workers are being studied for the presence of allergic alveolitis, asthma and other manifestations of hypersensitivity lung disease caused by the animal antigens to which they are exposed. A control population of non-exposed, normal individuals is being studied as well. The test population is being assayed by questionnaire, physical examination and simple pulmonary function tests as well as immediate-type skin tests using the relevant antigens as part of a general screen. Serum obtained will be assayed by RAST for specific IgE antibodies and by precipitin tests for specific IgG and IgM antibodies. Those subjects demonstrating evidence of specific hypersensitivity by history or examination or allergy assay will have bronchial challenge done along with complete pulmonary function tests. All tests will be done on the control subjects except for the bronchial challenge. Follow-up studies will be done on a sample of the negative and positive subjects at two years after initial encounter. Prevalence of this problems will be established and development of hypersensitivity over the two year observation period will be characterized. From this risk will be calculated and modifying factors looked for.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Center for Disease Control, National Inst. for Occupational Safety & Health $59,426

3.0393,

RESPIRATORY HAZARDS OF SWINE CONFINEMENT WORKERS

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A recent trend in livestock production is the use of confinement systems for increased economical production of animal protein. We have recognized potential health hazards for agricultural workers who work in these buildings. The objective of this project is to evaluate respiratory hazards present for these workers so that appropriate control measures may be taken.

Epidemiological studies have been undertaken to characterize the exposed population and quantitate the extent of the potential problem. Data collected to date suggests that there are four syndromes that workers may experience: 1) chronic irritation of the upper respiratory tract; 2) immediate hypersensitivity; 3) delayed hypersensitivity; 4) acute severe, disabling respiratory symptoms. Future epidemiological and clinical studies are designed to clarify and quantitate these early results.

More specifically, the clinical studies are to characterize the health effects of the confinement atmosphere on exposed individuals, elucidate the pathophysiology of the symptoms observed, and predict the potential for chronic lung damage. The four syndroms that have been defined by the epidemiological work will be investigated individually, primarily through challenge studies.

Environmental investigations will characterize the gaseous and particulate burden on the respiratory tract as well as variables affecting gas release from manure storage pits. Management practices and their relation to ambient levels of gases and dust in the work environment will be studied. Also, laboratory models of manure pits will be used to study measures to control gas release.

Animal studies are being initiated to predict the chronic pathological effect of the swine confinement atmosphere on the human respiratory tract.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Center for Disease Control, National Inst. for Occupational Safety & Health $78,863

3.0394,

OCCUPATIONAL HAZARDS OF ACRYLAMIDE AND HEXANE

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This combined clinical and experimental animal study will focus on acrylamide and hydrocarbon solvents, commercially important compounds which are significant occupational hazards because of their proven ability to produce occupational neuropathy, a type of neurological disease. The experimental part of this study will examine the known neurotoxicity and possible neuroteratogenicity of acrylamide and of 2,5-hexandione, the neurotoxic metabolite of the hydrocarbon solvents n-hexane and methyl n-butyl ketone. Light and electron microscopic examination of the nervous system of acute and chronically intoxicated animals (cats and rats) during fetal, post-natal, adult life, and in old age will allow us to determine the extent and pattern of nervous system damage and recovery with respect to age and development status. Based on our existing experimental data regarding sensory and motor dysfunction in acrylamide and hexacarbon neuropathies respectively, the clinical studies will utilize conventional and novel techniques to evaluate their usefulness and practicability in determining onset and recovery from occupational neuropathy. These studies are designed 1) to fulfill some of the Research Needs specified in National Institutes for Occupational Safety and Health Criteria Documents for Acrylamide (1976) and Alkanes (1977) and 2) to develop new, sensitive methods to prevent and detect occupational neuropathy in man.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Center for Disease Control, National Inst. for Occupational Safety & Health $151,077

3.0395,

PHYSIOLOGICAL RESPONSE TO INTERMITTENT HEAT EXPOSURES

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When working in heat, most workers wear clothing (e.g., long-sleeved shirt and trousers. However, most heat stress research has used semi-nude subjects. Workers also tend to go in and out of heat all day (intermittent exposure) while most research has continuous heat exposure for 1 or 2 hours. Most workers are heat acclimatized; much research uses non-acclimatized subjects. Our project has five phases: clothing worn in the field, insulation values, physiological responses, model validation and intermittent heat stress guidelines. In Phase 1, we will determine, for at least 25 organizations, what articles are actually worn in heat stress and recovery. In Phase 2, we will determine, using our electrically heated copper mannequin, insulation values (clo) of typical ensembles from Phase 1. In Phase 3, we will measure physiological responses of 12 acclimatized subjects at 4 temperature levels, 3 work-rest cycles, and 3 clothing levels and 2 recovery levels. Each session will last 10.5 hours (pretest, heat, post-test sessions with time for subjects to have coffee and lunch breaks in controlled environments). Heart rate, skin temperature, rectal temperature and clothing surface temperatures will be recorded automatically on tape every five minutes. Weight loss will be recorded every 60 min. In Phase 4, from our previous data and from Phase 3, we will validate our biophysical 25 node human thermoregulatory model for clothed exercising individuals exposed to intermittent heat stress. In Phase 5, from the experimental data and computer simulations using the model, guidelines will be developed giving permitted exposure to intermittent heat stress for clothed workers.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Center for Disease Control, National Inst. for Occupational Safety & Health $98,026

3.0396,

MERCURY BURDEN, HEALTH IMPAIRMENT IN DENTAL AUXILIARIES

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Previous studies of dental personnel have indicated that mercury exposure in the dental office represents a health hazard of dental practice. Attempts to measure the clinical health deficits associated with exposure have been few. Furthermore, the investigations that have been performed have been limited to evaluating current mercury exposure through blood, urine or hair analysis. The important relationship between cumulative mercury exposure and chronic health impairment has not been studied. This research proposal addresses itself to examining this relationship.

The population consists of 300 dental auxiliaries who have had contact with mercury and a cohort of 50 dental auxiliaries who do not use mercury in their practice. Cumulative mercury levels will be ascertained by measuring bone and brain mercury levels in situ by an X-ray fluorescence technique that was developed in our laboratories. The top ten per cent of the ranked population will then be further examined for neurological and renal deficits. Electrodiagnostic studies will measure nerve conduction velocity, denervation, neuromuscular transmission and sensory actions potentials. Renal examination will include kidney urinary concentrating function, osmolality and urinary microprotein. The kidney mercury level will also be ascertained by X-ray fluorescence in the group demonstrating elevated bone mercury. Neuropsychological evaluation is being performed on the ranked upper and lower twenty-five percent of the population. A battery of eleven tests are being used. Current mercury exposure levels of these populations will also be determined through analysis of blood, urine and hair and correlated with total body mercury burden as determined by X-ray fluorescence. The results of these evaluations will indicate whether functional health deficits have occurred as a result of mercury accumulation.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Center for Disease Control, National Inst. for Occupational Safety & Health $218,708

3.0397,

JOB CONDITIONS, OCCUPATION, AND CORONARY HEART DISEASE

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The object of this research is to examine U.S. data on cardiovascular disease and job conditions for associations similar to those recently obtained by these researchers in cross-sectional and prospective analysis of Swedish national data. Those findings confirmed the relationship between C.V.D. and psychosocial job characteristics using a previously untested model of job psychological strain development based on job decision latitude (low) and psychological job demands. The strength of the relationships are similar in magnitude to that found for serum cholesterol, blood pressure, smoking, and type-A behavior in the Framingham and Western Collaborative Group C.H.D. studies. These same job characteristics have been shown to be predictors of psychological strain symptoms in comparable U.S. and Swedish national surveys.

We propose to examine five major U.S. data bases including information on job characteristics and C.V.D. or C.H.D.: the H.I.S. (1972), H.E.S. (1960-62); H.A.N.E.S. (1970-75), the Western Collaborative Study, and the Framingham Study. While data measuring job characteristics is generally weak in all existing large scale U.S. C.V.D.-C.H.D. data bases, the above surveys do contain either limited direct measures of the relevant job characteristics or detailed U.S. Census Occupational Codes (382 categories). These codes can be used to indirectly assess job condition impacts with the help of job characteristic-occupation data in three national U.S. working condition surveys (1969, 1972, 1977). The U.S. data bases also allow control for conventional risk factors (especially age, smoking, serum cholesterol, type A behavior and socio-economic status). It should be noted that our model, based on work environment conditions, represents an alternative psycho-social mechanism of disease development to that implied by current 'Type A' behavior research (based on personality characteristics). Also, previous U.S. and Swedish findings based on the model have not substantially weakened when socio-economic status is controlled.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Center for Disease Control, National Inst. for Occupational Safety & Health $113,695

3.0398,

EPIDEMIOLOGICAL STUDY OF MALIGNANT MELANOMA

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A number of factors have been previously reported to be associated with high risk of malignant melanoma. These include age, sex, race, ethnic origin, complexion, ability to tan, hair color, eye color, and sun exposure. A case-control study has been designed to determine the degree of association between the occurrence of malignant melanoma and possible risk factors, including some which have not received quantitative analysis previously. The total data base will consist of approximately 1100 cases and a similar number of controls. Cases are being drawn from the tumor registry of the NYU Skin and Cancer Unit, whereas controls are randomly selected from the NYU Skin and Cancer Unit patients without melanoma or other neoplastic conditions. It is hoped that this study will lead to the identification of high risk groups at whom future monitoring for malignant melanoma could be directed. Significant positive associations found in the study, if corroborated by others, may also identify behavior patterns, which, if modified, could result in a decreased incidence of the disease.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Center for Disease Control, National Inst. for Occupational Safety & Health $34,351

3.0399,

COHORT MORTALITY STUDY OF DIMETHYLNITROSAMINE WORKERS

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This proposed research will establish a cohort of workers exposed occupationally in the past to dimethylnitrosamine. Prospective observation of their full mortality experience, from the time of first exposure, will be conducted. Expected and observed rates of death by cause will be tabulated to ascertain if unusual mortality patterns exist. Such data will have importance in assessing the potential human carcinogenicity of dimethylnitrosamine and in assessing the potential risk of environmental exposure of N-nitroso compounds.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Center for Disease Control, National Inst. for Occupational Safety & Health $24,579

3.0400,

SHIPYARD ASBESTOS DISEASE - MORTALITY EXPERIENCE

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We are investigating the mortality experience of shipyard workers at a major coast shipyard, to ascertain whether their asbestos exposure will be associated with increased cancer mortality. A previous field survey of 1,000 current employees in the yard (Groton, Connecticut) showed a very high incidence of asbestosis in chest films, establishing that asbestos exposure had been common in the past.

One thousand nine hundred and sixty men were employed in the yard on January 1, 1967, for at least ten years. By December 31, 1979, 340 were known to be deceased (17%) and 1,500 (76%) were known to be alive. Of these 830 (42%) were still employed in the shipyard. One hundred and twenty remained to be traced (6%). We expect to trace well over 95% of the cohort and will then analyze the mortality experience of the group, comparing expected deaths, based upon National Center for Health Statistics data for Connecticut and for the U.S. as a whole, with the differential experience of the various trades in the cohort (pipe fitters, boilermakers, painters, carpenters, guards, foundry workers, electricians, machinists, etc.). We are also exploring the mortality experience of two additional cohorts in the same way; a ship repair yard in Baltimore, Maryland, and a new surface ship construction yard in Quincy, Massachusetts (the Connecticut yard constructs and repairs submarines). In each of the latter two, more than 2,000 workers comprise the cohorts.

It will be of interest to compare the mortality experience with that of other asbestos-exposed workers (insulators, factory workers, miners and millers), with special reference to total mortality, lung cancer, pleural mesothelioma, peritoneal mesothelioma, gastrointestinal cancer, oropharyngeal and laryngeal cancer, renal cancer and asbestosis. The statistical analysis will utilize both the death certificate enumeration and that following ascertainment, in comparing expected deaths with those observed.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Center for Disease Control, National Inst. for Occupational Safety & Health $85,617

3.0401,

AN INVESTIGATION OF OCCUPATIONAL WRIST INJURIES IN WOMEN

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Past experience has shown that there is a high incidence of chronic wrist injuries among workers who perform manual work in industry; this incidence is particularly high among female workers. For example, in recent five year retrospective study of a sewing plant that was studied in the current investigation, Wherle (1976) reported that 10.3 cases of carpal tunnel syndrome occurred per million man hours worked.

The proposed research is a continuation of a current investigation, the tentative results of which show that carpal tunnel syndrome causation has both worker and job attributes. Based upon the findings of the current study, recommendations to alleviate carpal

tunnel syndrome at the work place will be proposed. The objective of this continued research is to validate the effectiveness of these recommendations, both theoretically and empirically.

A field study that will involve implementation of the recommendations so as to intervene in the pathogenesis of carpal tunnel syndrome at the workplace is planned.

To measure the effectiveness of the recommendations, it has been necessary to develop a test battery to evaluate functional hand performance and to establish test score distributions for symptomatic populations during the past year.

An anatomical study in which the types of intrawrist forces that create morphological tissue changes within the carpal tunnel is underway to evaluate the theoretical basis of the field recommendations. Papers have been submitted to the following journals: Journal of Biomechanics, Journal of Occupational Medicine, Archives of Physical Medicine.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Center for Disease Control, National Inst. for Occupational Safety & Health $18,331

3.0402,

PULMONARY EFFECTS OF VINYL CHLORIDE

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Completion of animal studies on pulmonary effects of vinyl chloride at heavy doses (600 and 300 ppm) with short exposure (a month) will be attempted. Both oncogenetic and non-neoplastic pulmonary effects at the late stage (40 weeks) after the exposure will be investigated. Some animals of 600 ppm will be kept for more than one year to study delayed-responses of the lung tissues to the chemical.

A comprehensive evaluation of pulmonary effects of vinyl chloride will be made from the data analysis of three animal studies, (1) heavy doses and long-term exposure, (2) small doses and short-term exposure and (3) heavy doses and short-term exposure.

Histopathological studies of human lung sections obtained from deceased workers at vinyl chloride polymerization plants will be continued.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Center for Disease Control, National Inst. for Occupational Safety & Health $88,919

3.0403,

LONG-TERM MORTALITY STUDY OF WORKERS IN THE FURNITURE MANUFACTURING INDUSTRY

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Epidemiologic studies have shown that persons employed in occupations with exposure to fine-wood dusts experience high mortality from cancer of the nasal sinuses and possible Hodgkins's disease. These findings, along with exposure to potentially hazardous chemicals such as methyl alcohol, toluene, xylene, formaldehyde, paints, varnishes, and lacquers, indicate the need for a fuller evaluation of the mortality experience of furniture workers. The National Cancer Institute with cooperation from the United Furniture Workers of America is initiating cohort mortality study of union members employed in the furniture industry 20-30 years ago. Records from the Insurance Fund of the union are currently being abstracted to establish the cohort. The number of study subjects is expected to be 20,000 to 25,000. The mortality experience of these workers will be compared to that of the general U.S. population after appropriate adjustments for differences in age, race, and sex. Exposure categories will be developed using job titles and furniture type. In addition, union locals and companies will be contacted in an attempt to obtain further information about working conditions and exposures.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Center for Disease Control, National Inst. for Occupational Safety & Health funds n.a.

3.0404,

MORTALITY AND INDUSTRIAL HYGIENE STUDY OF WORKERS EXPOSED TO TOLUENE

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This project involves a retrospective cohort mortality analysis of an occupational population exposed to toluene to determine whether or not there are any long-term health effects. The first phase of the investigation is a feasibility study to determine extent of exposure, to characterize the work environment, and to assess the feasibility of conducting the mortality portion of the study. The next phase of the study will be to conduct a retrospective cohort mortality study and analyze the results for any excesses in cause-specific mortality. The final phase will be to examine the mortality patterns by specific departments to see to what extent the toluene exposure may have contributed to any excess mortality experience of the cohort.

Vital status follow-up from the U.S. Shoe Company cohort in Harrison, Ohio is approximately seventy-five percent completed. Over 2400 persons are known to be alive and 400 deceased out of a population size of about 4000 persons. For the U.S. Shoe Company in Greenfield, Ohio, progress has been much slower due to data entry problems. This has delayed vital status follow-up substantially. As of March 1981, 50% of the follow-up effort was completed. Both cohorts are predominantly female.

A preliminary industrial hygiene report has been written by SRI International on 'Occupation Exposures to Toluene in the Shoe Manufacturing Industry'.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Center for Disease Control, National Inst. for Occupational Safety & Health funds n.a.

3.0405,

MORTALITY STUDY OF WORKERS EXPOSED TO SMALL FIBROUS GLASS

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In order to evaluate if there is excess mortality of malignant respiratory disease in workers exposed to fibrous glass ranging in size 1 to 3 mu in diameter, NIOSH has initiated a retrospective cohort mortality study of workers exposed to such fibers in a flame attenuation process that existed in the 1940s. This study supplements an earlier retrospective cohort mortality study on the same plant that showed increased mortality of non-malignant respiratory disease. The population of the previous study was generally exposed to fibers greater in diameter (e.g., ● 3 mu) than have been shown to be carcinogenic in man or animals and therefore the present study was deemed warranted to evaluate the small fiber diameter exposures. To date, records of 2,000 employees have been obtained and vital status ascertainment completed. In order to determine whether the worker group exposed to the small diameter fibrous glass particles suffer from unusual cancer mortality, matched control group has been selected from the non-exposed segment of the worker population at the above plant. A final report is being completed.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Center for Disease Control, National Inst. for Occupational Safety & Health funds n.a.

3.0406,

A STATE-BASED PILOT EFFORT FOR OCCUPATION-RELATED DISEASE SURVEILLANCE

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The need for an effective occupational illness surveillance program has been long recognized. Past and current efforts have been undertaken at various levels of public and private involvement. It is sufficient to note the efforts of BLS, AMA's Registry of Effects to Toxic Chemical Exposures, and efforts utilizing Workmen's Compensation data (California, Wisconsin, Washington). The purpose of this project is to develop, on a pilot basis, a program of occupation-related disease surveillance at the State Agency level.

Pilot activities will be developed through a proposed agreement with a State Department of Health. First-year activities will be directed to the establishment of information sources (corporate medical physicians, private physicians, unions, small business establishments) and a protocol for the collection, verification, analysis, and dissemination of reported occupation-related disease. Second-year activities will be directed to the implementation of the first-year's protocol.

An Evaluation of the cost and effectiveness of the Pilot Effort will be conducted at the completion of the second-year's activities.

FY 79 ACCOMPLISHMENTS: Established relationships with Ohio's Industrial Commission to refer cases to the Beryllium Case Registry. Developed a draft cooperative agreement to develop occupational health surveillance systems.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Center for Disease Control, National Inst. for Occupational Safety & Health $91,000

3.0407,

LEAD SURVEILLANCE FEASIBILITY ASSESSMENT

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Biological monitoring of workers exposed to lead is prescribed in the OSHA Final Standard on Lead (29 CFR, Part 1919.1025). In excess of one million tons of lead are processed yearly in the U.S. Potential occupational exposure to lead and its compounds has been observed in at least 120 occupations within a variety of industrial settings (lead smelting, lead pigments manufacturing, shipbuilding and ship repairing, auto manufacturing, and others). A medical surveillance program could potentially have a strong impact on containing lead absorption within defined limits presumed to be non-toxic. The feasibility of establishing a comprehensive medical surveillance system for the monitoring of occupational lead exposure has broad implications. Activities proposed during FY 80 will be undertaken to assess costs, methodologic alternatives, and benefits or consequences of monitoring activities.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Center for Disease Control, National Inst. for Occupational Safety & Health $31,000

3.0408,

WORKSHOP ON MACHINE-PACING STRESS PROBLEMS

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Machine-paced work is being viewed as a potentially significant contributor to worker stress and ill health. The National Institute for Occupational Safety and Health has a major effort underway at defining the impact of machine-pacing on worker health. In addition, there are various governmental and university research groups throughout the world conducting related research. One such group is the Institute of Occupational Health in Finland. The purpose of this project is to conduct a workshop, co-sponsored by NIOSH and IOH Finland, to sort out and review the latest findings, and exchange ideas for future work on the subject. A select group of international experts will be invited to make formal presentations concerning their research and participate in discussion groups at this meeting which will be held either in Helsinki, Finland or Washington, D.C.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Center for Disease Control, National Inst. for Occupational Safety & Health $29,980

3.0409,

ENERGY INDUSTRIAL MEDICAL PROTOCOL

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The following subprojects are included in the project: (1) summary of potential hazards associated with coal liquefaction and gasification as determined from literature review, extrapolation from analogous industries, and engineering theory; (2) summary of current medical programs at synthane, hygas, bigas, steam-iron gasification facilities and SRC, H-coal, clean

coke, and synthoil liquefaction facilities; (3) recommendations for on-site acute care facilities; (4) development of standard occupational/medical history forms suitable for medical and epidemiological uses; (5) development of standard forms for recording worker exposure to hazards which are suitable for medical and epidemiological uses; (6) evaluation of aryl hydrocarbon hydroxylase activity as a useful screening tool to determine employees at high risk of developing lung cancer following polynuclear aromatic hydrocarbon exposure; (7) development of a medical monitoring program tailored to unit operation specific hazards; (8) recommendations for a screening program to detect teratogenic effects of occupational exposures; and (9) recommendations for follow-up of terminated, disabled, and retired workers.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Center for Disease Control, National Inst. for Occupational Safety & Health funds n.a.

3.0410,
NATIONAL OCCUPATIONAL HAZARD SURVEY - #2

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The foundation of experience in sampling statistics, data editing and analysis, resolution of trade-name product ingredients, and managing a field survey team which was developed during the original National Occupational Hazard Survey will be used to support and guide the planning and implementation of a second national Survey. The NOHS survey forms, data processing systems, programs, and procedures, will be critically examined to identify areas where improvements can be made.

The sample of facilities to be surveyed will cover a wide range of industry types, facility sizes, and geographical locations, and be constructed in such a way as to permit the development of national exposure estimates. A team of industrial hygienists will be recruited and trained intensively in observational survey techniques. This team will be deployed in the sample of facilities for the purpose of gathering plant level data on the nature and extent of potential occupational exposures to chemical and physical agents, including trade name products. The surveyors will also collect information on the duration of these exposures, the physical form of the substances, and the intended control devices or procedures. Plant management will be interviewed to assess the incidence of illness which may be attributable to occupational factors, and the measures which have been implemented to insure the health and safety of the workforce.

Manufacturers of products identified as potential exposure agents will be contacted and asked to supply ingredient information on their products, which will be added to the main data base.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Center for Disease Control, National Inst. for Occupational Safety & Health $1,300,000

3.0411,
SAFETY AND HEALTH OF COMMERCIAL DIVERS

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Under the provisions of the Outer Continental Shelf Act, NIOSH has the responsibility for providing for the safety and health of commercial divers who explore for ore and mineral resources in the waters of the Outer Continental Shelf (estimated at 200-1200 divers). To identify health and safety problems of divers, NIOSH will collect accident, illness and mortality information from Federal agencies (NOAA, USCG, OSHA), the private sector (Brotherhood of Carpenters and Joiners) and foreign diving information sources. An Interagency Agreement with NOAA will establish a National Diving Accident Network to obtain medical information from hyperbaric treatment centers. A Hyperbaric Workers Safety and Health Data Center will be established at NIOSH to process this information.

A second objective of this project will be to provide support for studies on previously identified health problems of divers and caisson workers. Contracts will provide research on emergency diver evacuation procedures, to determine the most effective strategy to provide heating for Arctic divers, and to develop a set of interim decompression schedules for caisson workers. Also, a series of conferences will be held to (1) develop methods for delayed decompression sickness treatment, (2) determine methods for investigating sudden loss of consciousness in divers, and (3) determine alternate strategies for diving deeper than 1,000 feet.

Previous accomplishments in the area of occupational disorders associated with hyperbaric environments include publication of the proceedings of a symposium on Dysbarism Related Osteronecrosis, the development of a National Research Plan for Divers, and participation with NOAA, the USCG, OSHA and the diving industry in the development of a proposed research plan which would meet the needs of the Outer Continental Shelf Act of 1978.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Center for Disease Control, National Inst. for Occupational Safety & Health $474,900

3.0412,
MORTALITY AND INDUSTRIAL HYGIENE STUDY OF A URANIUM ENRICHMENT FACILITY

D.P. Brown, U.S. Dept. of Health & Human Services, Public Health Service, Center for Disease Control, National Inst. for Occupational Safety & Health, Division of Surveillance Hazard Evaluations & Field Studies, *4676 Columbia Pkwy., Cincinnati, Ohio* 45226 (VMH-BAB-546)

In recent years there has been increased concern over the possible adverse health effects from occupational exposure to radiation. However, there are few epidemiologic studies that have examined the mortality patterns among workers with documented long-term, low-level exposure to alpha radiation.

The Goodyear Atomic Coperation (GAT), which is a Department of Energy (DOE) facility, offers a good worker population for such a study. This facility enriches uranium from 0.7 percent U-235 to 98 percent U-235. The primary exposure of interest is internal alpha radiation from inhalation or ingestion of UF6. Based on existing data from industrial hygiene samples and biological monitoring, the workforce will be divided into gradients of alpha exposure by job classification. Additional industrial hygiene surveys will be conducted to characterize other exposures at the plant and correlate them to job classifications.

A retrospective cohort mortality study will be conducted to determine whether or not the study population has experienced any increased in cause-expecific mortality compared to the mortality of a standard population. This analysis will be done by subgroups according to exposure.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Center for Disease Control, National Inst. for Occupational Safety & Health funds n.a.

3.0413,
INJURY EPIDEMIOLOGY

P. Coleman, U.S. Dept. of Health & Human Services, Public Health Service, Center for Disease Control, National Inst. for Occupational Safety & Health, Division of Safety Research, *944 Chestnut Ridge Rd., Morgantown, West Virginia* 26505 (VLB-S11-807)

This project incorporates, under one heading, the three major components of the Safety Surveillance Branch's current program. These components are: 1. Safety Intelligence - this project continues from last year the efforts to establish an adequate surveillance system for safety research based on existing data, and to initiate change in this area to improve and implement future surveillance data bases. 2. Epidemiology of Injury - this project is a major initiative to restructure concepts, principles, and problem-solving approaches to injury prevention and safety research through a cooperative agreement with three academic institutions. While the general principles for adapting disease epidemiology to injury problems will be the first objective, each grantee will be asked to focus on one of the following areas: falls from elevation, overexertions, or caught-in-machine types of injuries. 3. Worker-Identified Hazard Control System - this project will serve as one demonstration of systems principles applied to safety and in-plant communication to improve worker input to the hazard management process.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Center for Disease Control, National Inst. for Occupational Safety & Health $1,412,000

3.0414,
EPIDEMIOLOGICAL MORTALITY STUDY OF TENNESSEE VALLEY AUTHORITY EMPLOYEES

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This mortality and industrial hygiene study of workers in the Tennessee Valley Authority's coal-fired power plants is being conducted in two parts. The second part can be found on TOX-TIPS 52-5.

The primary purpose of this study is to compare the mortality incidence of employees in coal-fueled steam-electric power plants to control groups in other lines of work. A secondary purpose is to determine the mortality incidence of a large heterogeneous work force in an established energy-producing industry.

The cohort selected for this study was 23,000 male annual employees with two or more years continuous service with TVA between 1955 and 1975. The project is expected to be completed in September 1981.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Center for Disease Control, National Inst. for Occupational Safety & Health $250,000

3.0415,
ANALYSIS OF X-RAY SURVEILLANCE DATA

L. Boyce, U.S. Dept. of Health & Human Services, Public Health Service, Center for Disease Control, National Inst. for Occupational Safety & Health, Division of Respiratory Disease Studies, *944 Chestnut Ridge Rd., Morgantown, West Virginia* 26505 (VKQ-M11-254)

This project provides for obtaining coal mine dust sampling data for MSHA, merging this data with our X-ray examination data collected in periodic x-ray exam program and building a data base which will be analyzed in FY 81, to determine the prevalence and progression of coalworkers' pneumoconiosis among U.S. underground coal miners. During FY 81 the correlation between radiological progression of CWP and gravimetric coal mine dust measurements will be determined.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Center for Disease Control, National Inst. for Occupational Safety & Health $12,520

3.0416,
CUTANEOUS TOXICITY HAZARDS

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The most common of all occupational illnesses are diseases of the skin which, according to the Bureau of Labor Statistics (1976), accounts for 40% (1.5 cases/1000 workers) of all reported occupational diseases exclusive of injuries. Inadequacy of the reporting system led the OSHA Advisory Committee on Cutaneous Hazards to conclude (12/19/78) that the incidence was actually 10 to 50 times greater than reported by BLS. Clinical eczematous dermatitis, caused by primary irritants, allergic sensitizers, and photo-sensitizers, comprises 75 to 80% of occupational dermatoses.

The objectives of this project are: 1) To actively continue the skin and eye irritation and skin sensitization testing program for NIOSH priority chemicals. Chemicals planned for testing include: acrolein (85 million pounds produced annually, 7,500 workers exposed); ethyl silicate (460,000 workers exposed); cyclohexylamine (6.5 million pounds produced annually, 6,000 workers exposed); and N,N-dimethylacetamide (65 million pounds produced annually, 8,500 workers exposed). 2) To analyze field samples submitted by DSHEFS health hazard evaluation effort using skin and eye irritation and/or skin sensitization methods. 3) To develop, evaluate, and standardize photosensitization methods and scoring procedures in a corroborative in-house effort with the Physical Agents Effects Branch, DBBS. Industrial photosensitization responses are encountered in a number of industries including manufacture and formulation of drugs, cosmetics, dyes, flourescent brighteners, photocuring, photoengraving, beauticians, printers, agricultural workers, etc. 4) To formulate a long-term program in cutaneous toxicity assessment which may include: a) development and evaluation of a commercially marketable kit for the identification of dermatogens; b) development of a model for percutaneous absorption

kinetics including aging effects and testing the model's application to evaluate protective clothing; c) further investigations on the role of biologicals in occupational dermatoses.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Center for Disease Control, National Inst. for Occupational Safety & Health $49,500

3.0417,

INDUSTRIAL HYGIENE STUDIES OF TENNESSEE VALLEY AUTHORITY WORKERS IN COAL-FIRED POWER PLANTS

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The NIOSH/TVA subagreement 1, 'Industrial Hygiene Studies of TVA Workers in Coal-Fired Power Plants,' is part of a larger cooperative research agreement to investigate the occupational health and safety impacts of electric power generation. (See also TOX-TIPS 52-3.) This investigation concentrates on measuring the exposure to those hazardous agents commonly found in coal-fired power plants: SO_2, NOx, respirable coal dust, respirable fly ash, and asbestos. Major craft groups in TVA's coal-fired power plants are being sampled using the personal sampling methods recommended by NIOSH for determination of average annual personal exposure levels by craft to the five agents. In addition to the sampling, historical data on coal-fired power plant exposure were gathered from TVA files for the past 25 years when they were available.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Center for Disease Control, National Inst. for Occupational Safety & Health $65,000

3.0418,

IMMUNOLOGY OF GRAIN AND OTHER ORGANIC DUSTS

S. Olenchock, U.S. Dept. of Health & Human Services, Public Health Service, Center for Disease Control, National Inst. for Occupational Safety & Health, Division of Respiratory Disease Studies, *944 Chestnut Ridge Rd., Morgantown, West Virginia* 26505 (VKC-R23-109)

This project encompasses an immunological study of organic dusts, with emphasis on grain dust. The study is designed to continue and expand in stepwise progression NIOSH in-house research related to the activation of complement by airborne grain dusts. In vitro studies have demonstrated that grain dust extracts generate complement-dependent chemotactic factors (for human PMN) after incubations in normal human serum. It is the intent of this study to analyze in vivo effects of dust/extract on animal lungs. In addition, attempts will be made to characterize the 'active' factions in the grain.

Collaboration with EIB, USDA, and WVU will continue in this project by examining sera from swine confinement house workers and matched controls for precipitating antibodies to various serologically distinct leptospirae and brucellae. Dusts from various animal confinement houses will be used to explore the potential for occupational exposure to gram negative bacterial endotoxins.

This project is also designed to expand a study of precipitating antibodies in sera from workers in the textile industry, and cotton in collaboration with CIB analyze sera from workers exposed to known amounts of dust from model cotton cardrooms as well as examine the various cotton samples and respirable filters. Knowledge gained in our previous study of grain and complement will be utilized to evaluate the effects of wood dust extracts on the complement cascade in collaboration with EPIB.

Finally, exposure to fungi is documented in many working groups. We intend to pursue an animal study of the long term effects of exposure to one of the most ubiquitous fungi, Aspergillus. Our previous NIOSH project has formed the basis of this study. Worker Groups Affected: Grain handlers (at all phases), animal confinement house workers, wood workers/millers, cotton textile workers. Benefits to Workers: Understanding of one mechanism of acute inflammation which could lead to chronic disease. Identification of potentially harmful components in dusts.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Center for Disease Control, National Inst. for Occupational Safety & Health $79,150

3.0419,

TECHNIQUES FOR IDENTIFYING HIGH-RISK OCCUPATIONAL GROUPS

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Several projects in the Surveillance Branch have identified sources and methods for acquiring intelligence on occupational hazards through programs of interaction with individuals or groups with an interest in workplace hazards. For example, a cooperative effort with OCAW and ICWU has produced a system which permits the unions to organize and access potential exposure information acquired through the local organizations. The system permits the unions' health and safety staff to identify potentially exposed workers by plant site as new information on a hazards is received.

Another project developed and pilot tested forms and manuals which make it easy for an employer to catalog potential exposure agents within his own plant and systematically identify high risk occupational groups. These materials form an important adjunct method for collecting data on potential exposures without requiring field surveys by NIOSH personnel, are thus economical data acquisition techniques with potential application in other NIOSH programs.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Center for Disease Control, National Inst. for Occupational Safety & Health $120,000

3.0420,

CASE-CONTROL STUDY AND OPHTHALMOLOGY SURVEY OF PLANT IN CHARLESTON, W. VA. - NCI

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In response to an employee request, NIOSH began an investigation into an alleged cancer hazard at a DuPont chemical plant in Belle, West Virginia. Subsequent to this employee request, NIOSH received a completed report of a DuPont epidemiologic study that demonstrated an excess risk of cancer of the eye, kidney and lung among employees at the DuPont Belle plant.

In order to thoroughly investigate the causes of this excess cancer risk identified among employees at the DuPont Belle plant, NIOSH proposed to conduct a cross-section ophthalmologic survey of workers at DuPont Belle plant and a case control study of the eye and kidney cancer cases.

The cross-section ophthalmologic survey was conducted from March 13, 1978, to April 21, 1978. A total of 1153 persons were examined. One additional case of ocular melanoma was discovered in a pensioned employee. A follow-up of persons discovered in the course of the survey to have pigmented lesions of the optic fundus is planned for FY 80.

The work histories of all the eye and kidney cancer cases identified at the DuPont Belle plant will be compared to the work histories of a group of matched controls to determine if the cancer cases worked more frequently than the controls in any specific job areas.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Center for Disease Control, National Inst. for Occupational Safety & Health $73,000

3.0421,

BIOLOGICAL HAZARDS IN THE WORKPLACE

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Causative agents of occupational diseases may be classified as chemical hazards, physical hazards, or biological hazards. NIOSH has devoted little effort or attention towards bio-hazards in the workplace. Biohazards include acute and chronic infections, parasitism, and toxic or allergenic reactions to plant or animal agents. Occupational exposure to irritating toxic or allergenic substances produced by a spectrum of plants, animals and microorganisms is evident.

Clearly, there are known diseases that are, or could be, related to occupation; brucellosis, tularemia, tuberculosis, hepatitis, bagassosis, bark stripper's disease, and coccidioidomycosis. Infections, dermatitis, asthma, urticaria, or photosensitization may frequently be the result of occupational exposure, yet not diagnosed as an occupational disease. In the past 30 years, 164 deaths have been reported from a total of 3921 'laboratory acquired infections.' These figures do not include occupationally related deaths from biological hazards in abattoirs, the fermentation industry, grain milling, agricultural, construction, or forestry operations.

An extensive literature review will be conducted to identify the various agents, etiology, and occupations exposed. Where appropriate, walk-through surveys will provide an opportunity to evaluate control technology and work practices. Dependent upon the findings, scope of the project may be narrowed. The principal product of the project will be a technical report documenting the findings and recommendations for further investigations.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Center for Disease Control, National Inst. for Occupational Safety & Health funds n.a.

3.0422,

MORTALITY AND INDUSTRIAL HYGIENE STUDY OF FORMALDEHYDE

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A study of formaldehyde was initiated because of findings reported by CIIT that low levels of formaldehyde were carcinogenic in rats. To date, an extensive literature review is being conducted and efforts to establish a suitable cohort and determination of exposure ranges are in process. Procedures of formaldehyde are exposed, but not numerous enough for a cohort. Mushroom growers (formaldehyde is used as a fungicide) have good records and may be suitable depending upon the range of exposure. This is awaiting analysis.

Formaldehyde has been used extensively in various manufacturing processes since the late 1940's. Formaldehyde resins, fertilizer, wood and paper products, and textiles have been the major industries using formaldehyde. An estimated 1.4 million workers are exposed to formaldehyde in 57,000 plant units.

This project will be composed of two portions. Initially, efforts will continue to locate a suitable population of workers for the cohort mortality study. Walk-through surveys may be required. Textiles, wood, and paper products are logical areas of investigation. Secondly, the industrial hygiene portion of this study will determine the extent of exposure across a large general worker population. The literature contains very little in this area. An in-depth industrial hygiene study will also be conducted to characterize the environment of the defined population in the epidemiological study.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Center for Disease Control, National Inst. for Occupational Safety & Health funds n.a.

3.0423,

MORTALITY ANALYSIS OF UNITED AUTO WORKERS COHORTS

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Exposure to known or strongly suspected carcinogens (e.g., asbestos, chromate pigments and plating solutions, coke oven emissions, cutting fluids, etc.) has been documented for workers in the automobile industry as well as in related industries such as metal working. Recently, studies have indicated increased proportions and rates of cancer deaths among workers in these industries. Most of these studies have been of a preliminary nature, and additional epidemiology studies are required to further define any hazards which may exist in these industries.

A preliminary evaluation of the United Auto Workers International Union's (UAW) computerized central pension files, as well as membership and seniority records, indicates that this data base is adequate to

conduct epidemiology studies of disease excess and disease etiology in the union membership. Therefore, when considering the uniqueness of this data base, a contract will be awarded to UAW to conduct studies of occupational cancer epidemiology. In addition to providing epidemiology studies of the automobile and related industries, it is hoped this project will serve as a model for self-analysis by other large labor unions.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Center for Disease Control, National Inst. for Occupational Safety & Health funds n.a.

3.0424,
RESEARCH ON CAUGHT-IN TYPE INJURIES

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The NIOSH Division of Safety Research long-range plans indicate a high priority for research to reduce the incidence of injuries classified as 'caught-in, under, or between' using the ANSI Z16.2 classification scheme. This type of injury most frequently occurs in manufacturing operations where employees operate machines and equipment.

The program consists of three continuing studies and three new studies. The continuing studies are: 1. Metalcutting Lathe Safety - an epidemiologic and ergonomic investigation of lathe design and operating procedures. There are about 150,000 lathe operators in the United States. 2. Reliability of Pressure Sensing Devices - a contract to develop performance criteria for light curtains used to safeguard presses. 3. Assessment of Machine Safeguarding Alternatives - a contract to develop a quantitative risk assessment method for machine safeguarding methods and devices.

The new studies are: 1. Hand speed assessment to determine appropriate distance to locate safety devices from machine point of operation (in-house). 2. Perform a safety evaluation of the OSHA experimental variance on self-tripping light curtains for operating mechanical power presses (contract). 3. Establish adequate methods for testing the sensitivity of radio-frequency presence sensing safeguards (contract).

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Center for Disease Control, National Inst. for Occupational Safety & Health $338,000

3.0425,
COHORT STUDY OF AUTOMOTIVE WOOD DIE AND MODEL MAKERS

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A PRM study conducted by NIOSH on 1257 deceased benefit-eligible members of the National Pattern Makers' League has shown significant proportionate excesses of deaths due to colon cancer and brain tumors. When divided by local leagues into wood shops and metal shops, wood shop pattern makers were observed to have a significant excess proportion of deaths due to leukemia. Non-significant excesses of cancer deaths were found at a number of other sites. Two other studies conducted independently by Sloan-Kettering Cancer Institute and Michigan Cancer Foundation have also shown significantly increased mortality from colo-rectal cancer, as well as elevated bladder and lung cancer rates in subgroups of the study population. Taken together, these three studies suggest increased cancer association with this occupation.

To further investigate these findings, a retrospective cohort mortality study and an environmental assessment are being conducted of about 2000 automotive wood die and model makers who were ever employed at Chrysler, Ford, and General Motors in 1940-1978. The cause-specific mortality of these workers will be compared with that of the general U.S. population. Any unusual patterns of mortality will be examined carefully considering employment work history data and environmental sampling data in an effort to untangle some of the exposures in an environment which includes exposures to wood and plastic dusts, glues, epoxy resins, and solvents.

An industrial hygiene characterization of the model shops was initiated in FY 80. Workers' exposures to total and respirable wood dust, solvents, and amines were measured. These surveys will be completed in FY 81. Surveys will include GM Fisher Body plant, Ford Body Engineering, Chrysler Highland Park, and four job shops represented by the Warren Association.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Center for Disease Control, National Inst. for Occupational Safety & Health funds n.a.

3.0426,
MORTALITY AND INDUSTRIAL HYGIENE STUDY OF PHOSPHATE WORKERS - MINING

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NIOSH is conducting an epidemiologic study of the mortality patterns among phosphate (fertilizer) production workers. Interest in the chronic health effects associated with this industry developed because of three observed cases of lung cancer in phosphate production workers. All three men were reported to be non-smokers. The hypothesis of an association between lung cancer and phosphate exposure seems to be supported by studies by other Federal agencies and the Florida State Department of Health, all of which have suggested an increased rate of lung cancer among the county populations surrounding the phosphate plants. This study involves: 1) industrial hygiene evaluations at a number of phosphate mining and phosphate fertilizer plants, 2) a retrospective cohort study of phosphate fertilizer workers' mortality patterns, and 3) a case control study on the same population studies in the cohort study to determine if the risk of lung cancer is associated with employment in specific job categories. In FY 80 the overall industrial hygiene report will be finalized. At that time it will be determined if any additional industrial hygiene monitoring is needed. Follow-up will continue for cohort study members until the vital status of approximately 95 percent has been determined. When this is accomplished, analyses can be done for retrospective study and cases and controls can be chosen for the subsequent epidemiologic study.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Center for Disease Control, National Inst. for Occupational Safety & Health $113,000

3.0427,
RESPIRATORY QUESTIONNAIRE DESIGN AND VALIDATION

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The respiratory symptoms questionnaire is extensively used in epidemiological research. The form presently used by the Division of Respiratory Disease Studies of NIOSH is based on the older British Medical Research Council format and is now considered outdated, inadequate, and in some ways, inappropriate.

This project will involve the drafting of a new questionnaire based on existing versions which will be suitable for modern research in occupational epidemiology of lung disease. The proposed questionnaire will be thoroughly tested and evaluated in a series of checks on validity, comparability, and reproducibility.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Center for Disease Control, National Inst. for Occupational Safety & Health $13,650

3.0428,
CURRENT INTELLIGENCE SYSTEM

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The basic purpose of the Current Intelligence System is to promptly review, evaluate and supplement new information received or generated by the National Institute for Occupational Safety and Health (NIOSH) on occupational hazards which are either unrecognized or are more severe than generally known. As warranted by this evaluation the information is capsulized and disseminated to NIOSH staff, other government agencies, the occupational health community (which includes labor, industry, academia and public interest groups), and the general public. The Current Intelligence Bulletins prepared in this project describe measures designed to minimize human risks. This system also serves to advise selected members of the above groups of specific knowledge recently acquired by NIOSH which pertains to their particular occupational environments.

In FY 80 the Branch will establish, as part of the Current Intelligence System, Current Intelligence Notes (CIN) on a quarterly basis. CIN's will contain information which is insufficient for a full Current Intelligence Bulletin. The 'insufficiency' could be a lack, of epidemiological data, minor occupational impact due to low exposure estimates, etc. Several subjects will be addressed in each Current Intelligence Notes.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Center for Disease Control, National Inst. for Occupational Safety & Health $273,251

3.0429,
MORTALITY STUDY OF CHEMICAL PLANTS IN THE KANAWHA VALLEY IN WEST VIRGINIA - NCI

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The Union Carbide Corporation has begun a study to examine the mortality patterns among their employees in the Kanawha Valley. They plan to determine the vital status of all of their past employees and analyze deaths observed by life table and case control studies.

They have requested that NIOSH become involved in what would be a joint venture. NIOSH would provide technical expertise, computer support, and limited follow-up, while Union Carbide would provide clerical staff for coding and would develop a history of the plants operations.

This study has particular significance in light of the NIOSH effort in the Union Carbide, Texas City study, since most of the processes conducted in Texas City are also conducted in the Kanawha Valley. Also, it will be of value in the NIOSH study of workers exposed to ethylene oxide which is of Union Carbide workers in the Kanawha Valley. There is opportunity for a number of cohort studies to be developed here.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Center for Disease Control, National Inst. for Occupational Safety & Health $105,000

3.0430,
MORTALITY STUDY OF INCREASED BRAIN TUMOR INCIDENCE IN TEXAS CITY, TEXAS

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In response to a complaint of alleged excessive brain tumors among employees at the Union Carbide Company of Texas City, Texas, the Houston South Area Office of OSHA launched an investigation in November of 1978. After a careful inquiry, OSHA requested technical assistance from NIOSH in evaluating the problem.

Preliminary data, supplied with aid of the company, local unions, and local physicians and surgeons, show ten cases in which death certificates indicated brain tumor as cause of death. One additional living employee was found to have a brain tumor. The cell types were predominantly glioma or glioblastoma multiforme with one 'meningioma, angioblastic (sarcoma)'. The workforce at the plant presently numbers 2500. Between 7.5 and 10 thousand workers have worked in the plant between 1941, when the plant began operation, and the present.

Present plans call for additional case-finding, case confirmation by pathological review of tissues, a proportional mortality study (as check of methodology which may be useful elsewhere), a case-control study of brain tumor deaths, and a cohort mortality

study. Coding of company records is being completed and the case-control study will begin soon.
SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Center for Disease Control, National Inst. for Occupational Safety & Health $138,000

3.0431,
CASE CONTROL STUDY OF GOODPASTURE'S SYNDROME ETIOLOGY

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Goodpasture's Syndrome (GPS), a rare but devastating form of renal failure, is characterized by necrotizing glomerulitis and life threatening pulmonary hemorrhage. Consistent with an occupational disease, GPS is more common in males than females, and more common in younger rather than older adults. The etiology is thought to be autoimmune, although tentative associations with influenza and hydrocarbon solvents are alleged. One study documents prominent solvent exposure in six of eight cases interviewed, but no assessment of exposure in controls was attempted.

A case control study of the causes of GPS will require nationwide interviews of 75 cases and 150 controls. Methods of case ascertainments are now being explored.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Center for Disease Control, National Inst. for Occupational Safety & Health funds n.a.

3.0432,
MORTALITY, MEDICAL AND INDUSTRIAL HYGIENE STUDY OF GOLD MINERS EXPOSED TO ASBESTIFORM MINERALS - NATIONAL CANCER INSTITUTE

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The NIOSH recommended standard in 1972 for asbestos exposures of 2.0 fibers longer than 5 microns per cubic centimeter of air (fibers greater than 5 microns/cu.cm) was made with the recognition that health data for exposures to low fiber levels and definitive information on the biological response to different sized fibers were not available. NIOSH in 1976 recommended a standard of 0.1 fiber greater than 5 microns/cu.cm.

In 1976 NIOSH reported on a mortality study of a mining population exposed to amosite asbestos (cummingtonite-grunerite) concentrations below 2.0 fibers greater than 5 microns/cu.cm and with most fibers being shorter than 5 microns in length, that demonstrated significantly increased mortality due to both malignant and non-malignant respiratory disease.

The purpose of this project is to complete an expanded retrospective mortality study (contract), analyze the data, and prepare a final study report utilizing the results from the completed industrial hygiene and medical studies.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Center for Disease Control, National Inst. for Occupational Safety & Health $73,000

3.0433,
MORTALITY, MEDICAL AND INDUSTRIAL HYGIENE STUDY OF WORKERS EXPOSED TO NITROGLYCERIN

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About 8000 workers are exposed yearly to nitroglycerin (NG) during its manufacture. Not only is work with this agent hazardous because it is explosive, but workers also suffer from acute toxicity (headaches due to vasodilation), may have excessive numbers of sudden deaths while employed (posibly from coronary vasospasm), and may suffer from excessive cardiovascular mortality after retirement.

An opportunity exists at the Radford Arsenal in Virginia to study cohort of 37 current workers and a much larger number of former nitroglycerin workers. A cohort mortality study (Va. deaths as comparison) would be valuable to establish the fact of excess death during employment and after separation. Since the plant physician has done periodic electrocardiograms and excluded workers with abnormalities from NG exposure, a potential exists to compare the mortality of NG workers with ECG abnormalities to NG workers with normal ECGs. This comparison would not be meaningful unless another group of non-nitroglycerin workers is followed in the same way.

These same groups would be used to determine if there is a characteristic NG abnormality on the ECG and also if abnormalities are present at the same rate in non-NG workers.

If there is excess mortality in workers long after separation from exposure, it will be valuable to investigate its cause by comparing heart disease risk factors in NG retirees compared with other retirees. Risk factors such as blood pressure, lipids, etc. would be evaluated.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Center for Disease Control, National Inst. for Occupational Safety & Health funds n.a.

3.0434,
MEDICAL AND INDUSTRIAL HYGIENE STUDY OF WORKERS EXPOSED TO 4,6-DINITRO-2-SEC-BUTYLPHENOL (DNBP)

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The herbicide 4,6-Dinitro-2-sec-butylphenol (DNBP) has been demonstrated to have adverse effects such as testicular atrophy in studies with rats (Hall, L. et al. Subchronic and Reproductive Toxicity of Denoseb., Toxicol. Appl. Pharm. 45 (1):235-236, 1978). If a cohort of sufficient size can be located, exposed individuals and appropriate controls will be interviewed, examined, and tested for testicular as well as other effects.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Center for Disease Control, National Inst. for Occupational Safety & Health $43,000

3.0435,
MORTALITY STUDY OF POTASH WORKERS

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The long term effects of diesel exposures need to be thoroughly evaluated as diesel fuel begins to take on a more important role in our country's energy policy. An occupation believed to have fairly high levels of diesel exposures is underground mining. Although most mines would have many other confounding exposures such as asbestos, radon daughters, and arsenic, potash mines have presumably non-carcinogenic environments as determined by a previously conducted retrospective cohort mortality study of 2743 underground and 1143 surface potash miners (Waxweiler et al., J. Occup. Med. 1973). Diesels were introduced in these mines in the early 1950's. By extending the epidemiologic study from 1967 to include follow-up through 1978, a 25 year latency period could be evaluated for many of the miners. In-depth industrial hygiene surveys would characterize current worker practices. The control technology section of NIOSH has an analogous project to evaluate diesel exposures underground in relation to such parameters as duty time and preventive maintenance.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Center for Disease Control, National Inst. for Occupational Safety & Health funds n.a.

3.0436,
SPONTANEOUS ABORTIONS AMONG EMPLOYED WOMEN

B. Albright, U.S. Dept. of Health & Human Services, Public Health Service, Center for Disease Control, National Inst. for Occupational Safety & Health, Division of Surveillance Hazard Evaluations & Field Studies, *4676 Columbia Pkwy., Cincinnati, Ohio* 45226 (VMH-W22-665)

NIOSH periodically receives inquiries about complaints of fetal loss from women employed in various work places. Beyond the generally accepted estimate of gynecologists that about one pregnancy in ten terminates in spontaneous abortion and one well-controlled study in Hawaii with few white participants, there are no reliable standards to which we can compare the experience of a group of women. Furthermore, effects of prior abortions on the probability of successful completion of a present pregnancy are not well documented.

This study would seek to establish rates for spontaneous abortions in a variety of working populations through the following steps: 1. Concurrent literature review and consultation with experts or organizations interested in pregnancy outcome to assure that this information is not already available. 2. Feasibility study to ascertain whether large national organizations with sizable constituencies of young women would assist in this type of study. Organizations for consideration may include the National Education Association; the International Ladies Garment Workers Union; the American Federation of State, County, and Municipal Employees; and female federal employees. We would be looking for cohorts with differing socio-economic and regional backgrounds but without high exposures to toxic agents. 3. If a cohort could be found, members planning to become pregnant would be asked to register with NIOSH. Each woman would be given a log book in which to record each menstrual period and a home pregnancy detection kit. Each participant would be given a questionnaire dealing with demographic data, past pregnancy history, etc.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Center for Disease Control, National Inst. for Occupational Safety & Health funds n.a.

3.0437,
MORTALITY AND INDUSTRIAL HYGIENE STUDY OF WORKERS EXPOSED TO SULFURIC ACID

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This project is a historical prospective mortality study of workers exposed to sulfuric acid mist. Although the acute dangers of sulfuric acid, e.g., corneal injuries and mucous membrane irritation, are well recognized, the only chronic effect documented to date is corrosion of tooth enamel. There have been very few epidemiological studies of sulfuric acid exposed workers; however, despite the fact that about 30 million tons are produced annually in the U.S. and that about 200,000 workers have potential exposure. The public is also exposed because sulfur dioxide, a common air pollutant, partially oxidizes in the atmosphere and on respiratory tissues to sulfuric acid.

Pulp facilities, sulfuric acid plants, copper sulfate processes, fertilizer plants, titanium dioxide manufacturing, cellophane manufacturing, battery plants, and pickling operations in the steel industry have all been considered for study, and it has been concluded that pickling offers the best combination of number of workers and substantive (and relatively pure) exposure. Walk-through surveys have been conducted of four steel manufacturing plants; data collection at one or more will be conducted by the project contractor, Enviro Control, Inc. Industrial hygiene aspects will be conducted by NIOSH.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Center for Disease Control, National Inst. for Occupational Safety & Health $95,000

3.0438,
CASE-CONTROL STUDY OF REPRODUCTIVE OUTCOMES

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As part of the development of nationwide capabilities to assess occupational health effects and hazards,

the Surveillance Branch has emphasized the use of existing sources of relevant comprehensive data. Information derived from the use of existing data sets should help in the identification of high risk occupational groups and the prioritization of research needs.

In the study of occupationally-related illnesses it is now important to assess the mutagenic and teratogenic effects on mothers and the mutagenic effects on fathers from reproductive hazards in the workplace. In the report of the NIOSH Work Group on Occupational Mutagenesis, Teratogenesis and Transplacental Carcinogenesis (November 5, 1976) and a report and recommendations for the Office of the Secretary DHEW on Occupational Health Problems of Pregnant Women (Vilma R. Hunt, April 30, 1975), recommendations were made to give high priority to the analysis of data already collected on pregnancy outcomes in relation to parental employment.

Through the publication of a sources sought synopsis (No. R-2-78) in the Commerce Business Daily on November 10, 1977, it was determined that a number of data sets are available for a study of pregnancy outcome in relation to parental employment. This project will abstract, code, computerize and analyze an existing data set, which includes among other elements occupational histories of parents and medical records of pregnancy outcomes, by a case-control approach to identify possible relationships between occupation and pregnancy outcome. Included in this project during FY 80 will be an effort to further investigate new surveillance methods for assessing reproductive effects, e.g., studies of infertility - clinic record.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Center for Disease Control, National Inst. for Occupational Safety & Health $9,000

3.0439,
FETAL MORTALITY STUDY

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The National Center for Health Statistics (NCHS) has planned to conduct a 1978 National Fetal Mortality Survey in conjunction with the 1978 National Natality Survey. NIOSH would form an agreement with NCHS to collect on the questionnaries occupational information on the parents, particularly the mother in these surveys. (NIOSH would assure that NCHS adapts standard occupational questions such as those used by the Bureau of Census. The actual coding of the occupation and industry data would be carried out and conform to the classifications set forth by the Bureau of Census.) NCHS staff, along with NIOSH staff, would determine suitable analysis, plan, and write one or more of these reports. Also, detailed raw data tapes of this study will be provided to NIOSH for further analysis.

FY 79 ACCOMPLISHMENTS: Due to unanticipated obstacles, the actual surveys will not be conducted until 1980. A pretest is being conducted on 1978 deliveries (mailing during June 1979 through November 1979.) While the pretest is still in progress, it is anticipated that some changes in the questionnaire and mailing procedures will have to be made before the final survey.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Center for Disease Control, National Inst. for Occupational Safety & Health $37,000

3.0440,
MORTALITY AND INDUSTRIAL HYGIENE STUDY OF SHIPYARD WORKERS EXPOSED TO RADIATION

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In a proportional mortality study conducted by Drs. Najarian and Colton, a significant increase in deaths due to neoplasms of lymphatic and hematopoietic tissues was reported among shipyard nuclear workers. The results of their study indicated that exposure to radiation at levels previously thought to be safe may be unsafe. NIOSH subsequently initiated a retrospective cohort mortality study.

As part of the study, approximately 27,000 civilian employees have been identified as having worked at the Portsmouth Naval Shipyard since 1954. To date, more than 3,000 deaths have been identified among the study population. The vital status will be determined from the remaining identified study population with death certificates retrieved and verified. A report of the in-depth industrial hygiene and health physics surveys (FY 79) will be drafted to address current and past occupational and chemical exposures to chemical and physical agents other than radiation. An exposure history will be compiled and assigned to appropriate job titles/locations.

A purchase order to Ted Colton has been made to purchase the results of his and Dr. Najarian's original study. NIOSH has supplied Dr. Colton with radiation values obtained from the Navy, and has had death certificates coded by a nosologist for his use in the reanalyses.

A review committee of outside consultants has been established to review the progress of the study. They have made trips to the shipyard and have familiarized themselves with the study protocol.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Center for Disease Control, National Inst. for Occupational Safety & Health $336,000

3.0441,
INDUSTRIAL HYGIENE AND MORTALITY STUDY OF CRUSHED STONE WORKERS

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As a result of researchers finding asbestos fibers in crushed rock being quarried in Maryland, negotiations were started and are continuing with the National Crushed Stone Association to arrange for NIOSH to do national mortality study of workers in the crushed stone industry. Emphasis will be placed on causes of death related to cancer and pulmonary diseases.

As an integral part of this study, the Environmental Investigations Branch will examine and characterize the rock that is being quarried. There are four basic types of rock being quarried and each type will be covered by our sample.

Negotiations have continued with the National Crushed Stone Association resulting in walk-throughs in several quarries and data collection in five quarries. Arrangements have been made to collect data in three additional quarries in the next quarter.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Center for Disease Control, National Inst. for Occupational Safety & Health $110,800

3.0442,
CROSS SECTIONAL INDUSTRIAL HYGIENE AND MEDICAL SURVEY OF NON-TEXTILE COTTON

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Continuation of FY 79 project. One-half of the selected sample has been studied. Contract portion has been terminated, and remainder of gin and warehouse sample will be studied with NIOSH personnel and equipment. This necessitates delaying the field study of cotton classification offices by one full year.

Purpose of the study is to establish prevalence of byssinosis and the dose-response relationship in the non-textile cotton industry (garnetts and mattress workers, cotton seed oil mills, waste utilization, warehouses, classification offices, gins). This will aid in setting environmental standards to protect workers in these industries.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Center for Disease Control, National Inst. for Occupational Safety & Health $472,100

3.0443,
MORTALITY STUDY OF WORKERS IN THE NORTHWEST PAPER, PULP AND PLYWOOD INDUSTRY - NCI

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The purpose of this project is to follow up on leads supplied by state and national mortality statistics which indicate excess cancer among workers in the wood processing industries. Via contract, a retrospective cohort mortality study of workers in the Northwest paper, plywood and pulp industries will be conducted.

Recent mortality studies conducted by Samual Milham, Jr., M.D., show an excess of lymphatic and hematopoietic cancers in wood processing industry employees. Data developed under NIOSH Contract no. DC-99-74-26 entitled 'Occupational Mortality in Washington State, 1950-71' suggests that persons working in the plywood, paper and pulp industries may be at particular risk. Under this project the contractor will substantiate and refine the earlier occupational mortality findings. An effort will be made to localize any excess mortality within selected plants and to identify agents and processes associated with the increased mortality. The contractor will develop general historical environmental descriptions for each plant. In depth industrial hygiene surveys may be conducted if any excess mortality is observed.

The contract was awarded to Stanford Research Institute. Nine plants were selected for study including four plywood mills and five pulp and paper mills. Data on the study population has been collected, coded, and keypunched. After the data is edited and follow-up is completed, NIOSH will begin analyses of the mortality patterns of the study population.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Center for Disease Control, National Inst. for Occupational Safety & Health $37,000

3.0444,
MORTALITY AND INDUSTRIAL HYGIENE STUDY OF WORKERS EXPOSED TO STYRENE - NCI

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Recently, information has evolved which indicates that workers exposed to styrene may experience chronic health problems: (1) There have been studies which show a definite increase in deaths due to leukemia among styrene-butadiene rubber workers. (2) Styrene has been shown to be mutagenic after liver microsomal activation. (3) Styrene oxide, which is a metabolite of styrene, has been shown to be mutagenic by the Ames test. Hepatotoxicity and carcinogenicity have been attributed to chronic exposure to styrene metabolites based on animal experiments. As a result of this information, a retrospective mortality study and industrial hygiene study of workers exposed to styrene is being conducted to further evaluate the potential medical effects of styrene.

Preliminary industrial hygiene and record assessment evaluations have been conducted at fifteen boat manufacturing facilities, both in and outside of the State of Washington, in order to judge the feasibility for their inclusion in the epidemiologic study. Two of these facilities in the State of Washington were identified as appropriate for the mortality study. In addition, five other facilities were chosen for industrial hygiene monitoring alone. A total of seven industrial hygiene surveys were carried out.

Demographic files have been coded and are being verified for the retrospective mortality study. Vital status follow-up has begun for all individuals who have worked at the two facilities which are part of the epidemiologic study.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Center for Disease Control, National Inst. for Occupational Safety & Health $53,000

3.0445,

REPRODUCTIVE AND INDUSTRIAL HYGIENE STUDY OF WORKERS EXPOSED TO MW/RF ENERGY

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The potential biological hazards of exposure to radiofrequency radiation are not yet clearly understood and remain the subject of worldwide study. Radiofrequency radiation has been implicated in a variety of biological phenomena including altered transmembrane potentials, increased membrane permeability, hyperthermia, hormonal imbalance, chromosomal anomalies, and mutagenic and teratogenic effects. Most of these studies have been experimental in nature. Very few human studies have been conducted to evaluate the chronic or reproductive health effects associated with exposure to radiofrequency radiation. This lack of human data is especially true in the United States. Several unconfirmed allegations have been made associating exposure to radiofrequency radiation with pancreatic cancer, brain cancer, leukemia and an increased incidence of birth defects and miscarriages. Unfortunately, the size of the population potentially at risk in most of these case reports has been too small to conduct a scientific evaluation of the situation. It is the intent of this project to define a population of workers who have been employed in work areas where there is exposure to radiofrequency radiation in order to evaluate whether their employment resulted in any increase in reproductive problems. Walk-through surveys are being conducted in the efforts to identify a study population. To date, the plants have been found to employ predominantly women in the heat sealing area. A control population of comparable size will be selected from the same facilities as the study group, but should be employed in work areas where there is no potential for exposure to microwave radiation or other potentially hazardous exposures.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Center for Disease Control, National Inst. for Occupational Safety & Health $126,000

3.0446,

MORTALITY AND INDUSTRIAL HYGIENE STUDY OF LEATHER INDUSTRY WORKERS - NCI

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Several case-control studies have indicated that individuals employed in the leather industry may experience an excess risk of developing bladder cancer. Cole, in a case-control study, found that leather workers had a relative risk of 2 for developing bladder cancer when compared with a group of matched controls. Another case-control study conducted on all bladder cancer cases referred to the Roswell Memorial Park Research Institute, found a relative risk for bladder cancer of 12.94 for persons employed at least 5 years in the leather industry.

In an attempt to gain additional insight into the relationship between bladder cancer and the leather and leather products industry, mortality rates for bladder cancer were examined in those U.S. countries where the leather industry comprised at least 5 percent of the total employment of the country. Twenty-four counties in six states met these criteria. A definite pattern of increased bladder cancer was found in the 'leather counties' in New England and New York State, however, no unusual risks were found in the 'leather counties' of Pennsylvania and Tennessee. It should be noted that the leather industry in Pennsylvania and Tennessee consisted mostly of small-scale operations of the shoemaker-repairer trade, whereas the leather industry in New York and New England was mainly leather tanneries.

Leathermakers are potentially exposed to chromates, benzidine-based azo dyes and numerous other suspect carcinogens. In addition, NIOSH has recently detected environmental levels of dimethylnitrosamine in a leather tannery. Dimethylnitrosamine has been demonstrated to be an extremely potent carcinogen in numerous animal studies.

A cohort mortality/industrial hygiene study will be conducted to further evaluate the above-mentioned excess risk data. The first phase of the investigation will be a feasibility study to determine the extent of exposure, to characterize the work environment and to assess the feasibility of conducting the mortality portion of the study.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Center for Disease Control, National Inst. for Occupational Safety & Health $92,000

3.0447,

EPIDEMIOLOGY AND INDUSTRIAL HYGIENE STUDY OF ALUMINUM REDUCTION WORKERS

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Workers in the aluminum reduction industry are exposed to a variety of substances, hydrogen fluoride fumes, dust, carbon monoxide and coal tar pitch volatiles (CTPV) such as benz(a)pyrene. Coal tar pitch volatiles are released in the anode preparation area in plants using pre-baked anodes and in the pot lines where soderberg self-baking cells are used. The releease of CTPV is thought to be temperature dependent. Sufficiently high temperatures are reached in both anode preparation and electrolysis of aluminum to achieve the release of such materials. Thus, there is concern for the health of aluminum workers who may be exposed to carcinogens within CTPV such as BaP. Industrial hygiene surveys of the aluminum reduction industry have revealed levels of coal tar pitch volatiles well above the current occupational health standard of 0.2 milligram per cubic meter (mg/m3) by the benzene soluble fraction method. A variety of studies have been carried out to describe the cancer mortality experience of workers in aluminum reduction facilities. Milham (1976) has reported an increase in proportionate mortality from total cancer, cancer of the pancreas, cancer of the respiratory system and malignant lymphomas among aluminum workers in Washington State. In a study by Equitable Environmental Health, cause-specific standard mortality ratios, calculated for subgroups in the study population defined by major process, showed a positive association between employment as a potroom worker and lung cancer, leukemia, and lymphoma. In order to more fully define the specific cancer risk within the potrooms, a retrospective case control study is planned on aluminum workers exposed to CTPV. Industrial hygiene will assist in classifying job categories and in verifying related industrial hygiene data. The case control study will use existing data generated from the Equitable study. The uses and controls have been selected from the Alcoa plants and the work histories have been coded.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Center for Disease Control, National Inst. for Occupational Safety & Health $22,000

3.0448,

MORTALITY, MEDICAL AND INDUSTRIAL HYGIENE STUDY OF THE PAINTING TRADES - NCI

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NIOSH contract no. 210-77-0096 was awarded to Johns Hopkins University in October, 1977 to undertake a systematic investigation of the extent and nature of health effects occurring in populations engaged in the application of surface coatings.

The project presently is structured so that a carefully selected cross-section of industrial settings (wood furniture, railroad, aircraft, automotive, etc.) will be represented in the study, and similarly, so that a carefully selected cross-section of paint and coating systems (each with its own peculiar hazard potential) and application techniques will be evaluated.

The project consists of three closely interrelated phases: epidemiological studies, cross-sectional medical studies, and industrial hygiene studies. These three phases will be designed to evaluate respectively, mortality or morbidity experience of carefully selected populations engaged in paint application, the presence of clinical effects in these populations, and finally, (to the extent possible) present and past environmental exposure patterns in these populations.

As of September, 1979, walk-thru surveys were completed in a total of 48 plants or construction sites. Approximately 45-50 visits were planned in this phase of the project. An undetermined number of these sites will be selected for in-depth studies on the basis of findings during the walk-thru surveys. The decision was made to delay medical studies until guidance can be obtained for such studies based on results of in-depth industrial hygiene and epidemiological studies. This is reflected on the milestones projected for the fiscal year.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Center for Disease Control, National Inst. for Occupational Safety & Health $58,000

3.0449,

MORTALITY AND INDUSTRIAL HYGIENE STUDY OF PCE WORKERS - NCI

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Perchloroethylene (PCE) is used extensively throughout the dry cleaning industry (100,000 workers). PCE has been tested for carcinogenicity in the Bioassay Program of the National Cancer Institute. The results of this experiment were similar to those seen with trichloroethylene - that is, an increase in hepatocellular carcinomas in mice. To date, the effects on humans from long-term low level exposure to PCE is unknown.

This study will assess the health effects from exposure to PCE by analysis of cause specific mortality among an identified group of dry cleaning workers. A cause of death for each individual in the cohort will be determined retrospectively and the observed deaths will be compared to those expected based on a standard race-, sex-, and age-specific population. Industrial hygiene surveys will be conducted by NIOSH to characterize worker exposure to PCE in the dry cleaning industry.

The Stanford Research Institute (SRI) is conducting the mortality study under contract. Personnel records from four labor unions have been used to assemble a cohort of approximately 1,650 dry cleaning workers who were employed for at least one year prior to 1960 in a facility where the primary solvent was perchloroethylene. All of the demographic and work history coding has been completed and vital status follow-up through the Social Security Administration has been accomplished. Once the SSA data is processed it will be determined how much more vital status follow-up is necessary.

Industrial hygiene surveys have been conducted in 30 dry cleaning facilities in San Francisco-Oakland, Detroit, and Cincinnati. An additional 15-20 surveys are planned in New York City and Chicago. The final I.H. report will be furnished in early FY 80.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Center for Disease Control, National Inst. for Occupational Safety & Health $20,000

3.0450,

MORTALITY, MEDICAL, AND INDUSTRIAL HYGIENE STUDY OF WORKERS EXPOSED TO NITROSAMINES - NCI

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Dimethylnitrosamine is labeled as a carcinogen by the Occupational Safety and Health Administration and therefore the few areas where it is used or manufactured, appropriate precautions are taken. It has only recently been discovered through the development of new analytical techniques, that dimethylnitrosamine and other nitroso compounds may form in the ambient atmosphere or even in vivo if sufficient concentrations of nitroso compound precursors (secondary amines, amides, etc.) and nitrates, nitrites or other nitrogenous compounds exist under the appropriate conditions.

Under the existing contract 28 plants have been investigated for total of 40 industrial hygiene surveys for possible nitrosamine contamination. The industries visited were the automobile, azo dye, small machine shops, fish and fish meal, rubber and leather. To date we have found N-nitrosodiethanolamine, N-nitrosodimethylamine, N-nitrosomorpholine and N-nitrosodiphenylamine in the air of several plants. N-nitrosodimethylamine, a regulated carcinogen, was found as high as high as 50 micron/cu.m in the lather industry. N-nitrosomorpholine was isolated in the rubber industry as high as 27 micron/cu.m. Ef-

forts were made to determine the nitrosating agent, source of contamination, the extent of human exposure and methods of controlling the exposure to nitrosamines in the rubber and leather industries.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Center for Disease Control, National Inst. for Occupational Safety & Health $245,000

3.0451,

MEDICAL, BIOMEDICAL AND INDUSTRIAL HYGIENE STUDY OF EMERGING PROBLEMS

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Newly suspected hazardous occupational environments are continually being identified. This program is designed to quickly gather information about these environments and to initiate industrywide epidemiological studies, where warranted. This project also provides mechanism through which to respond to requests for assistance that are related to IWSB study areas.

The approach of this project generally will be to conduct literature searches, and field surveys to collect information to determine if epidemiological studies (environmental, morbidity and/or mortality) are feasible and where they are, to develop study protocols to carry them out. Requested assistance will be provided as required.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Center for Disease Control, National Inst. for Occupational Safety & Health $399,000

3.0452,

MORTALITY, MEDICAL, AND INDUSTRIAL HYGIENE STUDY OF BRAKE LINING WORKERS (NCI)

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The NIOSH recommended standard for asbestos exposure of 2.0 fibers longer than 5 microns per cubic centimeter of air was made with the recognition that: 1) health data were not available for exposures to low levels, and 2) definitive information on the biological response to different sized fibers was not available.

Industrial hygiene surveys have been conducted in eight automobile repair facilities by the Industrial Hygiene Section. Optical counting and electronmicroscopic analyses are being performed in order to characterize the nature of the exposures occurring in these types of operations.

A contract has been let to the Environmental Sciences Laboratory Mt. Sinai School of Medicine to evaluate health effects of exposure to asbestos-containing dusts in brakelining maintenance and repair. The contract consists of two evaluations: 1) a feasibility study, to locate a cohort of brakelining repair and maintenance workers with sufficient latency to conduct a retrospective mortality study of these workers; and (2) a cross-sectional medical survey, to define the current health status of a representative cross-section of workers occupationally exposed to brakelining dusts. In conjunction with the cross-sectional medical study, NIOSH has undertaken industrial hygiene assessments at representative sample of work establishments. The cross-sectional medical survey final report is due September 30, 1979.

The cross-sectional medical study had considerably lower participation than anticipated. Additional work will be required to characterize non-respondents.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Center for Disease Control, National Inst. for Occupational Safety & Health $11,000

3.0453,

HEALTH EFFECTS EVALUATIONS DATA (HEED) FILE - PHASE II

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Section 20(a) (6) of the OSH Act charges NIOSH with the responsibility for evaluating the toxicity of chemicals used or found in th workplace upon written request from an employer or employee representative. Since 1971, the Hazard Evaluation and Technical Assistance Branch (HETAB) has performed these on-site toxicity determinations. Although the HETAB surveys are not statistically representative of the universe of worker population available for study, the results provide valuable information of the environmental and health status of the establishments surveyed. In the past two years, HHE and TA Reports from 1977 through June 1979 were complied. A new file design was implemented and analysis programs were constructed. A report on the HEED file was completed and submitted for publication during FY 79. It is proposed that FY 80 activities maintain the current abstracting coding from the HHE and TA Reports. In addition, new computer programs will be developed for the new HEED file structure. A report on the 1977-1979 HHE and TA Reports will be developed during the fiscal year.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Center for Disease Control, National Inst. for Occupational Safety & Health $122,000

3.0454,

IH STUDY OF INSULATION MATERIAL WORKERS - EPA

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Excess mortality from respiratory disease among insulation workers has been attributed to asbestos fiber exposure; however, the hazards associated with many other insulation materials have not been characterized. This project will determine by a literature search the quantities of the various insulation materials used in the United States, the number of workers potentially exposed to each material, and historic exposure levels. Current exposure levels of employees engaged in the manufacture and installation of two insulation materials will be determined through industrial hygiene surveys.

In FY 79 a literature review was performed, and a tripartite review meeting of representatives from industry, labor, and government was held. Polyurethane and urea formaldehyde foams were selected as the materials for study, and a list of manufacturers and installers to be surveyed was developed.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Center for Disease Control, National Inst. for Occupational Safety & Health $15,000

3.0455,

DISABILITY CONDITIONS IN THE WORKPLACE-PHASE III - MINING

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The purpose of this project is the development and implementation of activities to monitor the occupational and industrial characteristics of disabled individuals. Past accomplishments in our use of disability data have described the proportionate morbidity of disabled workers relative to their occupational characteristics. These activities have served as a basis for expanded cooperation between the Illness Effects Section and the Social Security Administration. Activities proposed during FY 80 will be directed toward an expansion of descriptive analyses (proportionate morbidity, categorical regression). In addition, the expansion of the data base to include data for 1975 and 1976 will facilitate analyses of trends for the period 1969-1976. A priority in forthcoming analyses will be the examination of disabilities in the mining industry.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Center for Disease Control, National Inst. for Occupational Safety & Health $183,000

3.0456,

EFFECTS OF SEGMENTAL VIBRATION ON CHIPPERS AND GRINDERS

D. Wasserman, U.S. Dept. of Health & Human Services, Public Health Service, Center for Disease Control, National Inst. for Occupational Safety & Health, Division of Biomedical & Behavioral Science, *4676 Columbia Pkwy., Cincinnati, Ohio* 45226 (VOG-G21-328)

This project will develop information leading to a comprehensive definition of permissible exposure limits to vibration impinging on the hands from the use of vibrating hand tools. NIOSH estimates that there are some 1.2 million workers in United States industries exposed to segmental vibration. An extensive field study has been conducted on vibration-exposed chipper and grinder workers who work at various foundry sites to determine the incidence and prevalence of Vibration White Finger Disease (Raynaud's Phenomenon) and workers' exposure levels. In FY 80 the field study data analysis will continue and be completed, followed by the publication of a comprehensive study report.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Center for Disease Control, National Inst. for Occupational Safety & Health $15,480

3.0457,

NATIONAL COAL WORKERS' AUTOPSY STUDY

M. Martin, U.S. Dept. of Health & Human Services, Public Health Service, Center for Disease Control, National Inst. for Occupational Safety & Health, Division of Respiratory Disease Studies, *944 Chestnut Ridge Rd., Morgantown, West Virginia* 26505 (VKC-R24-138)

This project will provide support for the National Coal Workers' Autopsy Study (NCWAS). This support will consist of field work, autopsies, pathology and tissue analysis as necessary relative to mining disasters; publicizing the NCWAS to increase awareness of its existence and purpose; pathologic analysis of appropriate tissue blocks and slides of cases when consultations are requested; and the collecting and correlating of data relative to cases received through the Study.

Past accomplishments include administration of the Disaster Plan in several mining disaster situations, increased awareness of the Program through discussions with MESA officials, pathologists, funeral directors and other individuals involved with coal miner deaths and computerization of a large percentage of the cases received.

This project will benefit workers and their families in the coal industry.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Center for Disease Control, National Inst. for Occupational Safety & Health $48,300

3.0458,

X-RAY/PATHOLOGY CORRELATIVE STUDIES IN PNEUMOCONIOSIS

F. Green, U.S. Dept. of Health & Human Services, Public Health Service, Center for Disease Control, National Inst. for Occupational Safety & Health, Division of Respiratory Disease Studies, *944 Chestnut Ridge Rd., Morgantown, West Virginia* 26505 (VKC-R22-244)

The chest radiograph is, at present, the best available method for diagnosis of occupational lung disease during life. It is also used for compensation purposes. The usefulness of a chest X-ray depends on how accurately it reflects the underlying pathologic processes in the lungs. In view of the importance of the chest radiographic in the pneumoconioses it is proposed to perform a study that will correlate the clinical chest X-rays on a series of coal miners with the pathological appearance of the lungs. A collection of material, unique to the United States, comprising 1,500 cases of autopsied miners has kindly been loaned to NIOSH by Dr. W. Laqueur for this study. This project should throw light on such important questions as the usefulness of the chest X-ray in diagnosing CWP, the relationship between emphysema, dust deposition, size and type of lesions and the X-ray.

The second year of the project will be primarily devoted to analysis of the data already collected.

Worker group affected is coal workers. They will benefit through the compensation system based on X-rays being more fair.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Center for Disease Control, National Inst. for Occupational Safety & Health $131,000

3.0459,
MACHINE-PACED STRESS IN POSTAL WORKERS

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This continuing project seeks to define job stress and associated health problems for the over 40,000 operators of multiple position letter sorting machines (MPLSM) in the U.S. Postal Service. Questionnaires were distributed to 6,000 MPLSM operators and 6,000 control subjects engaged in other postal jobs in the summer of 1979. The questionnaires dealt with job demands, workplace physical environment, psychosocial stress factors and health status. Data from the survey will be evaluated to determine relationships between job stress factors and worker health.

Coupled with the questionnaire survey are human factors evaluations of MPLSM work operations at 15 Postal Facilities distributed across the United States to pinpoint person/machine design deficiencies as well as to identify critical job demands influencing stress level. These human factors evaluations will serve to amplify work factors identified in the questionnaire survey as being stressful so that means for their elimination can be developed. A human factors checklist was developed in FY 79 and contracts awarded to two human factors experts to assist in this evaluation.

In addition to the above efforts, a longitudinal study of a small group (N equals 50) of MPLSM operators is underway. Medical, biological and psychological measures are being collected every six months to depict apparent stress and fatigue from letter sorting operations. This study is being conducted by the University of Wisconsin.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Center for Disease Control, National Inst. for Occupational Safety & Health $88,000

3.0460,
MORTALITY, MORBIDITY AND IH STUDY OF OIL SHALE WORKERS

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The purpose of this project is to determine the health effects, if any, of occupational exposure to shale oil. The study cohort is made up of 713 men who worked at the Anvil Points Oil Shale Retort from 1948 to 1977. The study is divided into a mortality study, a morbidity study, and an industrial hygiene component. The mortality study will compare mortality patterns among the shale oil workers with an appropriate control group from the states of Colorado and Utah. The morbidity study will compare the morbidity patterns of 326 oil shale workers with a control group of 326 coal miners from the Colorado Plateau. A job history, respiratory questionnaire, and dermatological examination will be given to each of the people in the two groups. Special attention will be given to age, race, smoking, skin complexion, years on the Colorado Plateau, and time spent in outdoor activities. The industrial hygiene portion of this study involves workshops, health hazard evaluations of oil shale facilities and cooperative work with people in the Estonian Republic of the USSR who are engaged in oil shale health research.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Center for Disease Control, National Inst. for Occupational Safety & Health funds n.a.

3.0461,
MORBIDITY & INDUSTRIAL HYGIENE STUDY OF CEMENT WORKERS

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For at least 40 years there have been studies performed to detect evidence of lung disease in Portland cement workers. The most recent epidemiologic study completed in Yugoslavia indicates that cement workers show significant increases in pulmonary symptoms and decreases in pulmonary functions related to chronic obstructive pulmonary disease, as compared to controls. It is not known whether the results of the Yugoslavian study can be applied to cement workers in the United States. It is possible that the work environment in American cement plants is different enough to produce different results in a similar study.

Workers in the cement industry will be examined for evidence of both obstructive and restrictive (fibrotic) lung disease. Furthermore, personal dust sampling will be done at the study sites to develop 'dose-response' curves to the dust generated at the cement plants. Results will also be compared to the results of the 'Blue Collar' control worker survey soon to be initiated by NIOSH.

During FY 78, in consultation with union and industry, the study protocol was written. It received favorable peer review and was accepted by SPRG. Twenty-nine cement plants were selected as possible study sites, and are presently being visited to determine their suitability. Approximately 19 of these sites will actually be selected for study. Furthermore, a pilot study of dust level variability is being conducted to give insight into the amount of personal sampling that will need to be done in the industry-wide study. Pilot study has been completed. Analysis of dust exposure variability is proceeding.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Center for Disease Control, National Inst. for Occupational Safety & Health $222,000

3.0462,
MAGNETOMETRY/PATHOLOGY CORRELATIVE STUDY OF COAL WORKERS' PNEUMOCONIOSIS

F. Green, U.S. Dept. of Health & Human Services, Public Health Service, Center for Disease Control, National Inst. for Occupational Safety & Health, Division of Respiratory Disease Studies, *944 Chestnut Ridge Rd., Morgantown, West Virginia* 26505 (VKC-R22-165)

Magnetometry is a technique that can be used to measure ferromagnetic contamination in the lungs. Coal dust contains approximately 0.1 percent Fe 304 or magnetite and this is large enough to be quantitated by magnetometry. Pilot studies on retired coal miners with coal workers' pneumoconiosis (CWP) and on lungs from coal miners removed at autopsy have shown that the technique is at least as sensitive as radiography in determining the amount of dust in the lungs. It has distinct advantages over radiography in that the technique is safe and non-invasive and can be used to measure dust retention and dust clearance over a period of time. The latter may help us to identify those miners who are retaining excessive amounts of dust and who are presumably more likely to develop CWP. Mangetometry thus could become an important tool for preventive medicine.

This study is designed to correlate the amount and distribution of coal dust (performed by Dr. D. Slatkin, Brookhaven Natl. Labs.), iron content, histopathology and radiology of selected freeze-dried lungs from miners and controls with the magnetometric measurements. The latter is performed by a consultant (Dr. A. Friedman, Philadelphia, Pa.).

The overall objective of the study is to establish a firm scientific basis for the use of magnetometry as a measure of CWP and thus hasten its application to clinical situations.

In the final year of this project correlations will be made on 20 freeze-dried lungs and the results will be submitted for publication in a reputable journal.

Workers in the coal industry will benefit from this project through its contribution towards the development of non-invasive methods for measuring lung dust burden.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Center for Disease Control, National Inst. for Occupational Safety & Health $41,940

3.0463,
MORTALITY STUDY OF DIESEL ENGINE MECHANICS

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A few years ago a suggestion was made to introduce diesel powered equipment into underground coal mines to replace electrically operated equipment. Labor unions expressed concern about this in terms of both health and safety. NIOSH held a conference in September, 1977, to determine what was known about health effects of diesel exhaust. One recommendation of this conference was for NIOSH to look at a large population of workers who had been exposed to diesel exhaust in confined spaces for an extended period of time.

Diesel engines have been found to emit polynuclear aromatic hydrocarbons. Among these emitted polynuclear aromatic hydrocarbons are found benzo(a)pyrene (BaP) and benz(a)anthracene (BaA) which are known to be carcinogenic. Work by Carnow and others suggests that an increase of 1 mg/cu.m meter B(a)P in urban pollution is associated with a 5% increase in lung cancer death rate. Battigelli and others in 1963 looked at 210 workmen exposed to diesel exhaust in railroad engine houses and found that there was no significant difference in pulmonary function between these workers and a control group. However, the maximum latent period was 15 years with an average of 10-year exposure and the study group was small.

Railroads began dieselization in earnest after the Second World War and by 1953 were well on the way toward complete dieselization. We now have a maximum latent period of 24-plus years which should be long enough to show evidence of lung cancer, if it exists, in these workers. This project will look at mortality patterns of a large group of workers in railroad diesel engine repair shops (and other diesel repair shops) where it is common practice for engines to be left running for adjustments. Particularly in inclement weather the shop doors are closed and inadequate ventilation may result. We will pick a sample of the larger shops in the eastern United States for this project.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Center for Disease Control, National Inst. for Occupational Safety & Health $20,000

3.0464,
CROSS-SECTIONAL EPI & IH STUDY OF NEW AND EX-MINERS

J. Hankinson, U.S. Dept. of Health & Human Services, Public Health Service, Center for Disease Control, National Inst. for Occupational Safety & Health, Division of Respiratory Disease Studies, *944 Chestnut Ridge Rd., Morgantown, West Virginia* 26505 (VKH-R22-163)

The project is designed to answer the basic question: 'Are those miners who have already left the coal mining industry different from those who remain?' This question will be answered by investigating 'new miners' (those miners who work only for a few years and quit) and 'ex-miners' (those miners who worked for many years and quit). The ex-miners will be investigated by comparing data collected in the first and second rounds of the National Coal Study. During the first year of this project, we investigated those miners who participated in Round 1, but not in the second round, to determine if they actually left the industry. Data from those who left will be compared with a matched group who remained. This will require no new data collection.

The overall purpose of the 'new-miner' study is to determine if new miners develop acute changes in their lung function with dust exposure. The 'new-miner' study will be divided into two phases. Phase I will consist of a detailed analysis of those miners who participated in the third round of the National Coal Study with less than 18 months of employment. These miners will be compared to a normal non-miner control group and a group of miners with more than five years exposure to coal mine dust.

Phase II of the 'new-miner' study will consist of the repeat examination of approximately 100 miners with less than one year of employment. Their initial examinations will be conducted before and after a work shift. Follow-up examinations will be conducted at 6-month intervals for approximately two years. During

FY79 initial examinations were completed on approximately 120 new miners.
SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Center for Disease Control, National Inst. for Occupational Safety & Health $78,900

3.0465,
IMMUNOGENETICS OF BERYLLIUM DISEASE IN HUMANS

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The continuation of this project is designed to survey and analyze the HL-A antigenic determinants on cells from patients with beryllium disease in an attempt to demonstrate possible genetic relationships with disease. These results will be compared with HL-A antigenic determinants on cells from patients with sarcoidosis in order to investigate possible genetic similarities or dissimilarities between individuals with either disease. Individuals in the following populations will be studied: patients with chronic beryllium disease, beryllium workers without disease, patients with sarcoidosis, and appropriate geographical controls with no pulmonary disease.

A questionnaire will be administered to volunteer subjects, and whole blood will be obtained by venipuncture and the cells analyzed for HL-A determinants and blood grouping. Split blood specimens from appropriate test and control sample populations will be utilized to measure MIF production by leukocytes for evaluation of specific hypersensitivity to beryllium compounds. In addition, serum will be examined for total immunoglobulin and C4/3 levels, and the following traits: alpha-1-antitrypsin levels, anti-nuclear antibody, rheumatoid factor, and immunosuppressive/regulatory activity.

During this final year, all follow-ups and secondary evaluations will be completed and all data will be collated, analyzed, and published.

WORK GROUPS AFFECTED: Beryllium plant workers; sarcoidosis patients.

BENEFIT TO WORKERS: Genetic susceptibility to disease. Predictability to getting disease. Modification of clinical test to determine degree of hypersensitivity.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Center for Disease Control, National Inst. for Occupational Safety & Health $60,300

3.0466,
MORT/IH STUDY OF WORKERS IN COAL FIRED POWER PLANTS - TVA - EPA

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Pulmonary disease and impairment such as airway obstructive diseases and pneumoconiotic lesions, could arise in part from exposures to gases emitted during coal combustion and to coal dust when coal is burned as fuel for steam-powered electricity generating plants. Those workers who handled the asbestos sheets used to insulate steam pipes may also show evidence of health damage - asbestosis or malignancies. In order to conduct research on occupational safety and health problems of TVA employees a memorandum of understanding between NIOSH and TVA was signed in 1976 specifying overall responsibilities for cooperative studies.

Sub-Agreement I, under this memorandum established industrial hygiene studies of workers in coal-fired power plants. The TVA will conduct detailed cross-sectional industrial hygiene studies of workers in selected occupations. Existing industrial hygiene data on past exposures, along with information on control methods will be reviewed in order to retrospectively estimate cumulative working lifetime exposures in occupations where there has been exposure to the same particulates or gases. This information will be used to attempt dose assessment for mortality studies of workers exposed to the same pollutants in the past. The Environmental Investigations Branch will monitor all stages of this study.

Sub-Agreement II, Epidemiological Mortality Study of TVA Employees, is being carried out to estimate the effects in terms of higher-than-expected death rates and/or early retirement due to disability involving principally cardiopulmonary disease or specific malignancies linked to earlier exposures to air contaminants in the workplace environment. All permanent male employees of the TVA with 5 or more years of employment (at least 2 of those years consecutive), and employed sometime between 1-1-55 and 12-31-72 will be included in the cohort for the study.

Required demographic data (age, sex, etc.), most recent and previous addresses, detailed work histories within TVA, and information about dates and causes of death or of early retirement will be obtained. The TVA will assemble and computerize all data from TVA record files for both active and retired employees from the earliest work histories through 12-31-77. (Text Abridged.)

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Center for Disease Control, National Inst. for Occupational Safety & Health $83,100

3.0467,
DELAYED NEUROTOXICITY OF ORGANOPHOSPHOROUS EXPOSED WORKERS

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Recent findings in workers exposed to certain organophosphorous chemicals have shown that irreversible damage to the nervous system (upper motor neuron lesions) with possible irreversible paralysis and central nervous system damage may occur from chronic low level exposure to these chemicals. This project seeks to explore potential neurological damage in workers exposed to organophosphorous chemicals, such as aryl and alkyl/aryl phosphates.

The major research effort will be directed to evaluating multiple exposure of workers. Concurrently with a medical/neurological evaluation a comprehensive industrial hygiene evaluation of the work environment will be conducted. Exposed workers (N equals 200 from one or several plants) and control workers (N equals 100) will be examined. Functional measures will include electrophysiological, psychological, neurological, and clinical biochemical assays. Statistical analysis of the data will consider multiple exposure conditions at the work-site and any relationship to delayed neurotoxicity in workers.

Research findings will be used in the development of recommended criteria documents and will be critical in preventing irreversible nervous system damage in workers exposed to chronic low levels of organophosphorous chemicals.

Previous studies with leptophos suggest a delayed neurotoxic effect of leptophos (possibly through increased percutaneous absorption in the presence of organic solvents such as n-hexane and styrene) resulting in upper motor neuron lesions (possibly irreversible). Previous studies have indicated a delayed neurotoxicity in workers exposed to organophosphorous compounds, specifically tri-aryl phosphates. All necessary clearances have been obtained, and site and cohort selection are proceeding.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Center for Disease Control, National Inst. for Occupational Safety & Health $131,000

3.0468,
STUDY OF NOISE/HEARING IN PAPERWORKING IN INDUSTRY

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This study critically examines the hearing levels and daily noise dose of workers in the paperworking industry (at the request of the United Paperworkers International Union) where non-steady state noise is said to exist. The Union estimates that approximately 700,000 paperworkers fall into this type of noise exposures. The hearing levels of approximately 2,500 paperworkers and control subjects have been tested to date by NIOSH and recording of daily noise exposures of selected workers performing a variety of paperworking jobs have been obtained.

A critical analysis of both the audiometric and exposure data will be performed and correlated. Subjects will be separated into groups according to general patterns of noise exposures to ascertain if different patterns of noise with equal intensity levels yield equal amounts of hearing losses.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Center for Disease Control, National Inst. for Occupational Safety & Health $57,220

3.0469,
DOCUMENT DEVELOPMENT

I. Baumel, U.S. Dept. of Health & Human Services, Public Health Service, Center for Disease Control, National Inst. for Occupational Safety & Health, Division of Criteria Documentation & Standards Development, *5600 Fishers Ln., Room 3-32, Rockville, Maryland* 20852 (VID-D50-089)

Following literature surveys, critical reviews of information relevant to industrial hazards are prepared. These reviews consider such information as extent of hazard, effects on humans and on animals, epidemiologic information, correlation of exposure and effect, methods of sampling and analysis of workroom atmospheres, engineering controls, and work practices. Recommendations for control of these hazards, based upon this information, are prepared. Following Institute approval, these criteria and, where appropriate, recommended Federal standards, are forwarded to the Occupational Safety and Health Administration for information purposes and for consideration in promulgating occupational safety and health standards.

Approximately 100 criteria documents have been prepared since 1971. Most of the preliminary draft documents have been prepared under contract and then subjected to a thorough review process. During the third quarter of FY79 three contracts were awarded for the delivery of twenty-one documents with initiation and completion of documents distributed from June 25, 1979 to June 24, 1981. Funding is included under this project for completion funding of these contract. However, during FY 80 new procedures will be implemented such that the documents developed under contract may appear in a format more highly differentiated and evolved than in the past. Each document will be examined on a case by case basis to determine whether it would be most appropriately disseminated as a brief guideline, a special hazard review, an occupational hazard assessment, a full recommendation for a Federal standard or any other form.

New contracts for traditional criteria documents will be initiated during FY80. Development of most documents will continue in-house as existing contracts are phased out. However, contracts will be negotiated during the year to supplement these in-house efforts especially in the literature searching and data gathering phase of document work.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Center for Disease Control, National Inst. for Occupational Safety & Health $4,298,119

3.0470,
PATHOLOGY STANDARDS FOR ASBESTOS INDUCED RESPIRATORY DISEASE

F. Green, U.S. Dept. of Health & Human Services, Public Health Service, Center for Disease Control, National Inst. for Occupational Safety & Health, Division of Respiratory Disease Studies, *944 Chestnut Ridge Rd., Morgantown, West Virginia* 26505 (VKC-R21-246)

This project is designed to provide pathologic standards for asbestos induced respiratory disease. Standards are required for the following reasons: 1) To improve communication between clinical scientists working in this area; 2) To enable comparison between different cases or series of cases as regards type of exposure and severity of the disease processes; 3) To facilitate the mechanics of legislation in the area of asbestos related disease. The following disease processes will be categorized and standardized: 1) Pulmonary fibrotic lesions; 2) Pleural placques; 3) Bronchial lesions; 4) Emphysema; 5) Vascular lesions; 6) Bronchial neoplasms; 7) Pleural neoplasms. The project will also attempt to define asbestos fibers and specify how they can best be identified in tissues and will define the appropriate methods for handling and processing lung specimens for asbestos study.

The project will be done on contract by an expert panel of pulmonary pathologists. It will help workers in the asbestos industry, by enabling more accurate diagnosis of the disease.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Center for Disease Control, National Inst. for Occupational Safety & Health $14,100

3.0471,

I.H. CHARACTERIZATION OF RESOURCE RECOVERY INDUSTRY - EPA

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The resource recovery facilities operational or under construction in the U.S. are projected to replace in excess of 7 percent of the fossil fuels used for electric power generation. Previous assessment studies conducted in DRDS indicate the need for an in-depth occupational environment characterization of these facilities. Emphasis will be on airborne pathogens, toxic chemicals, physical agents (noise and heat primarily), and the nature and significance of particulates and gaseous emissions.

The purpose of this contract is to more fully define occupational health problems in the resource recovery industry. Detailed occupational health assessments will be made to: quantify health problems through an industrial hygiene survey; define necessary programs including the feasibility of a retrospective cohort mortality study, medical surveillance, including a cross-sectional morbidity study, pre-employment physical and periodic medical examinations; evaluate the feasibility and desirability of development of a criteria document; and recommend control procedures and areas for control technology development.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Center for Disease Control, National Inst. for Occupational Safety & Health $28,540

3.0472,

MORBIDITY & MORTALITY & INDUSTRIAL HYGIENE STUDY OF WORKERS EXPOSED TO WOOD DUST

J. Gamble, U.S. Dept. of Health & Human Services, Public Health Service, Center for Disease Control, National Inst. for Occupational Safety & Health, Division of Respiratory Disease Studies, *944 Chestnut Ridge Rd., Morgantown, West Virginia* 26505 (VKL-R21-245)

Although man has been in daily contact with wood from time immermorial, and has regarded it as entirely innocuous, exposure to wood and wood dust may be hazardous. Exposure to wood and wood dust can produce irritating allergenic and carcinogenic effects. Signs and symptoms that have been associated with exposure include dermatitis, irritation of mucus membranes and conjunctiva, sinusitis, cough, rhinitis, asthma, chronic pneumonitis, reduced diffusing capacity, chronic bronchitis, and adenocarcinoma of the nasal cavity and sinuses. A variety of wood species have been implicated and include a number of exotic woods (or associated micro organisms), cork dust, cedar,sequoia, oak, maple, pine, poplar, birch, dogwood, beech, mahogany, and mulberry. Occupations range from lumbermen and sawmill operators to those exposed to finer dust (furniture makers, carpenters, violin makers, and other wood workers). Further work is needed on the extent of the problem, particularly on occupational asthma and nasal cancer, and the specific constituents producing disease.

Accomplishments: Walk-through surveys of different segments of the industry have been completed.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Center for Disease Control, National Inst. for Occupational Safety & Health $83,000

3.0473,

3RD ROUND NATIONAL STUDY COAL-WORKERS' PNEUMOCONIOSIS

D.M. Attfield, U.S. Dept. of Health & Human Services, Public Health Service, Center for Disease Control, National Inst. for Occupational Safety & Health, Division of Respiratory Disease Studies, *944 Chestnut Ridge Rd., Morgantown, West Virginia* 26505 (VKL-R22-183)

NATIONAL COAL MORBIDITY STUDY: This project involves both the cross-sectioned and longitudinal study of a large group of nationally distributed coal miners. Many of the coal mines in the project have been or will be visited twice at an interval of about 8 years. This affords excellent opportunity for the study of pneumoconiosis and other disease processes over this period. At present, 13 mines have been visited. To date participation rates have been variable, and generally disappointing. At the majority of mines the participation was so low as to make results from those places of doubtful value. The concern that arose from this lead to a temporary halt in this project while discussions were held to assess the best way to improve turnout. The decision following various meetings was to visit 3 more mines using enhanced procedures for getting the miners to attend, and at the third, to schedule miners on company time. After this further evaluation of the future of the project will be made. Arising from this problem and also from problem with Field Team staffing, plans for the next fiscal year are rather tenuous.

COAL MORTALITY STUDY: This project has two goals. The first goal is to complete a follow-up on the mortality, 1969-1977, of 9078 bituminous underground miners examined in the first round of the National Coal Study, 1969-71. Part of this goal, not yet accomplished, is to supplement this cohort with samples from the mines whose radiographs were obtained in the first round of radiographs (and related data) in Receiving Center files. The second goal of the project is shown with the 'Mortality Study of Workers in Coal Fired Power Plants--TVA': to develop and pretest mail and telephone survey procedures in order to update job histories and histories of cigarette smoking and to determine more valid histories of cardiopulmonary diseases, especially those likely to be due in part to contaminants in work place air.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Center for Disease Control, National Inst. for Occupational Safety & Health $310,540

3.0474,

EPIDEMIOLOGIC STUDY OF NORMAL BLUE COLLAR WORKERS

M. Petersen, U.S. Dept. of Health & Human Services, Public Health Service, Center for Disease Control, National Inst. for Occupational Safety & Health, Division of Respiratory Disease Studies, *944 Chestnut Ridge Rd., Morgantown, West Virginia* 26505 (VKL-R32-227)

Nonexposed blue collar workers will be examined using DRDS staff, equipment, and techniques for use as controls for epidemiological studies conducted at ALOSH. Participation is voluntary and data will be collected by a mobile field team. The subjects will be grouped by combinations of sex, race, and smoking habits in the analysis, and estimates of prevalence rates of symptoms and disease as well as standard pulmonary function equations will be developed for each combination.

The expansion of the project is now uncertain, and decisions concerning it will be made in the first quarter.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Center for Disease Control, National Inst. for Occupational Safety & Health $77,300

3.0475,

INVESTIGATION OF THE INFLUENCE OF HORMONAL CONTRACEPTIVES ON THE CYTOLOGY OF THE CERVIX AND ON OUTCOME OF PREGNANCY

G. Zarcovic, Inst. of Hygiene & Social Medicine, *Sarajevo, Yugoslavia* (02-603-F)

One portion of the study is attempting to determine whether there is any relationship between oral contraceptive drug use and abnormal Papanicolau smears or cervical histology by comparison with a control group using mechanical contraceptives. The second portion of the study will seek to determine whether any relationship exists between oral contraceptive drug use and the occurrence of congenital anomalies in offspring.

Since the mission of the Food and Drug Administration is consumer safety, it is hoped that this study will contribute to our knowledge of the effects of oral contraceptives.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Food & Drug Admin., Bureau of Drugs funds n.a.

3.0476,

GIARDIA LAMBLIA - RECOVERY FROM HOSTS AND FOODS, IDENTIFICATION AND EXTENT OF INFECTIVITY

W.A. Kasprzak, Akademia Medyczna w Poznaniu, *Przybyszewskiego 49, 60355 Poznan, Poland* (05-639-F)

Giardia lamblia is a parasitic protozoa known to cause severe epidemics of diarrhea and gastrointestinal disease when its cysts contaminate sources of drinking water. However, little is known about the transmission of non-epidemic giardiasis whose incidence in the human population may be quite high. The major purpose of this study is to determine whether non-epidemic giardiasis may be transmitted by foods and whether there are reservoir hosts. Results will be utilized to make food safe for human consumption.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Food & Drug Admin., Bureau of Foods funds n.a.

3.0477,

DETECTION AND CONTROL OF BACILLUS CEREUS

S.M. Harmon, U.S. Dept. of Health & Human Services, Public Health Service, Food & Drug Admin., Bureau of Foods, *200 C St. S.W., Washington, District of Columbia* 20204 (10093)

STATEMENT OF OBJECTIVE: To develop and evaluate methods for detecting B. cereus and its enterotoxin(s) in foods and to determine the rates of survival and growth of this organism under conditions which simulate cooking and handling of foods.

DESCRIPTION OF WORK: Characterization of food poisoning strains of Bacillus cereus: The characterization of B. cereus strains isolated from foods associated with food poisoning, which was initiated in FY 80 will be continued. The cultural and biochemical characteristics of several strains of B. cereus associated with food poisoning outbreaks will be determined and the results compared with those obtained with B. cereus strains derived from other sources. It has been assumed, but not conclusively demonstrated, that the B. cereus strains associated with food poisoning are merely typical B. cereus strains that have the capability of producing B. cereus enterotoxins. In this study, a variety of cultural and biochemical tests will be applied in order to determine whether the diarrheal or emetic strains of B. cereus exhibit unique cultural or biochemical characteristics, and whether the different strains associated with each type of illness are similar.

The studies will form the basis for subsequent testing of B. cereus isolates for their ability to produce diarrheal enterotoxin.

Testing of B. cereus strains for diarrheal enterotoxin: The Division of Microbiology is attempting to develop a serological method(s) for detecting and quantitating the diarrheal enterotoxin produced by B. cereus. This work has been delayed because of technical difficulty in producing purified enterotoxin under an extramural contract. Therefore, the initiation of this work is contingent upon successful purification of the enterotoxin and the development of an appropriate serological technique for detection of the toxin. The serological method will be evaluated for it applicability for detecting and quantitating the diarrheal enterotoxin produced by food poisoning strains of B. cereus. The method will also be used to determine whether other biotypes of the B. cereus group such as B cereus var. mycoidas and the closely related insect pathogens B. thuringiensis can produce diarrheal enterotoxin.

Collaborative study of differential tests for B. cereus: A collaborative study will be conducted in 10 laboratories to determine the utility of a new set of differential tests for distinguish (Text Truncated - Exceeds Capacity)

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Food & Drug Admin., Bureau of Foods $16,421

3.0478,

HEALTH SIGNIFICANCE OF FOODBORNE PARASITES

J.W. Bier, U.S. Dept. of Health & Human Services, Public Health Service, Food & Drug Admin., Bureau of Foods, *200 C St. S.W., Washington, District of Columbia* 20204 (04137)

STATEMENT OF OBJECTIVE: Determine the incidence and pathogenic potential of parasitic animals that occur in foods and in food-contact materials such as sewage recycled in the form of fertilizer or animal feed. Study methods for the recovery and inactivation of parasites in the food chain. Prepare general and technical articles on the safety of foods with respect to parasites.

DESCRIPTION OF WORK: 1. Roundworms, Protozoa and Salmonella. Infections with these parasites may be transmitted through the food chain by crops grown on land that is contaminated by fecal wastes. The land disposal of sewage and sludge is increasing due to Environmental Protection Agency regulations restricting water dumping and burning products

of municipal, industrial, and agricultural wastes. Eggs of roundworms such as Ascaris and Trichuris spp. are the longest surviving pathogens in sewage, soils and on crops. Methods for monitoring for these roundworms were collaboratively studied in FY'79. The Division of Mathematics recommended that the method used be compared with another method because of large variability in results within and between participating laboratories. Two methods will be compared in a collaborative study this year. In addition, data on the background incidence of parasite organisms on fresh vegetables will be monitored. Six vegetables will be sampled and checked for parasitic eggs by microscopical examination, and of protozoan cysts and Salmonella app. bacteria by culture methods. Vegetable samples will be collected by contract and split samples shipped to six district laboratories for parasite and Salmonella analysis and to Minneapolis Center for Microbiological Investigations for analysis for protozoan cysts. 2. Fishborne Parasites. Due to increasing consumption of raw and semiraw fish, human anisakiasis is being reported in the United States. FDA has already accomplished much work on these parasitic nematodes; however, some problems remain to be solved. A survey of Hawaiian fishes which commenced 2nd Quarter FY-80 will continue. The second year of a flatfish survey (First yr., FY'78) will be completed by Boston District; headquarters identify nematodes collected by the districts. Development of procedure manuals for the biochemical identification of anisakines in seafoods will continue (contract). Trematodes, Salmonella and Shigella (Text Truncated - Exceeds Capacity)

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Food & Drug Admin., Bureau of Foods $52,546

3.0479,
CLINICAL STUDY OF NUTRIENT TOXICITY

Y.K. Park, U.S. Dept. of Health & Human Services, Public Health Service, Food & Drug Admin., Bureau of Foods, *200 C St. S.W., Washington, District of Columbia* 20204 (12088)

STATEMENT OF OBJECTIVE: To study the incidence and severity of nutrient toxicity in a selected metropolitan area of the United States.

DESCRIPTION OF WORK: Initial efforts will be directed at identifying individuals who consume large levels of nutrient either individually or in combination. These studies will be identified from patients entering the medical center for all causes by reviewing information on dietary practices and through the use of screening techniques. Identified subjects will be asked to volunteer for further testing and evaluation to determine the extent of any biochemical, physiological, immunological, behavioral and other changes in body parameters. Efforts will also be devoted to determine demographic characteristics of individuals showing evidence of nutrient toxicity so that such information can be used for selecting future subjects from community segments.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Food & Drug Admin., Bureau of Foods funds n.a.

3.0480,
RELATIONSHIP BETWEEN THE INCIDENCE OF LEUKEMIA AND EXPOSURE TO DIAGNOSTIC RADIATION

T. Majle, National Inst. of Hygiene, *24 Chocimska St., 00791 Warsaw 36, Poland* (05-636-F)

The purpose of the project is to ascertain the lifetime exposure to diagnostic radiation of 1000 leukemia cases and 1000 controls matched by age and sex. The relative risk of leukemia in relation to dosage of x-radiation will be calculated.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Food & Drug Admin., Bureau of Radiological Health funds n.a.

3.0481,
MENOPAUSAL HOT FLASH

A.M. Voda, University of Minnesota, Minneapolis Campus, School of Nursing, *122 Owre Hall, Minneapolis, Minnesota* 55455 (R01 NU 00872-01)

This study is an extension of an ongoing study of menopausal women who have hot flashes. The specific aim of this second menopausal hot flash project is to further the work begun in phasse one by adding to the description of the woman who has hot flashes. SpecificaLLY, work will be done to quantify the hot flash through measurement of thermal and vasomotor changes, to assess the body composition of menopausal woman with and without the flashes, to evaluate the factors considered when decisions are made whether or not to use estrogens for relief of hot flash, and to estimate the prevalence of hot flash in menopausal women in a metropolitan area.

To accomplish the specific aims, the profect has been divided into 3 phases, physiological, epidemiological, and ethnographic. The physiological phase will utilize experimental methodology to further characterize the woman who flashes, to quantify the hot flash, and to determine differences in thermal, vasomotor, and body composition of flashing vs. nonflashing women. The epidemiological phase will utilize house-to-house survey methods to estimate the prevalence of hot flash in the community. The ethnographic phase will utilize basic exploratory methodology through ethnosemantic method of interview to add to the description of the woman who has hot flashes, and to determine what differences there are, if any, among 1) women who have hot flashes and do not take estrogens; 2) women who have hot flashes and take estrogens and 3) women who do not have hot flashes.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Health Resources Admin., Div. of Nursing $109,652

3.0482,
CESAREAN SECTION - EFFECT ON FUTURE PREGNANCY AND OUTCOME

V.M. Lognillo, State Dept. of Health, Office of Biostatistics, *Empire State Plaza, Tower Bldg., Albany, New York* 12237 (MC-R-360446-01)

The vital statistics registration system of the New York State Department of Health is to be used in a prospective study of the effect of cesarean section on subsequent reproductive experience. All women having a primary cesarean section during 1975 in upstate New York (New York State exclusive of New York City) will be identified, as will a set of matched controls that gave birth vaginally. These women will be followed for five years, using vital records data, and compared with respect to frequency, spacing, and outcome of their subsequent pregnancies. Maternal and perinatal mortality and morbidity measures will be used as outcomes, with vital records data to be augmented with data from hospital records. Comparisons will also be made among the cases (index event of a primary cesarean section) between those that deliver vaginally and those that deliver via repeat cesarean section on subsequent pregnancies to determine both the outcomes (both maternal and perinatal) and the prevalence of vaginal deliveries subsequent to a cesarean section.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Health Services Admin., Bureau of Community Health Services $47,198

3.0483,
DEMOGRAPHIC INFLUENCE OF ANNUAL DOWN SYNDROME BIRTHS

C.A. Huether, University of Cincinnati, McMicken College of Arts & Sciences, Dept. of Biological Sciences, *Van Wormer Adm. Bldg., Room 204, Cincinnati, Ohio* 45221 (MC-R-390453-01-0)

The principal objectives of this research are to: (1) help clarify the continuing role U.S. demographic changes are playing in determining the incidence and number of Down Syndrome (DS) live births, and (2) develop a demographic model which projects, for the period 1980-2000, the number of DS live births expected to be born annually in the U.S.

Ideally, the validity of the model would be tested by comparing with the number of annual DS births observed in the U.S. Since these data do not exist, the model will be tested against the number of annual DS births observed in the state of Ohio for the period 1970-78. Existing Ohio data are known to be grossly underreported; however, by using the large number of patients known to be DS through chromosome analysis, an accurate estimate of underrreporting will be obtained. Thus, a realistic estimate of the number of DS births occurring in this state will be obtained (objective (3)), and will be compared to the expected number generated by the model.

As aminocentesis for advanced maternal age has been increasingly utilized during the decade of the seventies, data will also be gathered on the number of aminocenteses performed for this period in Ohio (objective (4)). This will allow modification of the model to include the impact of this procedure.

Assuming the ultimate model sufficiently accurate, it will be utilized for projecting annual DS births for the rest of this century on a national level, using known population age structure and Census Bureau ASBR projections. Knowing the number of DS births to expect should prove useful to public health planners, for example in attempting to provide preventative measures such as aminocentesis and education.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Health Services Admin., Bureau of Community Health Services $27,428

3.0484,
SOCIOECONOMIC DIFFERENTIALS IN INFANT MORTALITY

E.G. Stockwell, Bowling Green State University, School of Arts & Sciences, Dept. of Sociology, *Bowling Green, Ohio* 43402 (MC-R-390452-01-0)

Using the census tract of mother's usual residence as the basic unit of analysis, this project will examine the relationship between infant mortality and socioeconomic status in four metropolitan centers in Ohio (for 1959-61 and 1969-71) and two in Arizona (for 1969-71). The dependent variables will be infant mortality rates (total, neonatal, and postneonatal), calculated separately by race and cause of death; and the independent variables will be several common indexes of socioeconomic status. The relationship between dependent and independent variables will be analyzed using multivariate techniques. The results of this analysis will contribute to a better understanding of the role of specific socioeconomic factors underlying observed differences in infant mortality.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Health Services Admin., Bureau of Community Health Services $59,787

3.0485,
EARLY MALADAPTATION - A PROSPECTIVE, TRANSACTIONAL STUDY

B. Egeland, University of Minnesota, Minneapolis Campus, School of Education, Dept. of Psychoeducational Studies, *Burton Hall, Minneapolis, Minnesota* 55455 (MC-R-270416-03-0)

Important issues in developmental/risk research are being addressed through a longitudinal study of a broad-based sample of infants. The original sample consisted of 267 infants and their families from the Minneapolis Health Clinics. A high proportion of risk in this sample is suggested by a variety of factors including neonatal assessments of the infant and assessments of mother's expectations, understanding, feelings and interest in her young child, as well as her age, lack of family support and basic caretaking skills. Competence assessments at the end of the first year (effectiveness of the attachment relationship) confirmed the degree of risk in the sample and also demonstrated that the entire range of quality of adaptation is encompassed.

The purpose in continuing to follow this sample through the preschool years, is to examine the continuity of quality of adaptation, the relation between early care on early competence and later developmental problems, the impact of stress, and the continuing interaction of maternal and child factors. The basic strategy involves the assessment of competence with developmentally appropriate measures, each of which taps the capacities of the child for coordinating adaptive responses. Quality of attachment was assessed at 12 and 18 months, problem-solving styles at two years and currently the child's flexibility and impulse control are being assessed, and at 4 and 1/2 years social competence will be assessed. The assessment procedures have all been the subject of considerable validation research, and some evidence for developmental links between them has been obtained for non-risk populations.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Health Services Admin., Bureau of Community Health Services $172,000

3.0486,
EPIDEMIOLOGICAL ASPECTS OF AMEBIASIS AMONG MALE HOMOSEXUALS RESIDING IN THE SAN FRANCISCO BAY AREA

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This study is an attempt to establish the prevalence and incidence of amebiasis among a selected male population during a one year period. The results of this investigation will be evaluated for possible public health problems.

The patients included in this project are primarily male homosexuals between the ages of 16 and 60, who are seeking medical care for enteric disorders.

Some asymptomatic male homosexuals and male heterosexuals will be included.

A questionnaire is provided for elucidating the relationships between clinical history and laboratory findings. Fresh stool specimens will be concentrated using formalin-ether. When necessary, a portion of the stool emulsified in polyvinyl alcohol will be trichrome stained.

Any abnormal exudates found on proctoscopy are freshly smeared on slides, fixed in Schaudinn's and similarly stained.

Follow-up studies include appropriate physical examinations and laboratory studies.

All data will be analyzed for correlations between specific sexual practices and positive laboratory findings in attempting to elucidate the mechanisms of infection.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Health Services Admin., Bureau of Medical Services $1,000

3.0487,
CHRONIC SEQUELAE OF NON-A, NON-B HEPATITIS

J. Hoofnagle, U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, Clinical Center, Immunology Section, *9000 Rockville Pike, Bethesda, Maryland* 20205 (Z01 CL 02010-06 BB)

All patients developing non-A, non-B hepatitis following open heart surgery will be followed with serial studies of SGPT to determine the incidence of chronic liver disease and to compare this incidence with those having type B hepatitis. Liver biopsy will be obtained when the SGPT is elevated for more than 6 months and then again at one and three years. Biopsy material will be obtained for fluorescent and EM studies, as well as light microscopy with multiple stains.

BIBLIOGRAPHIC REFERENCES: Berman, M., Alter, H.J., Ishak, K.G., Purcell, R.H., and Jones, E.A.: The Chronic Sequelae of Non-A/Non-B Hepatitis. Annals of Int. Med. 91:1-6, 1979.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, Clinical Center funds n.a.

3.0488,
PROSPECTIVE STUDY OF POST-TRANSFUSION HEPATITIS IN OPEN HEART SURGERY PATIENTS

H.J. Alter, U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, Clinical Center, Immunology Section, *9000 Rockville Pike, Bethesda, Maryland* 20205 (Z01 CL 02005-11 BB)

To prospectively follow all adult patients undergoing open heart surgery for the development of post-transfusion hepatitis and by appropriate serologic tests to determine the causative agents. Primarily interested in investigating the incidence of 'non-A, non-B' hepatitis and to see if there are any epidemiologic or serologic clues to its prevention. This study will also compare the clinical course of the various forms of PTH and determine the frequency with which chronic hepatitis develops.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, Clinical Center funds n.a.

3.0489,
THE DUFFY BLOOD GROUP DETERMINANT AND SUSCEPTIBILITY TO MALARIA

L.H. Miller, U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, Clinical Center, Immunology Section, *9000 Rockville Pike, Bethesda, Maryland* 20205 (Z01 CL 02011-06 BB)

Working with an in vitro model for invasion of red cells by malaria merozoites, this study has demonstrated that human red cells lacking the Duffy a and b antigens are resistant to invasion. This corresponds well with epidemiologic studies which show that approximately 70% of West African and American blacks are resistant to Vivax malaria. A similar proportion of these blacks are Duffy a and b negative whereas the Duffy negative genotype is extremely rare in other racial groups. The close association between the Duffy negative genotype and resistance to Vivax malaria has also been confirmed by retrospective analysis of 11 volunteers experimentally inoculated with P. vivax. A retrospective study of U.S. servicemen who contracted malaria in South East Asia has been completed and confirmed again our original hypothesis. A second study conducted by CDC in Honduras has also been completed and is another in-vivo study in-proof.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, Clinical Center funds n.a.

3.0490,
CONSULTING SERVICES

G.H. Weiss, U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, Div. of Computer Research & Technology, Physical Sciences Laboratory, *9000 Rockville Pike, Bethesda, Maryland* 20205 (Z01 CT 00022-13 PSL)

Members of the PSL provide consulting services in different areas of applied mathematics and the physical sicences to researchers at NIH and elsewhere. We have continued research on different interpolation methods in computerized tomography, in particular developing the theory of phantom views which has been found to diminish some artifacts in image reconstruction. Another research area has been the demonstration that generalized functions can be used to simplify calculations of joint distributions of order statistics and moments for arbitrary probability distributions. We have completed work and furnished a solution to combinatorial problems of considerable difficulty that arise in pharmacology. A joint project was started with members of the clinical center on the quantitation of audiometric methods, with specific application to diagnosis of osteogenesis imperfecta. Further epidemiological investigations were made on a data base of 1221 head-injured Vietnam veterans, with particular emphasis on post-traumatic epilepsy.

BIBLIOGRAPHIC REFERENCES: Bunow, B., Line, B.R., Morton, M.R., Weiss, G.H.: Regional ventilatory-clearence by xenon-scintigraphy: A critical evaluation of two estimation procedures. Journal of Nuclear Medicine 20:703-710, 1979. Meirowsky, A.M., Caveness, W.F., Rish, B.L., Dillon, J.D., Mohr, J.P., Kistler, J.P., Weiss, G.H.: Definitive care of cerebral missile injuries crossing the midline. Military Medicine 145:246-250, 1980.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, Div. of Computer Research & Technology funds n.a.

3.0491,
STATISTICAL RESEARCH IN CLINICAL PATHOLOGY

E.K. Harris, U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, Div. of Computer Research & Technology, Laboratory of Applied Studies, *9000 Rockville Pike, Bethesda, Maryland* 20205 (Z01 CT 00007-12 LAS)

Univariate and multivariate time series models are being applied to various databases consisting of short series of measurements of serum biochemistries in healthy subjects. The purpose is to gain practical experience in the use of these statistical forecasting techniques for detecting real changes and trends within subjects, taking into account random biological variation and measurement error. The time scale of these series varies from weekly to 6-month and 12-month intervals between observations. Parallel computer-based simulation studies of these models are also underway, particularly to estimate the relative sensitivities and specificities of multivariate and univariate forecasting methods. Mathematical investigations into the asymptotic properties of a new stochastic model of linear change have begun, and this model is being applied to data from patients at the Clinical Center under long-term therapy.

BIBLIOGRAPHIC REFERENCES: Harris, E.K. and Brown, S.S.: Temporal changes in the concentrations of serum constituents in healthy men. Annals of Clinical Biochemistry 16:169-176, 1979. Harris, E.K., Cooil, B.K., Shakarji, G., and Williams, G.Z.: On the use of statistical models of within-person variation in long-term studies of healthy individuals. Clinical Chemistry, 26:383-391. 1980.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, Div. of Computer Research & Technology funds n.a.

3.0492,
COMPUTER AIDED ANALYSIS OF ELECTROCARDIOGRAMS

J.J. Bailey, U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, Div. of Computer Research & Technology, Medical Applications Section, *9000 Rockville Pike, Bethesda, Maryland* 20205 (Z01 CT 00002-10 LAS)

These studies continuing since 1970 have been directed toward the evaluation of accuracy, clinical utility, and cost effectiveness of various computer systems for analysis of routine electrocardiograms (ECG's). Further studies will involve new methods of feature extraction and design of criteria by computer techniques and their use in epidemiological studies.

BIBLIOGRAPHIC REFERENCES: Bailey, J.J., Horton, M.R.: Reproducibility of version 2 of the IBM program with and without the serial comparison option. In Macfarlane, P.W. (Ed.): PROGRESS IN ELECTROCARDIOLOGY. Focal Press Inc., New York, 1979, pp. 259-263.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, Div. of Computer Research & Technology funds n.a.

3.0493,
HEALTH DATA ON MOLYBDENUM

P.A. Walravens, University of Colorado, Health Sciences Center, School of Medicine, Dept. of Pediatrics, *4200 E. 9th Ave., Denver, Colorado* 80262 (M01 RR 00069-180151)

This project is part of a broader program (RR 00069).

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, Div. of Research Resources funds n.a.

3.0494,
FAMILIES AT HIGH RISK FOR COLORECTAL CANCER

E.A. Murphy, Johns Hopkins University, School of Medicine, Dept. of Medicine, *725 N. Wolfe St., Baltimore, Maryland* 21205 (M01 RR 00722-080059)

This project is part of a broader program (RR 00722).

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, Div. of Research Resources funds n.a.

3.0495,
PULMONARY DISEASE IN A RURAL POPULATION

G.S. Davis, University of Vermont & State Agricultural College, School of Medicine, Dept. of Medicine, *85 S. Prospect St., Burlington, Vermont* 05401 (M01 RR 00109-170035)

This project is part of a broader program (RR 00109).

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, Div. of Research Resources funds n.a.

3.0496,
EVALUATION OF HEPATITIS B ANTIGEN CARRIERS (HUMAN)

R.L. Koretz, University of California, Los Angeles Campus, School of Medicine, Dept. of Medicine, *2025 Zonal Ave., Los Angeles, California* 90024 (M01 RR 00865-070038)

This project is part of a broader program (RR 00865).

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, Div. of Research Resources funds n.a.

3.0497,
HUMAN STUDIES WITH ENVIRONMENTAL POLLUTANTS

R.W. Hyde, University of Rochester, School of Medicine & Dentistry, Dept. of Medicine, *601 Elmwood Ave., P.O. Box 607, Rochester, New York* 14642 (M01 RR 00044-200183)

This project is part of a broader program (RR 00044).

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, Div. of Research Resources funds n.a.

3.0498,

PROTEIN CALORIE UNDERNUTRITION - PREVALENCE AND RELATION TO SURVIVAL

D.W. Nixon, Emory University, School of Medicine, Dept. of Medicine, *1364 Clifton Rd. N.E., Atlanta, Georgia* 30322 (M01 RR 00039-200256)

This project is part of a broader program (RR 00039).

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, Div. of Research Resources funds n.a.

3.0499,

GONADAL DYSGENESIS SURVEY (HUMAN)

H.O. Williamson, Medical University of South Carolina, School of Medicine, Dept. of Medicine, *80 Barre St., Charleston, South Carolina* 29401 (M01 RR 01070-040029)

This project is part of a broader program (RR 01070).

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, Div. of Research Resources funds n.a.

3.0500,

PROSPECTIVE STUDY ON FETAL ALCOHOL SYNDROME

S. Miller, Case Western Reserve University, School of Medicine, Dept. of Medicine, *2109 Adelbert Rd., Cleveland, Ohio* 44106 (M01 RR 00210-160098)

This project is part of a broader program (RR 00210).

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, Div. of Research Resources funds n.a.

3.0501,

EVALUATION OF EPIDEMIC ARTHRITIS IN THE LYME AREA

A.C. Steere, Yale University, School of Medicine, Dept. of Internal Medicine, *333 Cedar St., New Haven, Connecticut* 06510 (M01 RR 00125-170319)

This project is part of a broader program (RR 00125).

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, Div. of Research Resources funds n.a.

3.0502,

BLOOD LEAD AND DELTA ALAD ACTIVITY IN THE URBAN MOTHER AND HER FETUS

P.M. Kuhnert, Case Western Reserve University, School of Medicine, Dept. of Medicine, *2109 Adelbert Rd., Cleveland, Ohio* 44106 (M01 RR 00210-160101)

This project is part of a broader program (RR 00210).

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, Div. of Research Resources funds n.a.

3.0503,

FETAL EXPOSURE TO LEAD, MERCURY AND CADMIUM AN URBAN INDUSTRIAL ENVIRONMENT

P.M. Kuhnert, Case Western Reserve University, School of Medicine, Dept. of Medicine, *2109 Adelbert Rd., Cleveland, Ohio* 44106 (M01 RR 00210-160104)

This project is part of a broader program (RR 00210).

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, Div. of Research Resources funds n.a.

3.0504,

THE INCIDENCE OF OCCULT PSEUDOGOUT (HUMAN)

R.M. Bennett, Oregon State Higher Education System, University of Oregon Health Sciences Center, School of Medicine, Dept. of Surgery, *3181 S.W. Sam Jackson Park Rd., Portland, Oregon* 97201 (M01 RR 00334-140092)

This project is part of a broader program (RR 00334).

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, Div. of Research Resources funds n.a.

3.0505,

GENETIC AND EPIDEMIOLOGIC STUDY OF HUMAN SALIVARY PROTEINS

R.D. Friedman, University of Pennsylvania, School of Dental Medicine, Dept. of Periodontics, *4001 Spruce St., Philadelphia, Pennsylvania* 19104 (M01 RR 01224-020004)

This project is part of a broader program (RR 01224).

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, Div. of Research Resources funds n.a.

3.0506,

AIR POLLUTION AND HEALTH

J. Kraut, University of California, San Diego Campus, Graduate School, Dept. of Chemistry, *P.O. Box 109, La Jolla, California* 92037 (P41 RR 00757-080073)

This project is part of a broader program (RR 00757).

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, Div. of Research Resources funds n.a.

3.0507,

INCIDENCE OF POST-PROSTATECTOMY IMPOTENCY (HUMAN)

L.A. Klein, Beth Israel Hospital, *330 Brookline Ave., Boston, Massachusetts* 02215 (M01 RR 01032-050236)

This project is part of a broader program (RR 01032).

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, Div. of Research Resources funds n.a.

3.0508,

EVALUATION OF OFFSPRINGS OF DRUG-ADDICTED MOTHERS

J. Marcus, University of Chicago, Pritzker School of Medicine, Dept. of Pediatrics, *5801 S. Ellis Ave., Chicago, Illinois* 60637 (M01 RR 00305-140147)

This project is part of a broader program (RR 00305).

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, Div. of Research Resources funds n.a.

3.0509,

SEROEPIDEMIOLOGIC STUDY OF NON-A, NON-B HEPATITIS (HUMAN)

W.C. Maddrey, Johns Hopkins University, School of Medicine, Dept. of Medicine, *725 N. Wolfe St., Baltimore, Maryland* 21205 (M01 RR 00722-080091)

This project is part of a broader program (RR 00722).

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, Div. of Research Resources funds n.a.

3.0510,

BIOLOGICAL EFFECTS OF ENVIRONMENTAL CHEMICALS (HUMAN)

S.M. Daum, City University of New York, Mount Sinai School of Medicine, School of Medicine, Environmental Sciences Laboratory, *1 Gustave L. Levy Pl., New York, New York* 10029 (M01 RR 00071-170100)

This project is part of a broader program (RR 00071).

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, Div. of Research Resources funds n.a.

3.0511,

HYPOGLYCEMIA IN A 'NORMAL' POPULATION (HUMAN)

M.A. Permutt, Washington University, School of Medicine, Dept. of Internal Medicine, *660 S. Euclid Ave., St. Louis, Missouri* 63110 (M01 RR 00036-200384)

This project is part of a broader program (RR 00036).

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, Div. of Research Resources funds n.a.

3.0512,

MEDICAL IMPLICATIONS OF IODINATED WATER SUPPLY

W.C. Thomas, State University System of Florida, University of Florida, School of Medicine, Dept. of Medicine, *1600 Archer Rd., Box J-266, Gainesville, Florida* 32610 (M01 RR 00082-180186)

This project is part of a broader program (RR 00082).

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, Div. of Research Resources funds n.a.

3.0513,

BIOMEDICAL RESEARCH SUPPORT GRANT

A.D. Frame, Inter American University of Puerto Rico, Aguadilla Campus, Undergraduate School, Dept. of Natural Sciences, *Aguadilla, Puerto Rico* 00603 (S06 RR 08159-03)

The goals of the Biomedical Research Program at Inter American University is to determine the status of Fasciola hepatica in both cattle and man on the Island and to control (or eradicate) the progress of the disease through the various investigations functioning within the MBS program.

The proposed investigations are the following: 1) to deterine the prevalence of F.hepatica in a segment of the populations of cattle and man in Puerto Rico by means of fecal sampling using a sedimentation method for cattle and a concentration technique for the analysis of the human feces. 2) to study epidemiological factors and the snail intermediate host, Lymnaea cubensis, on the farms and river areas in order to better understand the cycle of the parasite and the progress of this disease. 3) to develop a more effective means for diagnosing fascioliasis in cattle using immunodiagnostic methods for detecting F.hepatica antibodies. 4) to control the snail intermediate host for R.hepatica, the L.cubensis, by using natural products extracted from plants common in Puerto Rico. 5) to determine the effect of F.hepatica on the quality of milk produced by the diseased cow.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, Div. of Research Resources $107,260

3.0514,

BIOMEDICAL SCIENCES

J.K. McNeley, Navajo Community College, Undergraduate School, Dept. of Social Sciences, *Tsaile, Arizona* 86556 (S06 RR 08163-02)

The program involves Navajo Community College students in research on significant health problems among the Navajo population. The Navajo Drinking Behavior project, having arrived at a cultural definition of alcohol abuse through the use of ethnoscience ethnographic procedures, will investigate the incidence of alcohol abuse of a sample of the Navajo population through the use of social survey research techniques. Clinical applications of research findings will also be explored. The Gastroenteritis project is investigating the incidence of diarrhea among newborn lambs and young children on the Navajo reservation with the objectives of identifying the agent(s) causing diarrhea within the two target populations as well as the environmental factors contributing to diarrhea. The Streptococcal Diseases project is engaging students in the isolation of beta-hemolytic streptococci from clinical sources and identification through presumptive grouping of A strain by bacitracin sensitivity and B strain by the cAMP test and hippurate hydrolysis followed by verification of presumptive grouping results by the fluorescent anti-body technique.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, Div. of Research Resources $128,900

3.0515,

GENERAL CLINICAL RESEARCH CENTER

S.M. Mellinkoff, University of California, Los Angeles Campus, School of Medicine, Dept. of Medicine, *2025 Zonal Ave., Los Angeles, California* 90024 (M01 RR 00865-07)

The Clinical Research Center, funded by the National Institutes of Health, provides eight research beds for projects approved through the Human Subject Protection Committee and the CRC Advisory Committee.

There is no departmental restriction on the areas of research. Active investigation is being pursued by members of the Departments of Internal Medicine, Pediatrics, Microbiology and Immunology, Obstetrics-Gynecology, Pharmacology, Radiological Sciences,

Surgery, Ophthalmology, and Psychiatry. Any valid research program is carefully evaluated and all possible support is offered to the investigators. There are presently 35 active inpatient protocols and 22 active outpatient protocols, a total of 57.
SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, Div. of Research Resources $749,811

3.0516,
GENERAL CLINICAL RESEARCH CENTER
F.H. Epstein, Beth Israel Hospital, Dept. of Medicine, *330 Brookline Ave., Boston, Massachusetts* 02215 (M01 RR 01032-05)
This proposal requests continued support for the General Clinical Research Center at the Beth Israel Hospital. The past three years have witnessed a broadening of the activities and accomplishments of the inpatient, outpatient and core laboratory components of the center, which continues to serve as the major focus of clinical research at Beth Israel. The present research program is multidisciplinary, including clinical studies in endocrinology, hematology, nephrology, diabetes and metabolism, cardiology, behavioral medicine, neurology, urology, general surgery, radiology, obstetrics, gynecology, computer medicine, gerontology, rheumatology, infectious diseases, dermatology and biostatistics.
SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, Div. of Research Resources $614,583

3.0517,
GENERAL CLINICAL RESEARCH CENTER
T.E. Gaffney, Medical University of South Carolina, School of Medicine, Dept. of Pharmacology, *80 Barre St., Charleston, South Carolina* 29401 (M01 RR 01070-03S1)
This application for a Clinical Associate Physician to be associated with the GCRC at the Medical University of South Carolina requests support for Dr. Timothy Fagan. Dr. Fagan would assume this position following completion of two years of clinical research fellowship based entirely on work done in our GCRC studying the mechanism of action, disposition and pharmacokinetics of propranolol and applications of non-invasive technology to studies of the effects of drugs on ventricular function. Dr. Fagan has begun to develop the Non-Invasive Research Laboratory, separate from the clinical non-invasive laboratory based on cardiology, as a Core Research Resource for numerous studies that are underway on the GCRC. As a Clinical Associate Physician, Dr. Fagan will serve as a resource to a substantial number of senior investigators whose work in clinical cardiovascular pharmacology is already underway on the unit. Dr. Fagan's proposed research is described in detail in the application, was designed as a framework for Dr. Fagan's further professional development as an independent clinical investigator, and as a means to maximize the impact of the Clinical Associate Physician position on the further development of clinical research in the GCRC. The Clinical Associate Physician will be responsible to the Program Director for his general duties on the GCRC and to a single group of senior investigators, headed by the Principal Investigator, who will provide the primary direction for his research; he will also assist in the area of research headed by the Program Director.
SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, Div. of Research Resources $18,332

3.0518,
GENERAL CLINICAL RESARCH CENTER - DENTAL MEDICINE
D.W. Cohen, University of Pennsylvania, School of Dental Medicine, Dept. of Periodontics, *4001 Spruce St., Philadelphia, Pennsylvania* 19104 (M01 RR 01224-02)
This application requests one year continuation support for a General Clinical Research Center at the School of Dental Medicine of the University of Pennsylvania to provide a multidisciplinary outpatient research center for the study of the applications of oral science to human needs. The center will provide a controlled environment with carefully selected and maintained groups for cross-disciplinary human study research in order to translate basic research findings into improved oral health and patient care and increased understanding of functions within the oral cavity. To achieve this goal, a multidisciplinary consortium of experienced investigators will apply microbiological, physiological, behavioral, and scientifically sound assessment methods to the study of oral processes, diseases and their treatment and prevention.
SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, Div. of Research Resources $288,037

3.0519,
C U P R, BIOMEDICAL RESEARCH PROGRAM
G.A. Infante, Universidad Catolica de Puerto Rico, School of Science, Dept. of Chemistry, *Avenida las Americas, Ponce, Puerto Rico* 00731 (S06 RR 08067-10)
This program is a combination of nine projects. The first one proposes to investigate the inhibitory activity of alkaloids such as nitidine, fagaronine and related compounds. A second project involves the determination of atmospheric particulate and other gaseous pollutants and its relation to public health. Chemical and biological analysis will be carried out.
The third project deals with the radiation chemistry of biologically important compounds and radiosensitization and radioprotection studies in modern systems and also in vivo systems.
The fourth project involves the organization of the teleostian thalamus and telencephalum invertebrates. The project will also study different pathways from the Retina optictectum visual thalamus and telencephalum. Other project involves the analysis of estrogen receptor sites within cancerous tissues, including preservation, purity monitoring, morphological and biochemical studies.
The sixth project involves investigation on the lipid metabolism and morphology of torulopsis fujisanensis. Another project involves the isolation and characterization of N. Fowleri in Puerto Rico.
The eighth project involves the elucidation of the mechanisms of action of nitrofurans.
The last project involves investigation about identification, isolation and purification of dengue virus type 2 antigen for the induction of neutralizing antibody.
BIBLIOGRAPHIC REFERENCES: Gabriel A. Infante, Jaime Martinez, Sandra Gracia, Ruben Perez, Maria J. Matos, Daniel Cruz and Jose N. Correa, 1978, Radiosensitization and Radioprotection of Murine Chondrosarcoma, Science-Ciencia 6, 12 -13. Eileen Orta, Luis Velez, Genoveva Yordan and Gabriel A. Infante, 1978, Radiation Chemistry of Antitumor Purines, Science-Ciencia 6, 14-15.
SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, Div. of Research Resources $257,521

3.0520,
GENERAL CLINICAL RESEARCH CENTER
R.S. Ross, Johns Hopkins University, School of Medicine, Dept. of Medicine, *725 N. Wolfe St., Baltimore, Maryland* 21205 (M01 RR 00722-08)
Partial support is proposed for a special facility for ambulatory clinical investigation through The Johns Hopkins Out-Patient Clinical Research Center. Based on a 25-year previous experience of long-term outpatient investigation in a large number of disorders, the Center will provide facilities and financing for continual studies in acute and chronic medical and surgical illnesses of potential significance, the natures of which preclude in-patient investigation and for which clinical research can be most effectively and economically conducted on ambulatory subjects. Patients of all age groups will be included. Areas of major investigational emphasis include: nutritional management of chronic renal failure; evaluation of frequency and duration of hemodialysis in management of end-stage renal disease; long-term effects of persistent hepatitis B and other DNA virus infections in immunosuppressed renal transplant recipients; cryoglobulinemia and glomerulonephritis relationships; hypertension in diabetes mellitus and its association with diabetic retinopathy; the relationship of histocompatibility surface antigens to occurrence or modification of rheumatic disorders, polycystic kidney disease, hepatitis B infections, and renal vascular disorders, polycystic kidney disease, hepatitis B infections, and renal vasular disorders; controlled evaluation of corticosteroid therapy of pulmonary sarcoidosis; hormonal and other biologic aspects of medullary thyroid carcinoma and related endocrine neoplasms; familial studies in colorectal cancer; management of Marfan's syndrome and other genetic disorders, including skeletal dysplasias and dysmorphologies; prognostic implications of findings in arteriography and left ventriculography in survivors of acute myocardial infarction; relationship of colonic cancer to ulcerative colitis; and long-term effects of prolonged estrogen therapy for ovarian dysgenesis. Special attention will be given to epidemiologic, biomathematical, and hereditary aspects of these disorders.
SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, Div. of Research Resources $196,752

3.0521,
COMPUTER RESOURCE FOR BIOMOLECULAR RESEARCH
J. Kraut, University of California, San Diego Campus, Graduate School, Dept. of Chemistry, *P.O. Box 109, La Jolla, California* 92037 (P41 RR 00757-08)
The objective of the Computer Resource is to aid the investigation of the structure, dynamics and function of biomolecules by providing a unified, powerful and highly interactive computer system for the collection, processing, storage, analysis and display of biomolecular data and for the construction, analysis and evaluation of models of biomolecular phenomena. Major areas of biomedical research of the Resource include: protein crystallography; relationships between structure and biological function for peptides and proteins; structural studies of polynucleotides; large system molecular dynamics and electropherogram analysis of proteins.
SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, Div. of Research Resources $243,108

3.0522,
GENERAL CLINICAL RESEARCH CENTER
D.M. Kipnis, Washington University, School of Medicine, Dept. of Internal Medicine, *660 S. Euclid Ave., St. Louis, Missouri* 63110 (M01 RR 00036-20)
The Washington University General Clinical Research Center, established in 1960, consists of inpatient and outpatient facilities located in Barnard and St. Louis Children's Hospitals in the Washington University Medical Center. The 25-bed Adult Unit is located in Barnard Hospital and the 8-bed Children's Unit is located in St. Louis Children's Hospital. These units function under a single administration and share dietary and core laboratory services; the nursing services are separate. Both units are designed so that acutely ill as well as ambulatory patients and normal volunteers can participate in clinical investigation. The GCRC provides a physical setting for inpatient and out-patient studies with experienced and skilled, research quality nursing and dietary services and facilities for specialized studies. The GCRC Core Laboratory provides both technical developmental and specialized service support to GCRC investigators and patients. The service support provides determination which are not otherwise available or, in some instances, which would be available only at inordinate cost. All faculty members of Washington University School of Medicine who wish to pursue clinical investigation, and have research protocols approved by the Washington University Human Studies and GCRC Advisory committees, may use the resources of the GCRC. Although the primary function of the GCRC is clinical investigation, it also provides opportunities for undergraduate and post-graduate training in clinical investigation.
SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, Div. of Research Resources $1,284,634

3.0523,
MUSHROOM WORKERS DISEASE PROJECT (HUMAN)
A.P. Fishman, University of Pennsylvania, School of Medicine, Dept. of Medicine, *36th & Hamilton Walk, Philadelphia, Pennsylvania* 19174 (M01 RR 00040-200182)
This project is part of a broader program (RR 00040).
SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, Div. of Research Resources funds n.a.

3.0524,
GENERAL CLINICAL RESEARCH CENTER
A.P. Richardson, Emory University, School of Medicine, Dept. of Medicine, *1364 Clifton Rd. N.E., Atlanta, Georgia* 30322 (M01 RR 00039-20)
This grant supports a facility where investigators from all departments of Emory University School of Medicine can study unsolved clinical problems under conditions of controlled diet and physical activity, and where most physiological and chemical variables can be monitored continuously for unlimited periods of time. Problems under study during the current

year are as follows: 1. Hematology-Oncology: Hemostasis; chemotherapy of leukemia; mechanism of proteinuria in patients with neoplastic disease; protein-calorie undernutrition in cancer. 2. Cardiology: Cardiomyopathy in muscular dystrophy; effects of protein-calorie mainutrition on the heart; hypertrophic cardiomyopathy. 3. Nutrition: Prevalence, causes and treatment of protein-calorie undernutrition. 4. Neurology: Therapy of multiple sclerosis; endocrine changes in Parkinson's disease. 5. Endocrinology: Juvenile osteoporosis; diabetes insipidus; growth hormone deficiency; subclinical muscular dystrophy; Turner's syndrome; cause of growth retardation. 6. Liver Disease: Hepatorenal syndrome; gastroesophageal varices; treatment of alcoholic hepatitis; surgery for portal hypertension and intractable ascites; disorders of amino acid metabolism in cirrhosis. 7. Gastroenterology: Effects of Mg deficiency. 8. Nephrology: Mechanism of nephrolithiasis.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, Div. of Research Resources $920,004

3.0525,
GENERAL CLINICAL RESEARCH CENTER

L.E. Earley, University of Pennsylvania, School of Medicine, Dept. of Medicine, *36th & Hamilton Walk, Philadelphia, Pennsylvania* 19174 (M01 RR 00040-20)

This is an application for a five-year renewal of a General Clinical Research Center at the Hospital of the University of Pennsylvania. This Clinical Research Center is utilized for both in-patient and out-patient studies by members of the Departments of Pediatrics, Neurology, Medicine, Surgery, Radiology, Dermatology, and Obstetrics and Gynecology. Research protocols deal with a wide spectrum of diseases, mostly of a metabolic nature, which require specialized facilities for patient observation as well as dietary control. An associated clinical laboratory provides certain analyses which are required specifically by study patients and which are not otherwise generally available in the institution.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, Div. of Research Resources $726,419

3.0526,
BACTERIOCIN TYPING OF ACINETOBACTER SPECIES

B.J. McArthur, Wayne State University, School of Nursing, *5557 Cass Ave., Detroit, Michigan* 48202 (S06 RR 08167-03)

The overall objectives of this research are to develop enlarged standard sets for bacteriocin testing of the titled organism, to develop high titered bacteriocins, and to characterize the resultant bacteriocins. Projects already in progress on the comparison of serotyping and bacteriocin typing of selected strains, epidemiologic study of a hospital epidemic and possible loss of R-factors through in vitro storage of cultures will be completed.

Part 5 of 5.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, Div. of Research Resources funds n.a.

3.0527,
ATMOSPHERIC PARTICULATE AND PUBLIC HEALTH

R.R. Eckert, Universidad Catolica de Puerto Rico, School of Science, Dept. of Physics, *Avenida las Americas, Ponce, Puerto Rico* 00731 (S06 RR 08067-100002)

This project is part of a broader program (RR 08067).

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, Div. of Research Resources funds n.a.

3.0528,
GENERAL CLINICAL RESEARCH CENTER

F.E. Young, University of Rochester, School of Medicine & Dentistry, Dept. of Microbiology/Pathology, *601 Elmwood Ave., P.O. Box 607, Rochester, New York* 14642 (M01 RR 00044-20)

Application is made for the renewal of funding for a General Clinical Research Center. The program of research activities involves the Departments of Medicine, Pediatrics, Radiation Biology and Biophysics, Psychiatry, Pharmacology and Toxicology, Obstetrics and Gynecology, and Surgery. Areas of special research interest include: neuroendocrine control of adenohypophysical function, of feeding and appetitive behavior, of glucose homeostasis, and of the hormonal determinants of blood pressure, metabolic alterations in neuromuscular disease and in cancer; the control of insulin secretion during fasting; caloric balance in children with acute and chronic illness; metabolic alterations in morbid obesity and the effects of bypass surgery; the relationship between temperature sensitivity and attenuated virulence of influenza A virus; salt, and trace metal metabolism in cirrhosis; the impact of clinical aerosols in airway mechanics and pulmonary gas exchange; plasmapheresis as a therapeutic modality in idiopathic thrombocytopenic purpura; disposition and turnover of isotopic mercury in industrial mercury workers; comprehensive assessment of metabolic, body compositional, hormonal, and electrocardiographic changes during protein-sparing modified fasts. Thus, the Center supports studies in Endocrinology and Metabolism, Nutrition, Neurology, Infectious Disease, Pulmonary Disease, Gastroenterology, Hematology, Toxicology, Psychiatry, Pharmacology, as well as Pediatrics and Obstetrics and Gynecology.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, Div. of Research Resources $717,925

3.0529,
GENERAL CLINICAL RESEARCH CENTER

H.C. Knowles, University of Cincinnati, College of Medicine, Dept. of Internal Medicine, *Eden & Bethesda Aves., Cincinnati, Ohio* 45221 (M01 RR 00068-18S1)

Numerous studies have shown the etiology of Systemic Lupus Erythematosus (SLE) to be multifactorial though most investigations have shown an altered immune system to be the final pathway in expression of the autoimmune disease. Some lines of evidence have found a defect in cell mediated immunity and a specific defect of T-suppressor cells has been demonstrated. Familial studies, especially twin studies, have shown a high incidence of altered immune status in family members, an increased incidence of SLE among family members and a greater than 50% incidence of SLE among monozygotic twins. Other studies have suggested an environmental influence with the presence of lymphocytotoxic antibodies in SLE family members as well as close household contacts. If immunologic abnormalities can be demonstrated in SLE family members, specifically a suppressor T cell defect, this, in conjunction with the presence of anti-lymphocyte antibodies, would support the hypothesis that SLE manifests itself in those persons with a genetic predisposition given the appropriate environmental stimulus. It is the objective of this proposal to demonstrate such a defect.

The research plan will select 50 family members of SLE patients and a control group of 50 non-family close contacts matched for age, race, and sex. All subjects will be screened for serologic abnormalities seen in SLE and have delayed hypersensitivity skin tests performed. Lymphocytotoxic antibodies will be tested for in all groups and identification of any T cell function aberration. In the final phase of the study, those subjects in whom T cell abnormalities have been identified will have an in-depth study of T suppressor-helper cell defects.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, Div. of Research Resources $849,253

3.0530,
GENERAL CLINICAL RESEARCH CENTER

S. Kupfer, City University of New York, Mount Sinai School of Medicine, School of Medicine, Dept. of Medicine, *1 Gustave L. Levy Pl., New York, New York* 10029 (M01 RR 00071-17)

The facilities and support provided by this research grant make it possible for clinical investigators in all departments to study various pathophysiological states and diseases under controlled environmental and metabolic conditions.

Such studies include research on neurological myeloproliferative disorders, purine metabolism and gout, renal and electrolyte and fluid disorders, catecholamine metabolism in relation to hypertension and affective disorders, altered adrenal cortical and gonadal hormonal balances, malabsorption, hepatic and biliary tract secretory disturbances, obesity, inborn errors of metabolism, and diabetes mellitus.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, Div. of Research Resources $1,198,172

3.0531,
GENERAL CLINICAL RESEARCH CENTER

W.B. Deal, State University System of Florida, University of Florida, School of Medicine, Dept. of Medicine, *1600 Archer Rd., Box J-266, Gainesville, Florida* 32610 (M01 RR 00082-18)

This proposal is for continuation of a seven-bed inpatient and outpatient CRC for children and adults at the Shands Teaching Hospital of the J. Hillis Miller Health Center of the University of Florida, to provide careful and optimal control of variables critical to clinical investigation in man. The Center is organized to provide a focus for communication and collaboration among health scientists advising on policy and carrying out studies in the unit, including specialists in: gastroenterology, pediatric and adult endocrinology, obstetrics and gynecology, metabolism, genetics, immunology, microbiology, oncology, pediatric and adult general surgery, urology, hematology, neurology, pathology, ophthalmology, psychiatry, psychology, biochemistry, pharmacology, nursing, pharmacy, pulmonology, and pediatric nephrology. Research-oriented nursing and dietary staff assist in the development of detailed and practicable protocols and assure adherence to them. The Program Director and Associate Director, assisted by the Advisory Committee, encourage and assist young investigators to develop clinical research proposals. A technician is responsible for dependable specimen handling and distribution and carries out assays of urine and blood constituents to assist investigators and save costs.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, Div. of Research Resources $497,504

3.0532,
GENERAL CLINICAL RESEARCH CENTER

W.H. Luginbuhl, University of Vermont & State Agricultural College, School of Medicine, Dept. of Pathology, *85 S. Prospect St., Burlington, Vermont* 05401 (M01 RR 00109-17)

The Clinical Research Center at the University of Vermont consists of a six-bed research ward including a special diet kitchen, core laboratory and special procedure rooms which provide inpatient and limited outpatient facilities for the conduct of original investigation by members of the medical faculty. It is staffed by full-time nursing, dietary and laboratory personnel who are highly trained in patient care and research techniques. Thus, the Center provides an environment where suitable patients may be studied under optimum conditions for experimental control and accurate data collection.

Proposed research projects must be approved by the Committee on Human Experimentation for the Medical Sciences and are subjected to critical review by the Program Director and CRC Advisory Committee prior to final approval. They are rated on the basis of scientific merit, methodology, and appropriateness for human investigation. A priority rating is established for each research project and admission of patients to the Center is determined accordingly.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, Div. of Research Resources $411,034

3.0533,
GENERAL CLINICAL RESEARCH CENTER - ADULT AND CHILDREN

A. Ebbert, Yale University, School of Medicine, Dept. of Internal Medicine, *333 Cedar St., New Haven, Connecticut* 06510 (M01 RR 00125-17)

The objective of this supplemental application is for the acquisition of a computerized data management system (CLINFO (TM) for the use of the clinical investigators using the Adult and Children's Clinical Research Centers at Yale University School of Medicine. Our Division of Research Resources-funded Clinical Research Centers have been actively functioning since 1963. Investigators from the Departments of Internal Medicine, Surgery, Psychiatry, Obstetrics and Gynecology and Human Genetics are currently conducting clinical research sponsored by the CRC. At the present time, no less than twelve investigators have ongoing studies for which they believe a computerized data management system would be extremely valuable.

We propose to locate terminals in the following seven strategic locations throughout the Yale University School of Medicine-Yale-New Haven Hospital complex: 1) systems manager's office on the GCRC; 2) GCRC core lab; 3) CCRC; 4) CCRC core lab; 5) endocrine section research lab; 6) renal section research lab and 7) Yale-New Haven Hospital clinical chemistry lab.

We believe that the acquisition of CLINFO for our CRCs will significantly improve the handling of data from the studies presented in the body of this proposal. In addition, we feel that CLINFO will be a valuable tool for training future investigators.
SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, Div. of Research Resources $1,207,410

3.0534,
GENERAL CLINICAL RESEARCH CENTER
F.C. Robbins, Case Western Reserve University, School of Medicine, Dept. of Medicine, *2109 Adelbert Rd., Cleveland, Ohio* 44106 (M01 RR 00210-16)
The Perinatal Clinical Research Center is a unique environment facilitating and supporting research programs involving pregnancy (mother and fetus), the neonate and the development of the infant. It is also an important education resource for the Medical School and Hospital and an avenue for attracting new recruits to this study area. The viability of this triple focused (mother, fetus and infant) and multidisciplinary Center is demonstrated by continuing research themes and the addition of many new programs.
Members of the Department of Obstetrics have introduced new studies in the areas of high risk pregnancy, antepartum bioelectronic monitoring of fetal heart rate, movements and respirations, the prediction of low birth weight infant outcomes and the effect on the fetus of environmental contaminants, including heavy metals, and drugs used during the antepartum and intrapartum periods. Studies in computerized data management and diagnosis, fetal electroencephalography and programmed identification of fetal distress are continuing. In the Department of Pediatrics, studies in fuel metabolism of the mother, fetus and neonate have been expanded and focused on diabetes mellitus and intrauterine growth retardation. Gas chromatography-mass spectrometry techniques are being used. Neonatal physiologic and pharmacologic studies have also been expanded, as have studies in infant neurobehavioral development, supported by the PCRC Developmental Assessment Unit. Additional areas of study include instrumentation, microprocessor applications, antenatal genetics, virology-immunology, infant perception and placental morphology.
The Center serves as a resource to the hospital, community and region for the dissemination of state-of-the-art clinical techniques for providing optimum care to the high risk mother, fetus and newborn. Finally, the Center, by virtue of its infant followup capabilities in the Developmental Assessment Unit has the important commitment to assist all of its investigators in the study of infant outcome, with respect to disease and treatment.
SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, Div. of Research Resources $712,492

3.0535,
GENERAL CLINICAL RESEARCH CENTER
A. Dorfman, University of Chicago, Pritzker School of Medicine, Dept. of Pediatrics, *5801 S. Ellis Ave., Chicago, Illinois* 60637 (M01 RR 00305-14)
The project is designed to operate a 4-bed Clinical Research Center for Children with facilities for multidisciplinary clinical investigations. The clinical studies will be supplemented by animal/basic research. Endocrine mechanisms that control normal and abnormal growth will be explored using new hormone assay methods. Refined methods for controlling diabetes and other metabolic disorders in childhood will be tested. Infants and children with cardiopulmonary problems will undergo examinations employing new methods for cardiac performance evaluation using non-invasive and quantitative angiocardiographic technics. Studies related to defining the basic biochemical defects in heritable connective tissue disorders will be continued, and attempts to correct some of these through enzyme replacement shall be made. A multidisciplinary study of the pathophysiology in gastrointestinal malabsorption syndrome in young subjects shall be made. New therapeutic programs for the correction of immune deficiency disease in children shall be tried. New drugs for the control of muscular dystrophy will also be tried. Other new therapeutic ventures will be directed towards the control of certain endocrine, neurologic, renal, cardiac, metabolic and hematologic disorders. Normal and abnormal behavior patterns in newborn infants will be evaluated.
SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, Div. of Research Resources $369,027

3.0536,
BIONOMICS OF ANOPHELINE VECTORS OF MALARIA
A.E. Aziz, Ain Shams University, *Abbassia St., Cairo, Egypt* (03-062-N)
The completion of the Aswan High Dam and the filling of Lake Nasser have created a situation ideal for the introduction of Anopheles gambiae into Egypt from the Sudan. Owing to the extensive anopheline mosquito breeding places, the whole Egyptian population can be considered at risk to malaria.
Basic investigations will be performed on the capability of differing anopheline strains to act as vectors or carriers of the disease, as well as insecticide resistance, genetics, and determinants of vector range. The goal of the project will be the accumulation of sufficient knowledge of the bionomic, biology, and ecology of the proven and suspected anopheline vectors, so as to interpret factors affecting their control, and to establish a basis for sound planning, operation, and evaluation of control programs.
Malaria is still prevalent in Egypt and the potential for an epidemic is increasing. The absence in the past of definitive studies, as described above, indicate a real need for such baseline data in Egypt, and the objectives of the project, when completed, will provide the weapons necessary to combat any such outbreak.
SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, Fogarty International Center funds n.a.

3.0537,
TICK, VERTEBRATE & INFECTIOUS AGENT INTERRELATIONSHIPS
H. Hoogstraal, U.S. Dept. of Defense, Navy, Naval Medical Research Unit #3, *FPO, New York, New York* 09527 (03-036-N)
Results of this research will be collated and correlated with existing published and unpublished data to determine models of tick-pathogen-vertebrate interrelationships. The dynamics of these models will be analyzed to ascertain the combinations of factors that may impinge on human health and how these factors compare with those operating in cycles of pathogens transmitted to humans by fleas, lice, mosquitoes, and other hematophagous arthropods. Special experimental and field studies will be devoted to tick-virus-vertebrate interrelationship models.
SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, Fogarty International Center funds n.a.

3.0538,
ECOLOGY OF TRACHOMA AND OTHER EYE INFECTIONS
M.E. Said, Gameat Al Iskandaria, *Alexandria, Egypt* (03-024-1)
To: 1) determine prevalence and intensity of trachoma and bacterial conjunctivitis under different ecological conditions in rural communities; 2) measure visual loss from these diseases; 3) measure the socioeconomic burden of this loss; 4) develop efficient, economical methods for controlling these diseases; 5) train graduate students in opththalmology and preventive medicine in community health methods concerned with visual loss; 6) improve and standardize laboratory methods for diagnosis of communicable eye diseases; 7) establish standard methods for recording clinical findings in ocular disease, useful in field work and in hospitals and out-patient clinics so that data from various sources may be compared.
SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, Fogarty International Center funds n.a.

3.0539,
EPIDEMIOLOGY OF CANCER
T. Koszarowski, Coordinating Commission for Polish American Sci. Collaborat., *Miodowa 15, Warsaw, Poland* (05-093-N)
To determine with good precision, using accepted cancer register techniques, the incidence of cancer by site in well-defined urban and rural populations of Poland; b) to define trends of site-specific cancer incidence within Poland; c) and trends mentioned in connecting the ongoing case-control studies with laboratory determinations and with pathomorphologic data; e) to develop information on survival experience; f) to evaluate on the basis of the registered data the real effiency of cancer control based on cancer centers system.
SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, Fogarty International Center $94,687

3.0540,
MUTAGENIC/CARCINOGENIC AGENTS IN BODY FLUIDS OF CHILDREN
G.R. Warren, Montana State University, School of Letters & Sciences, Dept. of Chemistry, *Bozeman, Montana* 59715 (R01 CA 26647-02)
An isolated high lung cancer mortality area in Montana (Deer Lodge-Silver Bow County) has been studied in an effort to investigate the utility of rapid bioassays, such as microbial mutagenesis testing of urine samples, to predict impacts on a population by a possible carcinogenic environment. At one site (Anaconda-Deer Lodge County) the lung cancer was occupational while at another (Butte-Silver Bow County) all portions of the populations were equally at risk. Initial Ames testing of urine sample concentrates from school children in Butte, Montana showed elevated urine mutagen levels when compared with children from Anaconda. Simultaneously run air filter mutagen levels in Butte were higher as well. The present study will continue this investigation probing the relationship between air mutagen levels and urine mutagen levels in a group of school children over a monitored two week period as well as in-depth investigation of mobility and eating and drinking during the test period. The school children are selected by one day pre-screening in the school system. Due to the presence of metal mining and smelting as the major industry in this area the study concentrates on detecting metal mutagens as well as organics.
BIBLIOGRAPHIC REFERENCES: Warren, G., S. J. Rogers and E. H. Abbott. The genetic toxicology of substitutionally inert transition metal complexes. In: Inorganic Chemistry in Biology and Medicine, ACS Advances in Chemistry Series, in press, 1980. Warren, G. R. and S. J. Rogers. Mutagen testing of urine from school children in an isolated high lung cancer mortality area. Environmental Mutagenesis 2: 282 (abstr) 1980.
SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. $54,971

3.0541,
TOPICS IN BIOSTATISTICS
J.A. Koziol, University of California, San Diego Campus, School of Medicine, Dept. of Medicine/Mathematics, *P.O. Box 109, La Jolla, California* 92093 (R01 CA 26666-01)
The proposed research involves the following subject areas: survival analysis, classification and nonlinear regression, the low-dose extrapolation problem, and statistical deconvolution and regularization. Among the topics we plan to consider are: an investigation of the efficiencies of goodness-of-fit procedures with censored data; a modification of the Gehan test or the Mantel-Haenszel test for the sequential analysis of randomly censored data; the development of a test for trend in survival distributions with randomly censored data; a theoretical investigation of questions concerning recursive partitioning schemes raised in previous research; the application of recursive partitioning schemes to the analysis of data sets collected by Dr. D. Morton of UCLA and by Dr. C. Zippin of UCSF; the development of a new technique of effecting the low-dose extrapolation procedure; the technique being related to D.R. Cox's proportional hazards models; a theoretical and empirical investigation of the effectiveness and resolvability of various methods of handling the low-dose extrapolation problem; an investigation of methods for deconvolving estimated probability density functions.
SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. $54,581

3.0542,
PROSTATIC CARCINOMA IN AMERICAN BLACKS
J. Kovi, Howard University, School of Medicine, Dept. of Pathology, *2400 6th St. N.W., Washington, District of Columbia* 20059 (R26 CA 26679-02)
The purposes of this study are: (A) to examine the association of carcinoma and morphologic manifestations of aging within the prostate gland in necropsies, and (B) to investiate by pretested questionnaires whether dietary and/or lifestyle habits of American blacks are related to the high incidence of prostatic carcinoma. The initial findings in our investigation are as follows. Prostate glands from 508 necropsy cases, 171 from Ibadan, Nigerian and 337 from Washington, D.C. were reviewed and analyzed for severity of arterial medial fibrosis, intimal thickening, muscle proliferation and the presence or ab-

sence of sclerotic atrophy of glands in the outer prostate. The vascular changes and the sclerotic atrophy of the glands were more severe in the U.S. specimens as compared to the African specimens (p less than 0.05). Sclerotic atrophy of glands in the outer prostatic area was more severe in prostates with microcarcinoma than in prostates without carcinoma (p less than 0.05). Twenty age-matched patients and controls have been analyzed for epidemiologic and nutritional variables so far. Associations between prostate cancer and the following epidemiologic variables were detected: 1. lower urinary tract infections 15 or more years before diagnosis of cancer (p less than 0.05), 2. exposure to irrigation, bougie and dilatation treatment of lower urinary tract infections (p less than 0.05), 3. family history of cancer (p less than 0.05) and 4. professional, paraprofessional and skilled occupation (p less than 0.01). In the nutritional study the following observations were made: The consumption of citrus fruits and juices was more common in controls than in prostate cancer patients (p less than 0.05). The consumption of butter milk was less common in controls as compared to prostatic carcinoma patients (p less than 0.05). Controls consumed more tabasco sauce than patients (p less than 0.05).

BIBLIOGRAPHIC REFERENCES: Kovi, J., Heshmat, M.Y., Jackson, M.A., Rao, M.S., Akberzie, M.E. and Ogunmuyiwa, T.A.: Incidence of Prostatic Calcification in Blacks in Washington and Selected African Cities. Urology. Vol. XIV. 4:363-369, 1979. Kovi, J., Jackson, M.A. and Akberzie, M.E.: Unusual Smooth Muscle Changes in the Prostate. Arch. Pathol. Lab. Med. 103:203-205, 1979.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. $101,677

3.0543,

PATTERNS OF CARE IN ONCOLOGY

E.R. Greenberg, Dartmouth College, Dartmouth Medical School, Norris Cotton Cancer Center, *P.O. Box 833, Hanover, New Hampshire* 03755 (R18 CA 26690-02)

OBJECTIVES: This is a collaborative epidemiologic study of lung cancer patient care and survival in New Hampshire and Vermont. The study is designed to determine whether geographic variations in patient care in this rural area are related to the local availability of specialized cancer treatment facilities and whether this can account for geographic differences in survival. The study will allow us to examine one of the basic assumptions underlying cancer control programs, i.e., that identifiable populations in the U.S. lack easy access to sophisticated cancer treatment facilities and therefore receive sub-optimal care with resultant poor outcome.

APPROACH: The two-state population-based tumor registry has been used as a source of identified cases and we are conducting reviews of medical records to determine patient characteristics, functional status, tumor stage, and detailed treatment information. An independent slide review will provide information on histology. These data will be analyzed using univariate and multivariate methods to examine the effects of residence (i.e., distance from specialized treatment facilities) upon treatment received and length of survival. The analysis of survival times will necessitate adjustment for stage at diagnosis and other sources of bias.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. $106,141

3.0544,

POPULATION BASED STUDY OF LOWER URINARY TRACT TUMORS

L.D. Marrett, Yale University, School of Medicine, Dept. of Epidemiology & Public Health, *333 Cedar St., New Haven, Connecticut* 06510 (R26 CA 26692-02)

The general purpose of this study is to gain further knowledge about the etiologies of bladder tumor (BT) and other lower urinary tract tumors (LUTT), including tumors of the renal pelvis, ureter, and urethra. The study employs two types of epidemiologic data: 1) interview data on a wide range of possible risk factors; and 2) incidence and mortality data routinely collected by the Connecticut Tumor Registry (CTR).

As part of a large national collaborative study of BT, data about smoking (active and passive), occupational exposures, artificial sweetener and coffee consumption, hair dye use, quality of drinking water, and skin exposures to a variety of medicinal, chemical, and common household products were collected. Four hundred and fifteen (415) cases of BT diagnosed during 1978 and reported to the CTR, as well as a population sample of 880 controls, selected to have the same age and sex distribution as BT cases, have been interviewed.

We are currently extending this study 1) to include cases of LUTT diagnosed between 1/15/78 and 4/15/80 (We expect 100-110 such cases); and 2) to ask all LUTT cases as well as samples of BT cases and controls about their use of analgesics.

The CTR contains demographic and tumor-related data on all malignant neoplasms diagnosed in Connecticut residents since 1935. These will be utilized to examine trends in the incidence and mortality of BT and LUTT.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. $35,363

3.0545,

DIETHYLSTILBESTROL AND TESTICULAR CANCER IN CONNECTICUT

J.N. Lewis, State Dept. of Health Services, Preventable Diseases Division, *79 Elm St., Hartford, Connecticut* 06115 (R18 CA 27179-01)

This case-control study will determine the risk of males developing testicular cancer after exposure to diethylstilbestrol in utero. The case population will be drawn from the list of primary testicular cancers reported in Connecticut residents between 1945 and 1977. The cases studied will be those who were also born in Connecticut between 1945 and 1972. Two control groups, one drawn from birth certificates and the other from hospital populations, will be selected. Drug histories will be obtained from hospital records and from prenatal records of mothers. Other factors to be evaluated include exposure to other exogenous estrogens in utero, cryptorchidism, and hypoplastic testes.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. $68,873

3.0546,

LUNG CANCER ETIOLOGY IN NEW MEXICO'S HISPANICS AND ANGLOS

J.M. Samet, University of New Mexico, School of Medicine, Dept. of Medicine, *University Hill N.E., Albuquerque, New Mexico* 87131 (R01 CA 27187-01)

The New Mexico Tumor Registry (a population-based cancer registry participating in the SEER program) has identified marked differences in lung cancer incidence and mortality among New Mexico's multicultural population, with especially striking deficits of lung cancer occurring among Hispanic males. From the limited data currently available, cigarette smoking alone does not appear to explain their low risk status. Lung cancer rates for the state's Hispanic and Anglo females are similar and closely approximate national rates. These findings have been corroborated by investigators looking at Hispanic populations in California and Texas.

A population-based case-control study of lung cancer patients will assess the role of smoking, occupation, residence, and other putative etiologic factors. Time trends in the histologic types of lung cancer will be determined in a histopathology review of these cases, as will differences in the frequency of histologic types in the Hispanic and Anglo populations. Histology specific analyses will be conducted in the case-control study which may tighten exposure-histology correlations.

This proposed investigation should provide new information about the interactions of known risk factors and/or suggest the presence of previously unknown protective factors.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. $115,078

3.0547,

PROGRAM IN BIOMETRICS OF CANCER EPIDEMIOLOGY

I.D. Bross, Roswell Park Memorial Inst., *666 Elm St., Buffalo, New York* 14263 (R01 CA 27514-02)

The ultimate objective of this study is to assess the long-term iatrogenic effects of the various modalities of therapeutic intervention in breast cancer included in the first two collaborative clinical studies. Secondary objectives are further assessment of long-term therapeutic effects and benefit-to-cost assessments.

The goals for the current year are to assess the feasibility of various follow-up strategies that might be used in the eventual study and to produce preliminary information which, together with further information generated during the period of the continuation, could provide the basis for a renewal grant proposal that would make it possible to achieve the ultimate objectives of this study.

The specific significance of the proposed project is that it has reasonable prospect of answering important questions about the treatments of breast cancer which are currently of concern to both physicians and patients.

Since the study operates from a unique data base which was randomized with respect to treatment arms and this was also randomized with respect to long-term iatrogenic effects, the principal methodological problem in this study is to secure completeness of follow-up.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. $39,341

3.0548,

EPIDEMIOLOGY AND CANCER REGISTRIES IN THE PACIFIC BASIN

B.E. Henderson, University of Southern California, School of Medicine, Dept. of Community & Family Medicine, *2025 Zonal Avs., Los Angeles, California* 90033 (R13 CA 27751-01)

This proposal requests funds for travel and per diem for fifty (50) participants in the Third Symposium on Epidemiology and Cancer Registries in the Pacific Basin. The first and second symposia (1975 and 1978) provided a forum for the exchange of information on 1) the design and conduct of cancer registries, and 2) the status of research in cancer epidemiology in nineteen participating countries and territories of the Pacific. In addition, important collaborative research on several cancers (e.g., lung, breast, nasopharynx and liver) was developed.

The Third Symposium will be designed to provide new demographic information from existing cancer registries (e.g., secular trends, occupational risk) and to introduce data from developing registries in the People's Republic of China, Korea, and the South Pacific. In addition, ongoing collaborative research will be reviewed and new projects designed during workshops on cancer sites of particular interest - liver, breast, stomach, colo-rectal, lung, urinary bladder, and prostate and testis. Dr. Henderson will visit several of the participating programs prior to the Third Symposium to provide added stimulus to the meeting preparations.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. $77,374

3.0549,

TESTICULAR CANCER AND PRENATAL DES EXPOSURE

A.R. Moss, Northern California Cancer Program Inc., *770 Welch Rd., Suite 190, Palo Alto, California* 94304 (R01 CA 27752-01A1)

Testicular cancer is the most frequent solid tumor in young men, with incidence rates for the 20-30 year old group reaching 11 per 100,000 in high incidence regions such as the San Francisco Bay Area. Recent evidence, including one case-control study, has linked certain testicular cancers with prenatal exposure to diethylstilbestrol (DES), synthetic hormone given to several million women in the 1940's, 50's and 60's to prevent abortion. The purpose of the present proposal is to carry out a case-control study of testicular cancer and prenatal DES exposure in young men in Northern California.

Cases for the proposed study will be drawn from institutions participating in the Northern California Oncology Group, including Stanford University Hospital, the University of California at San Francisco, and Children's Hospital of San Francisco. It is proposed to interview 250 cases over a three-year period. Men participating in the study will be asked to provide access to their mothers and also to peer controls who share the cases' early life experiences. The mothers of both cases and controls will be interviewed to determine their exposure to DES during pregnancy. Positive reported exposure to DES will be verified by inspection of medical records for both case and control mothers. Negative exposure to DES will be verified in a twenty percent sample of mothers.

The study will be carried out by staff of the Northern California Cancer Program, the parent organization of the Northern California Oncology Group. Statistical consultation is available through the statistical

consultants of the Northern California Oncology Group.
SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. $48,740

3.0550,
STATISTICAL GENETIC ANALYSIS FOR CANCER FAMILIES

R.C. Elston, Louisiana State University, Medical Center, School of Medicine, Dept. of Biometry, *1542 Tulane Ave., New Orleans, Louisiana* 70112 (R01 CA 28198-01)

Appropriate statistical models will be developed for the analysis of family data to elucidate the action of major genes governing susceptibility to cancer and similar diseases with variable age of onset; these will include segregation and linkage models, that allow for familial environmental components, for both qualitative and quantitative traits. Computer programs based on these models will be written, documented for general use, and used in simulation experiments to assess the power, efficiency and robustness of the methods of analysis developed. These models and programs will also be used, collaboratively, in the analysis of cancer family data collected by other workers. This will result in the development of appropriate methods, based on the results obtained, for genetic counseling of individuals in cancer families; and for the early detection of cancer-prone individuals to help research in the biochemical pathways involved.
SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. $188,414

3.0551,
THE EPIDEMIOLOGY OF LEUKEMIA IN RURAL IOWA

K.J. Donham, University of Iowa, School of Medicine, Dept. of Preventive Medicine & Environmental Health, *Jessup Hall, Iowa City, Iowa* 52240 (R01 CA 28626-01)

Unlike most cancers, leukemias occur at elevated rates in rural and farm populations. Previous studies have been unsuccessful in identifying any specific risk factors for leukemia in rural areas or farming.
Using incidence data from the Iowa Cancer Registry, we have completed extensive preliminary ecologic-epidemiologic studies which have indicated there are elevated leukemia rates in Iowa which are strongly associated with: 1) male sex, 2) rural residence, 3) proximity to high cattle population densities, and 4) proximity to dairy herds with cases of bovine lymphosarcoma. The elevated rates and the associations noted were primarily associated with acute lymphoid leukemia (ALL). These preliminary data are suggestive that cattle and perhaps the bovine leukemia virus (BLV) may be factors in the high rates of leukemia seen, at least for ALL. We propose a case-control study to verify the ecologic relationships seen in the preliminary studies, and to investigate on an individual basis the role of various factors in the rural and agricultural environment that may contribute to the observed high leukemia rates.
Approximately 200 cases of ALL (male and female) will be drawn from the Iowa Cancer Registry for the 66 rural counties. Two normal controls for each case will be selected from the same counties, and the cases and controls will be matched for age, sex, and county of residence. Personal interviews of each case and control will be completed to obtain data on: 1) environmental or occupational exposure to cattle, 2) environmental or occupational exposure to bovine leukemia virus, 3) farm or non-farm occupation, and 4) various exposures within farming such as agricultural chemicals and other livestock species.
Dairy herds of cases and controls will be tested serologically to determine the extent of BLV infection. The data will be analyzed to discern a possible cause-effect relationship of exposure to cattle, BLV, and other factors in the rural/agricultural environment.
SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. $101,224

3.0552,
BREAST CANCER BIOLOGY - EPIDEMIOLOGY AND PROGNOSIS

D.C. Deubner, Duke University, School of Medicine, Dept. of Community & Family Medicine, *Box 3711, Durham, North Carolina* 27710 (R01 CA 28720-01)

No summary has been provided to the Smithsonian Science Information Exchange.
SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. $170,208

3.0553,
ROLE OF ALCOHOL AS PRIMARY RISK FACTOR IN ORAL CANCER

A. Mashberg, College of Medicine & Dentistry of New Jersey, New Jersey Medical School, School of Medicine, Dept. of Surgery, *100 Bergen St., Newark, New Jersey* 07103 (R01 CA 29214-01)

The objective of this case-control study is to determine the significance of alcohol in the development of oral and pharyngeal squamous carcinoma and its relative risk compared to that of cigarettes. Our preliminary studies appear to indicate that alcohol may be a greater risk factor than tobacco and that beer and wine in particular appear to be significantly greater risk factors than whiskey. Patients admitted or identified as having squamous carcimoma of the oral cavity or pharynx will be entered into the study as cases. A history of alcohol comsumption, smoking habits, other upper aerodigestive tract cancers and other epidemiologic data shall be gathered for these patients via interview at the time of diagnosis. A control population without history or evidence or oral, pharyngeal or upper aerodigestive tract cancer (lung, larynx, esophagus) will be selected from the hospital population and interviewed in the same manner. Statistical analysis of data will be made with particular attention paid to the role of alcohol and tobacco, used either jointly or separately; individual analysis of beer, wine and whiskey will be included.
SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. $69,050

3.0554,
HEREDITY AND ENVIRONMENT IN CHILDHOOD CANCER

A.T. Meadows, Childrens Hospital of Philadelphia, *3400 Civic Ctr. Blvd., Philadelphia, Pennsylvania* 19104 (R01 CA 29275-01)

Although cancer is the leading cause of morbidity and mortality in children beyond infancy, etiologic factors are not known, except in few cases. Clues from epidemiologic studies in adults and from animal data suggest that substances which could produce germinal mutations may also act to produce malignant transformation in somatic cells.
We propose to investigate possible etiologic factors in childhood cancer, which could explain the uniform incidences of some cancers around the world (spontaneous fraction), the preponderance of multicentric or bilateral cases in some instances (germinal mutations), and the environmental factors causing both somatic and germinal mutations. By identifying individuals at high risk of childhood cancer we may be able to devise methods of prevention.
The methods used will involve: (1) The Greater Delaware Valley Pediatric Tumor Registry (GDVPTR), a population based registry, in order to monitor the incidence of childhood cancer in a 31-county region and to determine tumor-specific incidence rates especially comparing the incidence of multicentric cases with expectations. (2) A case-control study to test hypotheses concerning important risk factors in the etiology of childhood cancer. This would include approximately 650 children with various malignant diseases and 1300 controls to investigate pre-natal, gestational, and post-natal exposures such as those known to be mutagens or carcinogens in animal systems and adults.
SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. $102,757

3.0555,
A CASE CONTROL STUDY OF HODGKIN'S DISEASE

S. Davis, Fred Hutchinson Cancer Research Center, *1124 Columbia St., Seattle, Washington* 98104 (R23 CA 29395-01)

The present research is designed to determine whether or not cases of Hodgkin's Disease (HD) aggregate through prior interpersonal contact prior to their disease manifestation more than would be expected to occur by chance in comparable persons without the disease and, if so, whether such 'exposure-clustering' is confined to young persons under age 40. Although epidemiologic and clinical findings suggest that HD may be the result of two etiologic processes, that in the young perhaps being of an infectious origin, no adequate demonstration of space-time aggregations of HD cases has yet been observed. Similarly, several specific factors which bear on the hypothesis of an infectious etiology have not yet been evaluated and the effects of additional purported risk factors are not well understood.
This study employs a matched-pair case-control design, which is a new approach in searching for aggregations of HD cases through prior contact and assessing the significance of those contacts found. It also provides the opportunity to more fully assess several potential factors of risk for the disease. Approximately 250 cases of HD are to be identified in three Western Washington counties using a population-based cancer registration system, and one control is chosen for each case of the same sex and approximate age from the case's neighborhood of residence at the time of his/her diagnosis.
Data collected through personal interviews will be analyzed using newly-developed techniques to look for excessive prior contact among cases. In addition, evaluations will be made of the following factors, many of which may bear on an infectious model of disease: 1) childhood social class, birth order, family size and common infections; 2) exposures to drugs, especially amphetamines and narcotics; 3) exposure to sick domestic animals; 4) exposure to phytohemagglutinin (PHA); 5) prior surgery, especially tonsillectomy and appendectomy; 6) prior infectious mononucleosis; 7) seasonality of date of first symptom; and 8) occupational exposure to wood or wood products.
SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. $37,482

3.0556,
CANCER IN WOMEN RECEIVING EXOGENOUS ESTROGENS

M.F. Arnold, University of Denver, Denver Research Inst., *University Park, Denver, Colorado* 80210 (R18 CA 29543-01)

The issue of replacement estrogen for post-menopausal women has created a variety of controversies in terms of potential benefits and potential risks. This project is concerned primarily with the prevention of estrogen-dependent neoplasia (breast or endometrium). In view of the extensive literature on both the potentially beneficial effects of estrogen treatment and the potentially detrimental effects, there is likely to be disagreement in the professional community and confusion and concern among the patient population and the public.
The plan for the project is to enlist the cooperation of a selected group of physicians to participate in the demonstration by: (a) Following recommended policies for surveillance, diagnosis and treatment, and follow-up for patients for whom they are prescribing estrogenic hormone therapy; and (b) providing data, or access to data collections, regarding therapeutic regimes for their patients on hormones and special information on those patients showing symptoms or signs such as bleeding or mammary masses. Recommended policies for surveillance, diagnosis and treatment, and follow-up of patients will be developed by a Medical Steering Committee sponsored jointly by the Denver Medical Society, the Colorado Division of the American Cancer Society and the CRCC. Participating physicians will be provided consultation on surveillance, diagnosis and treatment of both endometrial and breast cancer as well as consultation for patient education.
A supporting and reinforcing community education program will be directed at women over forty-five.
SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. $115,849

3.0557,
EPIDEMIOLOGY AND ETIOLOGY OF HUMAN BREAST CANCER

N.K. Day, Sloan Kettering Inst. for Cancer Research, Biology Laboratory, *410 E. 68th St., New York, New York* 10021 (R01 CA 29711-01)

We have evidence using two methods developed in our laboratory that sera of breast cancer patients have cross-reacting antibodies to mouse mammary tumor virus (MuMTV). The antibody levels are reduced by more than 80% following absorption with

MuMTV, the membrane protein of the virus gp52, and also in preliminary experiments, by deglycosylated virus, indicating that the antibody is not a heterophile. Further, the antibody is not absorbable by erythrocytes from equine, human, sheep, bovine and pig, fetal calf serum and by two murine leukemia viruses (AKR and Rauscher). Studies from a geographical perspective show that 66% of women with breast cancer from E. Africa, 26% from U.S. and 31% of E. Indian women have this antibody in their sera. In contrast, only 5% of Chinese women with breast cancer have this antibody. Studies of families with a high propensity for breast cancer showed that family members including some male members also have this antibody. We have also demonstrated that breast cyst fluids (BCF) have an IgA antibody with reactivity to MuMTV. We plan to investigate the specificity of this antibody present in serum of some breast cancer patients using exhaustive and extensive absorptions and inhibition assays. We will also search for the antigen(s) to the MuMTV free in the circulation and in circulating immune complexes (CICs) in sera of patients with breast cancer using monospecific antisera against MuMTV, gp52, monoclonal antibodies, deglycosylated MuMTV. We will search for free antibody in serum and in CICs using purified MuMTV and all defined components of MuMTV. We will apply these reagents to study the relationship of the antibody in sera of breast cancer patients and the presence of antigens recognized by antibodies to the MuMTV in breast tissue from the same patients, and to study particles present in breast cyst fluid and breast nipple expression. Preliminary data in our laboratory show that high levels of CICs correlate with low levels of MuMTV-reactive antibody and complement. Following mastectomy, the CIC levels drop, antibody and complement levels increase. These studies, using new methodologies and new materials (BCF), will allow for a clearer definintion of the relationship between MuMTV and human breast cancer.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. $94,193

3.0558,
CONFERENCE ON BIOSTATISTICS IN CLINICAL ONCOLOGY

V. Mike, Sloan Kettering Inst. for Cancer Research, *410 E. 68th St., New York, New York* 10021 (R13 CA 29801-01)

The objective of this grant proposal is to obtain funding for a one-week conference on biostatistics in clinical oncology, to be held in June 1981 at Memorial Sloan Kettering Cancer Center in New York City. Plans for this conference are a direct result of recommendations made by the Workshop on Epidemiology and Biostatistics in Clinical Cancer Education sponsored by the National Cancer Institute in March 1979. Since there are not enough professionals trained in biostatistics to meet the needs of medical schools and cancer centers around the country, special conferences would be most desirable to enhance the effectiveness of individuals now filling many of these positions. The Chairman of the Biometrics Section of the American Statistical Association asked the Principal Investigator to serve as Chairman of a new committee created to organize such a conference; the Co-investigators were appointed committee members.

The proposed conference is designed for statisticians and others with a general background in statistics who are currently involved in some aspect of clinical cancer research, but are not part of an established biostatistics group and have not had specific training in this area. Lectures and panel discussions will cover a broad spectrum of topics, from questions of study design and modern statistical methodology to issues of medical ethics and various aspects of teaching and statistical consulting in the medical community.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. $53,555

3.0559,
LYMPHOCYTE CARCINOGEN METABOLISM IN ACUTE LEUKEMIA

J.L. Blumer, Case Western Reserve University, School of Medicine, Dept. of Pediatrics/Pharmacology, *2109 Adelbert Rd., Cleveland, Ohio* 44106 (R23 CA 30067-01)

Acute leukemia ranks as the malignancy of highest incidence in the pediatric population of the United States. Despite the recent epidemiologic data which suggests that environmental carcinogens may be responsible for most of human cancer, chemical carcinogens are seldom considered as etiologic agents in pediatric neoplasms. The proposed research will examine the ontogenetic expression of aryl hydrocarbon hydroxylase, glutathione-S-transferase and epoxide hydrase in human lymphocytes and elucidate the patterns of expression of these enzyme activities in children with acute leukemia. This work should permit the recognition of developmental factors which affect the susceptibility of infants and children to the neoplastic effects of chemical carcinogens. It will also provide important insight with respect to the ability of the human fetus to interact with its chemical environment. Finally, the patterns of expression of these enzyme activities in acute leukemia will provide a basis for assessing the relative importance of ontogeny and genetics in the proposed association between chemical carcinogens and pediatric malignancy.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. $36,500

3.0560,
THE EPIDEMIOLOGY OF CHILDHOOD RHABDOMYOSARCOMA

S. Grufferman, Duke University, School of Medicine, Dept. of Pediatrics, *Box 3711, Durham, North Carolina* 27710 (R01 CA 21244-02S1)

An incidence survey of childhood rhabdomyosarcoma (RMS) has been conducted covering the State of North Carolina during the period 1967-1976. This was initiated by the clinical observation of a possible 'epidemic' of RMS in the state. Preliminary data suggest that rather than an epidemic, there has been a 'straight-line,' almost 4-fold increase in RMS incidence over the 10-year study period. The incidence rate reached is greater than previously reported estimates based on mortality statistics but the same as estimated incidence data from the Third National Cancer Survey. It also appears that males are affected more than females (M/F equals 1.7) and blacks more than whites (B/W equals 1.3). In previous studies the excess of males was less marked (M/F equals 1.0-1.4) and whites experienced higher risks than blacks. case-control approach is currently being used to study the 'descriptive epidemiology' of RMS as well as associations between RMS and potential antenatal, childhood, familial, dietary and environmental etiologic exposures.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. $15,179

3.0561,
STUDIES ON CANCER PATIENT DATA CONTROL

D.B. Fischer, Yale University, School of Medicine, Dept. of Epidemiology & Public Health, *333 Cedar St., New Haven, Connecticut* 06510 (R10 CA 21194-04)

The objectives of this proposal are: 1. To continue the Epi-Stat program for the development of a statistical base of information (tumor registry) on patients diagnosed and/or treated at the Yale Comprehensive Cancer Center which is compatible with the Centralized Cancer Patient Data System and which is a resource for clinical and epidemiological investigations in cancer. 2. To improve the quality control of data entered in this system. 3. To investigate areas where the data base may be expanded in order to increase the research potential of the tumor registry. 4. To develop and carry out through the Centralized Patient Data System, protocols for collaborative studies of cancer patient characteristics, and natural history, treatment and etiology of cancer.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. $63,712

3.0562,
STUDIES ON CANCER PATIENT DATA CONTROL

R.L. Prentice, Fred Hutchinson Cancer Research Center, *1124 Columbia St., Seattle, Washington* 98104 (R10 CA 21193-04)

This proposal is to continue the creation and utilization of a patient database, on approximately 2400 patients per year, for the Fred Hutchinson Cancer Research Center. The patient population consists of in-house leukemia patients, patients enrolled in designated Oncology Units in six affiliated hospitals and cancer patients at Children's Orthopedic Hospital. Uniform data on all patients (the minimal data set), along with annual follow-up data, will continue to be pooled with that from other comprehensive cancer centers as part of the SAQC-CCPDS system. The minimal data will hopefully act as a springboard for collaborative research activities during this proposed project period. Data utilization objectives include the analysis of locally generated protocol studies, participation in and analysis of special studies on bone marrow transplant recipients, the production of interim accrual and survival reports to participating Oncology Units and the comparison of survival data on patients in the local SEER (Surveillance, Epidemiology and End Results) and CCPDS databases.

BIBLIOGRAPHIC REFERENCES: Prentice, R.L. (1978). Regression Analysis of Censored Survival Data with Extensions to Include Competing Risks and Case-Control Studies. The Evaluation of Environmental Biological Hazards and Competing Risks. (Ed. Peter Groer). In press.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. $87,772

3.0563,
STUDIES ON CANCER PATIENT DATA CONTROL

A.K. Bahn, University of Pennsylvania, School of Medicine, Dept. of Research Medicine, *36th & Hamilton Walk, Philadelphia, Pennsylvania* 19174 (R10 CA 21183-04)

This is a three year study to expand and integrate the statistical database for the Fox Chase/University of Pennsylvania Comprehensive Cancer Center. The inclusion of outpatient tumor clinics in the database necessitates training of clinic personnel in CCPDS data management procedures and in the expenditure of funds to computerize and to interface these units with the existing database. The development of an integrated data system will increase the efficiency of both casefinding and patient followup.

Increased utilization of CCPDS database by both clinical and epidemiologic staff will be encouraged. Data will be valuable for identifying types of patient trends, treatment, pattern of patient residence, etc. Data quality control will continue to be a major portion of the research contract.

The responsibility to accomplish these objectives lies with the coordinated data management team at the FC/UPCC. The team is headed by the Data Coordinator, with the Director of Biostatistics, Systems Analyst and Associate Data Coordinator playing active roles. Support staff includes a keyin data clerk, research assistant and part-time programmer.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. $122,837

3.0564,
DEVELOPMENT OF CENTRALIZED CANCER PATIENT DATA SYSTEM

J.R. Durant, University of Alabama in Birmingham, School of Medicine, Dept. of Medicine, *1919 7th Ave. S., Birmingham, Alabama* 35233 (R10 CA 21182-04)

The objectives of this proposal are to maintain and continue to develop patient entry points for the Cancer Center; to interact with new hospital and clinical facilities, to evaluate protocol patients, improve quality control and carefully plan and develop research modules and projects.

The CCPDS staff will continue to develop relationships with Cancer Center hospitals, clinics and physicians. Children's Hospital, for example, has recently been added to CCPDS. Protocols are now being recorded by CCPDS and in-depth site-specific registries have been developed for melanoma, head and neck cancer, uterine cancer, breast cancer and sarcoma.

The Cancer Center has recently strengthened Epidemiology and Biostatistics with the addition of an internationally known cancer epidemiologist as Associate Director of the Cancer Center. Special studies and modules are being planned and readied for consideration by the Technical and Policy Advisory Committees of CCPDS. CCPDS staff members are active on the data utilization, quality control and research planning subcommittees of TAC.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. $103,417

3.0565,

CLINICAL & PHARMACOLOGICAL ANTINEOPLASMS STUDY

P. Calabresi, Brown University, Roger Williams General Hospital, Dept. of of Medicine, *825 Chalkstone Ave., Box 1883, Providence, Rhode Island* 02908 (P01 CA 20892-05)

This is a broad coordinated program combining work in the fields of drug development, biochemical pharmacology, and cancer biology to generate new scientific information with direct and practical relevance for use in man. A significant feature of the proposed program is the collaborative interdisciplinary approach that will result in an efficient mechanism for translating basic scientific information through clinical investigators to practicing physicians, and provide an effective feedback from the clinic to the laboratory as well. A fundamental objective is to seek basic information that will contribute to clinical utilization in human cancer.

BIBLIOGRAPHIC REFERENCES: Calabresi, P., Dexter, D.L., and Heppner, G.H. Clinical and Pharmacological Implication of Cancer Cell Differentiation and Heterogeneity. Biochem. Pharmacol. 28: 1933-1941, 1979.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. $480,278

3.0566,

CHILDREN'S CANCER STUDY GROUP A

M.E. Lahey, Utah Higher Education System, University of Utah, School of Medicine, Dept. of Pediatrics, *1400 E. 2nd S., Salt Lake City, Utah* 84112 (R10 CA 10198-13S1)

We propose to collaborate with other members of CCSG as well as with other members of other cooperative study groups, in research on leukemia, malignant solid tumors and closely related disorders in children. The chief purpose of the CCSG is to cooperate in several aspects of research in malignant disease in children (i.e., the natural history, epidemiology) and in particular to develop, evaluate and improve methods of diagnosis, prognosis and treatment of malignant disease in children.

Special emphasis will be placed on the study of new combinations and new schedules of already established chemotherapeutic agents as well as on the evaluation of new anti-cancer agents and new modalities of therapy.

The Principal Investigator is Chairman of the Histiocytosis Committee and has recently received approval by CIB of a new protocol designed to study this disorder in depth with particular attention to clinical and histologic features of prognostic significance, improved therapy and comprehensive immunologic evaluation. The prognostic significance of certain clinical features developed by CCSG has been tested and acclaimed by other chemotherapy groups.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. $8,910

3.0567,

EPIDEMIOLOGIC STUDY OF OVARIAN CANCER

P. Greenwald, State Bureau of Cancer Control, Division of Epidemiology, *Empire State Plaza, Tower Bldg. Rm. 565, Albany, New York* 12237 (R01 CA 20502-04)

Our general objective is to determine, by means of a concurrent case-control study, whether risks of developing various histologic types of ovarian cancer are influenced by: a) Prior reproductive experience of the patient, b) cancer among first degree female relatives, c) a combination of these factors. The hypothesis that low fertility or infertility contribute to risk will be refined and assessed. Also, we will have a systematically derived and validated statement of familial risk among first degree female relatives. Additional study variables will include prior hormonal therapy, pre-existing medical conditions and menstrual history.

In the proposed study, two population controls will be selected for each ovarian cancer patient interviewed. The controls will be matched by age and county of residence. Demographic and clinical data will be collected from hospital records of each ovarian cancer patient, and pathology slides reviewed. Various types of epidemiologic data will be collected through face-to-face interviews with each patient and control. Standardized follow-up procedures have been developed for verifying whether or not the relatives have ever been diagnosed as having or have died from a malignancy.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. $152,642

3.0568,

CHILDHOOD BRAIN TUMOR CONSORTIUM

F.H. Gilles, Harvard University, Boston Campus, Childrens Hospital Medical Center, *300 Longwood Ave., Boston, Massachusetts* 02115 (R01 CA 20462-05)

A consortium of ten institutions located in North America has been organized, which utilizes the efforts of neuropathologists, pediatric pathologists, a neuroepidemiologist, neurosurgeons, and biostatisticians in a study of childhood brain tumors.

Our principal goal is to obtain accurate prognostic information for tumors at specific sites for the design of therapy for individual children, and for studies of competing therapies. The estimated data base from the ten institutions in the comsortium is between 3,000 and 3,400 children. We will use the first surgical sample for the assessment of the prognostic significance of individual histologic patterns and antecedent clinical features. We will use two classifications, that of the World Health Organization, and another one which uses the biologic characteristics of clustering of histologic patterns and life tables. We will choose which of these classifications provides the most accurate prognostic information for tumors at each site within the brain. This information will be entered into the computer via interactive programs which will provide: 1) specific prognostic information for tumors at each of several sites within the brain for individual patient care decisions by any pathologist or neurosurgeon, and 2) prognostic information for the design of studies of competing therapies.

BIBLIOGRAPHIC REFERENCES: Gilles, F.: Prognosis in cerebellar tumors. Lab. Invest. 40:4, 1979.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. $319,204

3.0569,

MULTIDISCIPLINARY APPROACH IN PANCREATIC CARCINOGENESIS

P.M. Pour, University of Nebraska, Medical Center, School of Medicine, Eppley Institute for Research in Cancer & Allied Diseases, *42nd & Dewey Aves., Omaha, Nebraska* 68105 (R26 CA 20198-04)

In seeking a renewal of our current grant, the following studies, based on our hamster model, are proposed. We will attempt to: (1) indicate the mechanism of pancreatic carcinogenesis through metabolic and alkylation studies (e.g., to ascertain the site and type of alkylation, the consistency of binding), as well as the rate and persistency of repair in target, and non-target tissue in the susceptible (hamster) and resistant (rat) species. In this context, the effect in the two species on pancreatic carcinogenesis of some modifying agents will be sought out. (2) We plan to determine modifying factors in pancreatic carcinogenesis by studying the effect of substances which influence the pancreas function by altering the blood supply and/or the physiologic response of pancreatic cells. (3) We will develop techniques for early detection of induced pancreatic cancer by radioimmunoassay. This study will concentrate on two areas: a) determination of circulating endogenous and exogenous hormones, such as insulin, glucagon, gastrin and glucose (including the tolerance test) during pancreatic carcinogenesis and b) Determination of the relationship between circulating levels of mucin (produced by cancer) and the extent during the tumor development. (4) We will conduct comparative morphologic-epidemiologic studies in human pancreas (random selection of autopsy material; surgical specimens of tissues after total pancreatectomy due to pancreas cancer) with 3 objectives: a) to determine the ultimate pancreatic cancer incidence by screening for occult and microscopic malignant lesions, b) to correlate human pancreatic lesions with those induced in our model and c) to correlate the histologic findings with clinical history with special emphasis on smoking and drinking habits, diabetes, liver and bile duct disease, etc. (5) Finally we will develop therapeutic methods (or induced pancreatic cancer) by using specific substances obtained by bound antibody (to tumor mucin) to specific and potent chemotherapeutic agents.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. $96,423

3.0570,

CANCER CENTER SUPPORT GRANT

N.I. Berlin, Northwestern University, Chicago Campus, School of Medicine, Dept. of Obstetrics & Gynecology, *303 E. Chicago Ave., Chicago, Illinois* 60611 (P30 CA 15145-06)

The objectives of the Northwestern University Cancer Center are to maintain an organizational structure and an environment within the University which will bring together basic scientists, clinical investigators, clinicians and educators leading to: (1) collaborative basic and clinical research in cancer; (2) the most effective use of existing knowledge through collaborative programs for the care of the patient; and (3) enhance the extent and quality of cancer care in the community. A fourth objective, to create a facility for the Cancer Center's laboratories, has been achieved.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. $644,468

3.0571,

HOWARD UNIVERSITY CANCER CORE GRANT

J.E. White, Howard University, School of Medicine, Dept. of Oncology, *2400 6th St. N.W., Washington, District of Columbia* 20059 (P30 CA 14718-07A2)

The objective of this proposal is to secure continuing fiscal support of the Administration of the Howard University Cancer Center and the further growth of its Clinical and Basic Research Programs. The capabilities for more appropriate research have been enhanced by: 1. Acquisition of additional research space by an estimated 34,000 net square feet: 2. New Research Leadership; 3. Personnel changes - including removing non-productive scientists; 4. Focusing on a significant, relevant but more limited area of basic science, Molecular and Cell Biology, an area for which a nucleus of talent exists at Howard University Cancer Center but which will make significant and more rapid strides if senior investigators in this proposal are granted. It is nevertheless expected that the Center be given sufficient flexibility to evolve in directions appropriate to new thrusts of research in the scientific community.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. $172,000

3.0572,

CANCER CENTER SUPPORT GRANT--COMPREHENSIVE

A.A. Roman Franco, University of Puerto Rico, Medical Sciences Campus, School of Medicine, Dept. of Pathology, *P.O. Box 5067, Rio Piedras, Puerto Rico* 00936 (P30 CA 16598-05)

The Puerto Rico Cancer Center was awarded a Cancer Center Support Grant in June 1975. The Center has to date been quite successful in attending to the special needs of the Puerto Rican community. It has succeeded in promoting and establishing a broad based multidisciplinary program in cancer research and in cancer management. It has focused its attention on particular malignancies of high prevalence in the Island without neglecting the broader aspects of the cancer problem.

The objective now is to continue the development of the Cancer Center at the University of Puerto Rico Medical Sciences Campus, and to consolidate gains made in the past three years so as to continue strengthening our activities related to cancer in basic clinical research education and training, services, and community programs. A high priority item is to establish demonstration programs in cancer management using the latest findings of research and consonant with the special needs of the Puerto Rican community and sensitive to its cultural idiosyncracies. Another high priority is to provide high quality research through interdisciplinary interactions.

To this end the Puerto Rico Cancer Center has during the past year expanded its core laboratory resources, its clinical research resources, has established close operational links with all the major providers of health care in oncology, has bridged the differences between the 3 major volunteer organizations in oncology and has established an Island-wide network of educational activities that have enabled it to reach every corner of the Island. Furthermore, it has established links with the Oncologic Hospitals in Puerto Rico for the purpose of strengthening education, research and improving the facility of cancer care in Puerto Rico. The Puerto Rico Cancer Center

continues to be the source of cancer care policy for the Government of Puerto Rico.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. $646,150

3.0573,

CANCER EPIDEMIOLOGY - STATISTICAL METHODS

N. Mantel, George Washington University, Columbian College of Arts & Sciences, Dept. of Statistics, *2121 Eye St. N.W., Washington, District of Columbia* 20037 (R01 CA 15686-05S1)

The spontaneous occurrence of cancer in humans, or induced occurrence in laboratory animals, reflects the interplay of many variables. Also multivariate in nature are the factors influencing survival times or remission times of individuals with cancer, whether treated or left untreated. The multivariate statistical problems which arise may relate to identifying individually important variables which may be causative, making prognoses of survival or other predictions for cancer patients with a specified multivariate vector and seeking to identify optimal therapeutic procedures for such patients. Data available for such analyses may be prospective or retrospective in nature, and for the prospective case will generally involve incomplete observation. Recent developments in mathematical models and statistical approaches for relating response to multivariate regressors, specifically models involving hazard functions and generalized logistic regression, open the way to handling such problems, and it is the effective use of such models and approaches that I plan to study. In instances these approaches may bear modification as, say, using a classification approach when data are abundant but variables to be studied few in number. I anticipate that tie-ins with other problems of cancer epidemiology will develop. Related, or variant methods, may be appropriate in the study of potential environmental carcinogens. Methods for safety evaluation of such agents represent a preventive epidemiology approach.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. $28,931

3.0574,

THE CHILDREN'S CANCER STUDY GROUP

J.Z. Finklestein, University of California, Los Angeles Campus, Los Angeles County Harbor General Hospital, *1000 W. Carson St., Torrance, California* 90509 (R10 CA 14560-07S1)

OBJECTIVE: The purpose of this project is to continue and expand the active participation of Harbor General Hospital and affiliated institutions in all phases of the Children's Cancer Study Group.

The research involves a multi-disciplinarian approach to the clinical investigation of childhood cancer with special emphasis on chemotherapy of acute leukemia and solid tumors of childhood with collaborative protocols developed by the Children's Cancer Study Group. We will continue to participate in the study and the treatment of pediatric oncologic disorders by means of Phase I, II, and III Protocols. In addition, pertinent questions regarding natural history, treatment and epidemiology of childhood cancer will be investigated.

APPROACH: The results of therapies are recorded by the institutions' pediatric oncology staff, including Data Managers, and Protocol Nurse Coordinators, supervised by Subspecialists in Pediatric Oncology. Information is forwarded to the Operations Office for detailed statistical analysis.

The ultimate benefit is that the investigation involves controlled clinical trials in leukemia and solid tumors of childhood, controlled evaluations of newly developed therapeutic agents and controlled studies of the effects of immunotherapy and immunosuppression. Children participating in this project will benefit by being offered the most up-to-date methods of diagnosis, treatment and management of their disorders. The program seeks a scientific approach to a comprehensive, therapeutic investigation of childhood cancer.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. $17,000

3.0575,

CANCER CENTER SUPPORT GRANT

R.A. Good, Sloan Kettering Inst. for Cancer Research, *410 E. 68th St., New York, New York* 10021 (P30 CA 08748-15)

This application is for renewal of the core grant which has provided essential support for the research program of the Sloan-Kettering Institute for Cancer Research. This is a program of cancer research, many aspects of which are closely linked with the treatment activities of our sister organization, Memorial Hospital. The core grant has provided partial support of salaries of approximately 11% of the professional staff, including most of the Institute's scientific leadership, and has underwritten supporting resources such as animal maintenance services, biostatistical management, instrumentation, and other centralized activities required by a large productive scientific organization. An important provision has been the financial support necessary to develop new programs. The core support has been crucial in helping to assure stability and give a degree of flexibility not available to the Institute from University or State funds.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. $6,305,976

3.0576,

EPIDEMIOLOGY OF CANCER IN ADVENTISTS - A LOW RISK GROUP

R.L. Phillips, Loma Linda University, School of Health, Dept. of Biostatistics & Epidemiology, *Loma Linda, California* 92354 (R01 CA 14703-06)

Seventh-Day Adventists (SDAs) are a very much health-oriented religious group with a conservative lifestyle who do not smoke or drink by church proscription. For most of the cancer sites which are unrelated to smoking, the age-sex adjusted mortality among SDAs is 50-70% of the general population. For over 100 years, the SDA Church has strongly discouraged the use of coffee, other caffeine beverages, highly refined foods, and hot spices and has highly recommended a low-fat, high-fiber lacto-ovo-vegetarian diet, at the same time actively encouraging vigorous exercise and other health habits. However, with the exception of abstinence from smoking and drinking, there is great variation in the degree of adherence to these habits among SDAs, which makes them an ideal population for the investigation of the role of diet and other lifestyle characteristics in cancer risk. Furthermore, the great variation in duration of exposure and age at first exposure to the SDA lifestyle provides a unique opportunity to determine the relative effect of lifestyle patterns early vs. late in life, as well as the effect of short-term vs. long-term patterns of living. This ongoing prospective study seeks (1) to confirm with incidence data the previously observed low cancer mortality among SDAs and (2) to determine the specific components of the SDA lifestyle which account for their apparent low risk of non-smoking-related cancers.

Collection of baseline data on demographic characteristics from 61,258 California SDAs, as well as detailed lifestyle characteristics from 46,000 of these subjects, is virtually complete. Continuation of this study for 5 more years will provide an average 8.5 years of follow-up for the 61,258 subjects with completed questionnaire data (525,412 person-years). After adjusting for the expected low incidence, we expect to identify 2,481 new cancer cases (464 colon-rectal, 389 breast) by reviewing the hospital records of all hospitalizations which are reported during an annual contact with each subject. Comparison of site-specific cancer incidence among SDAs vs. the general population (as well as among subgroups of the SDA population with differing dietary and/or lifestyle characteristics) is likely to identify new lifestyle characteristics as cancer risk factors. (Text Abridged.)

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. $338,057

3.0577,

CHILDREN'S CANCER STUDY GROUP

S. Piomelli, Columbia University, College of Physicians & Surgeons, Dept. of Pediatrics, *630 W. 168th St., New York, New York* 10032 (R10 CA 03526-24)

The Division of Pediatric Hematology of Babies' Hospital (the Pediatric Section of the College of Physicians and Surgeons of Columbia University) has participated in the research activities of Children's Cancer Study Group since 1957. Patients have been and will continue to be entered in the clinical trials of this Group, directed at devising optimal therapy for children's cancer and evaluating biological and natural history factors which are important; a multidisciplinary approach to cancer therapy will be followed, both at the institutional and at a national group level. Children with cancer cared for by members of the Division will be entered in the studies of the Group: they will receive medical care standardized to Group requirements, including all required laboratory and diagnostic investigations; accurate records will be kept and transmitted promptly to Group Headquarters for evaluation. Members of the Division will actively participate in the development of the research strategy of new studies. They will participate in the development of the Group scientific program, development and conduct of protocols for Ewing's sarcoma, retinoblastoma and non-Hodgkin's lymphoma, improved modalities for supportive care and definition of biological aspects of childhood cancer, refinement of Pediatric Surgical Oncology techniques and cost effective imaging techniques and coordination of the Group Pathology activities.

The Division of Pediatric Hematology/Oncology will coordinate the clinical care of childhood cancer in the Columbia Medical Community. Related research activities within the Division will be developed and eventually expanded to Group trials. These presently include studies of biochemical markers of malignancy; means to decrease toxicity of chemotherapy; the relationship between nutrition, cancer and chemotherapy; newly developed varicella vaccine and epidemiological aspects of perinatal cancer. The interaction between the clinical activities of the Division of Pediatric Hematology/Oncology and the comprehensive Cancer Center of Columbia University will be further developed.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. $85,008

3.0578,

CANCER CENTER SUPPORT GRANT

E. Frei, Sidney Farber Cancer Center Inc., *44 Binney St., Boston, Massachusetts* 02115 (P30 CA 06516-18)

To continue to serve as the major cancer center in the Harvard Medical School area and to play a leadership role in our region. To continue to develop and maintain clinical, laboratory and epidemiologic research programs of high quality related to cancer biology, prevention, diagnosis and treatment. To continue to provide a source of expertise in cancer diagnosis, treatment and supportive care. To continue to provide total care and rehabilitation on an interdisciplinary basis, in association with affiliating institutions. To continue to add to the total oncology resources of our medical community in terms of available staff, facilities and expertise. To continue to participate in teaching of medical students, house staff, fellows and graduate students and in the continuing education of practicing physicians and other health professionals. To continue to serve as a focal point for a regional cancer control program which is closely integrated with other activities of the Institute. To participate in regional clinical trials and in national clinical trials when appropriate.

BIBLIOGRAPHIC REFERENCES: A Phase 1 Study of High Doses of Aminopterin with Leucovorin Rescue in Patients with Advanced Metastatic Tumors L. M. Glode, S. W. Pitman, W. D. Ensminger, A. Rosowsky, N. Papathanasopoulos, and E. Frei, III Cancer Res., 39, 3707-3714 (1979).

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. $1,707,249

3.0579,

CANCER EPIDEMIOLOGY AND PREVENTION RESEARCH CENTER

B. MacMahon, Harvard University, Boston Campus, School of Public Health, Dept. of Epidemiology, *55 Shattuck St., Boston, Massachusetts* 02115 (P01 CA 06373-18)

The proposed research is a program of studies of the epidemiology of the major human cancers, with the ultimate goal of developing knowledge which will lead to the prevention of these diseases.

The focus of the research will be on cancer of the breast, especially in relation to patterns of metabolism of endogenous estrogens in young adult life, oral contraceptive use, and other hormonal factors. Emphasis is on the detection of early markers characteristic of increased risk of cancer of the breast, prostate and colon. Other studies are on Hodgkin's disease, bladder cancer, cancer of the pancreas, and multiple myeloma. In addition, we plan to continue to develop epidemiologic methods, particularly

those methods for application in the field of cancer epidemiology. Methodologic areas of investigation include life table analysis of survival data and various aspects of significance testing and interval estimation.

Using a variety of resources, the studies will employ different epidemiologic approaches including case-control studies, prospective cohort studies, and review of existing data in the Department. Many of these studies are developed on the basis of studies designed and completed in earlier years; some studies are supported for planning phase only; and others are continuations of ongoing data collection and analysis.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. $582,697

3.0580,
EXOGENOUS MATERNAL HORMONES AND CANCER IN DAUGHTERS

A.L. Herbst, University of Chicago, Pritzker School of Medicine, Dept. of Obstetrics & Gynecology, *5801 S. Ellis Ave., Chicago, Illinois* 60637 (R01 CA 20084-05)

The Registry for Research on Hormonal Transplacental Carcinogenesis continues its investigation of the epidemiology, pathogenesis, biologic characteristics, management and prognosis of human genital cancers that develop after intrauterine exposure to exogenous sex hormones. A computerized data bank that contains carefully monitored and doubly checked details for each case forms the basis for this research. Active canvassing of treatment centers and tumor registries will continue in order to obtain all cases of clear cell adenocarcinoma of the genital tract occurring in females born since 1940, with or without a history of hormone exposure, as well as all cases of other types of genital cancer that develop in individuals exposed to either diethylstilbestrol (DES) or any other type of sex hormones including those of steroidal nature. Detailed clinicopathologic correlative studies will be directed toward wide variety of host and cancer characteristics that may be related to the behavior of the tumor (i.e., histology, depth of invasion, mitoses, grade and location). A particular interest exists in squamous cell carcinomas of the vagina and cervix that arise in the exposed. Knowledge of treatment and prognosis of these lesions will be expanded. Maternal history data regarding the age of the mother, the birth order of the daughter, as well as the pregnancy history of the mother will be investigated to determine their relation, if any, to the development of clear cell adenocarcinoma. We shall remain a source of scientific information and consultation for this problem.

BIBLIOGRAPHIC REFERENCES: Herbst, A.L. and Scully, R.E.: Clear cell adenocarcinoma of the vagina and cervix - survival and recurrences. Contemporary Ob-Gyn., 1980 (In Press). Herbst, A.L.: The current health status of DES-exposed mothers, daughters and sons. Consultant Vol. 20, No. 2, p. 219, Feb., 1980.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. $68,804

3.0581,
PATHOLOGY - ELECTRON MICROSCOPY CORE FACILITY

W.B. Hutchinson, Fred Hutchinson Cancer Research Center, *1124 Columbia St., Seattle, Washington* 98104 (P30 CA 15704-07)

The electron microscopy laboratory is a basic core resource for many basic and clinical investigators at the Fred Hutcinson Cancer Research Center. It is supported by the CORE Grant (CA15704) for the Comprehensive Cancer Center comprising FHCRC. An AEI Corinth transmission electron microscope was installed in September 1975. A JEOL 100 electron microscope has been funded in the CORE Grant renewal of 1980 and installation is proceeding. Facilities are for all investigators of FHCRC. Major users have been Medical Oncology (in the diagnosis of tumors and research on the lesions of graft-versus-host disease), Genetics, Biochemical Oncology, Basic Tumor Biology, Tumor Immunology, and Developmental Biology. The new microscope will be used primarily by Genetics and Developmental Biology groups for studies of nuclear chromatin and DNA strands at high resolutions. Tumor Virology will also be using electron methods to characterize RNA viruses and their subunits.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. $3,119,217

3.0582,
COOPERATIVE CANCER CENTER CORE SUPPORT

W. Lawrence, Virginia Commonwealth University, Medical College of Virginia, Dept. of Surgery, *1200 E. Broad St., Richmond, Virginia* 23298 (P30 CA 16059-05)

The mission of the MCV/VCU Cancer Center is to coordinate the cancer research, patient-care services, oncology education and community outreach cancer programs at our institution. The center is organized with nine program areas, each with a coordinator. The research program areas include Cancer Cell Biology, Tumor Immunology, Pharmacology of Anti-Cancer Drugs, Carcinogenesis and Clinical Cancer Research. The non-research program areas include Cancer Training and Education, Clinical Cancer Services and Rehabilitation, Detection and Screening and Community Interaction. In addition, the Center has developed an Epi-Stat Unit, Tumor Registry, Cell Analysis and Sorting Lab, Tumor Immunobiology Lab, Media Preparation Lab, Histopathology Lab, Clinical Cancer Research Core and Evaluation components. In addition to these shared resources and program areas, the Core Support Grant provides some developmental funds for new projects and programs.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. $391,176

3.0583,
GENETIC STUDIES OF HERITABLE COLORECTAL CANCER

B.S. Danes, Cornell University, Medical Center, Cornell Medical College, Dept. of Medicine, *1300 York Ave., New York, New York* 10021 (R26 CA 15973-06)

The identification of individuals at high risk for the development of large bowel cancer prior to clinical symptoms and the incidence/ hazards of mutagenesis and transformation that their somatic cells are at risk for are the dual aims of this research proposal.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. $91,081

3.0584,
A PROGRAM IN MEDICAL ONCOLOGY

M.J. Cline, University of California, Los Angeles Campus, School of Medicine, Dept. of Medicine, *2025 Zonal Ave., Los Angeles, California* 90024 (P01 CA 15688-07)

The research programs in the Division of Hematology-Oncology will continue to encompass four program areas: 1) chemotherapy-immunotherapy of selected malignant diseases (acute leukemia, lymphoma, lung, breast, and head and neck cancer); 2) allogeneic and autologous bone marrow transplantation in combination with intensive chemoradiotherapy; 3) studies of normal and malignant hematopoiesis; 4) studies of host defense mechanisms against microorganisms and neoplastic cells.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. $524,748

3.0585,
LAC-USC CANCER CENTER CORE SUPPORT GRANT

G.D. Hammond, University of Southern California, School of Medicine, Dept. of Pediatrics, *2025 Zonal Ave., Los Angeles, California* 90033 (P30 CA 14089-06S1)

This is a Cancer Center Core support grant providing Core support for administration, program, and research efforts for the Los Angeles County/University of Southern California Comprehensive Cancer Center. This Center is one of the nineteen designated comprehensive cancer centers in the United States.

Cancer activities at this Center constitute one of the largest University-based cancer research and control efforts in the nation. Principal effort is focused in a Basic Research Program including activity in Chemical Carcinogenesis, Tumor and Cell biology, Lymphocyte Biology, and Immunology; in Clinical Cancer Investigations including Tumor Imaging, Radiopharmacy, Hematopathology, Clinical Immunology, Clinical Pathology; Surgery, Chemotherapy, Immunotherapy, Phase II and III Trials, and Clinical Pharmacology; in Biostatistical and Epidemiological studies of major import; and in an extensive Cancer Control Program reaching throughout the southwestern United States. In addition, the Center conducts an extensive training and education program in the above specialty areas.

Nearly 150 faculty members and scientific investigators of the University and affiliated institutions are involved in this effort, with extramural funding for research, education, and control. The Center also acts as the Operations headquarters for the National Children's Cancer Study Group.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. $0

3.0586,
CHILDREN'S CANCER RESEARCH CENTER

G.J. D'Angio, Childrens Hospital of Philadelphia, *3400 Civic Ctr. Blvd., Philadelphia, Pennsylvania* 19104 (P01 CA 14489-07A1)

The program of the Children's Cancer Research Center focuses on the special problems of pediatric oncology and seeks: 1) To devise better and more efficient treatments using clinical and laboratory studies so as to achieve best survival and lowest early and delayed complication rates. 2) To study and understand the late adversities of therapy so that they can be avoided or mitigated. 3) To identify causative factors with a view towards reducing the incidence of childhood cancer.

Integrated clinical, epidemiologic and laboratory investigations will be used to accomplish these objectives. Leukemia, neuroblastoma and other tumors and disease states of neural crest origin will be emphasized in clinical studies and those relating to the genetics, immunology, membrane biology, epidemiology and radiobiology of pediatric neoplasia. The development of minimal therapies for low risk patients and aggressive treatments, including those requiring bone marrow rescue for children at high risk, will be stressed.

The late effects of treatment will be studied, with special reference to the learning disabilities that follow cranial irradiation for leukemia and other cancers.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. $749,159

3.0587,
COMPREHENSIVE CANCER CENTER FOR THE STATE OF FLORIDA

C.G. Zubrod, University of Miami, School of Medicine, Dept. of Oncology, *1400 N.W. 10th Ave., Box 520875, Coral Gables, Florida* 33152 (P30 CA 14395-08)

During the past year the Center has achieved great improvements in consolidation of its physical facilities; in the addition and growth of a number of laboratory research programs; and in rapid expansion of control programs throughout the entire state. The University has spent $1.2 million in renovation of the University's new quarters which will permit the move of all Center activities, except laboratory research, into a single building. Similarly the University is funding the move of our major laboratory research programs into a single research building. Programs in immunology and viral oncology have been added to the existing activities in cell kinetics, cell analysis, cell membranes, cell differentiation, epidemiology and carcinogenesis. The Center has been highly successful in working with health agencies throughout the state in obtaining legislation creating a statewide cancer registry and a Florida Cancer Plan for control. The Center, because of its excellent computer and biostatistics resources, was awarded the contract to run the state registry. Clinical care continues to place increasing demands upon physicians and this factor puts stresses upon clinical investigators.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. $1,223,888

3.0588,
SURVEILLANCE FOR DRUGS THAT MAY BE CARCINOGENIC

G.D. Friedman, Kaiser Foundation Research Inst., Dept. of Medical Methods Research, *1956 Webster St., Room 310 B, Oakland, California* 94612 (R01 CA 19939-05)

This epidemiologic study has two components. The first involves screening of commonly used medicinal drugs for possible carcinogenic effects. The drugs dispensed to 143,000 subscribers to the Kaiser Foundation Health Plan in the years 1969-1973 have been stored in computer records. These subjects are

followed up through Health Plan Records and subsequent incidence of cancer (each site and all sites) is determined for users of the drugs to be screened. The second component involves testing of hypotheses generated by the above screening analyses by detailed case-control studies involving the subjects' complete medical records.

BIBLIOGRAPHIC REFERENCES: Friedman, G.D.: Cancer after metronidazole (Letter to the editor with data). N. Engl. J. Med. 302:519, 1980. Friedman, G.D. and Ury, H.K.:: Initial screening for carcinogenicity of commonly used drugs. J. Nat. Cancer Inst. 65:723-733, 1980.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. $102,724

3.0589,
CANCER CENTER SUPPORT GRANT

J.W. Cole, Yale University, School of Medicine, *333 Cedar St., New Haven, Connecticut* 06510 (P30 CA 16359-05)

The Yale Comprehensive Cancer Center was recognized and funded by NCI on July 1, 1974. Dr. Joseph R. Bertino, Professor of Medicine and Head of Yale's Medical Oncology Unit was appointed as the Center's Director and served in this capacity during the 01 year. On July 1, 1975, Dr. Bertino accepted an ACS lifetime professorship and was replaced as Director of the Cancer Center by Dr. Jack W. Cole, Professor of Surgery and former chairman of the Department of Surgery at Yale. Dr. Cole is supported by two Associate Directors.

Dr. Sherman Weissman, Professor of Human Genetics, Medicine, and Molecular Biophysics and Biochemistry serves as Associate Director for Basic Science. Dr. J. R. Bertino of the American Cancer Society, Professor of Medicine and Chief, Section of Medical Oncology serves as Associate Director for Clinical Affairs.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. $2,115,890

3.0590,
ENVIRONMENTAL CARCINOGENESIS

E.L. Wynder, American Health Foundation Inc., *320 E. 43rd St., New York, New York* 10017 (P01 CA 12376-08)

This program project grant has supported an integrated multidisciplinary program in environmental carcinogenesis relating retrospective case-control epidemiological studies and experimental research. The latter includes cell culture, animal model, and human subject investigations. Proposed studies by organizational division in the forthcoming period are: 1) Epidemiology: various cancer studies in the U.S. and overseas, emphasizing GI tract and breast cancer. 2) Nutrition: endocrine-related cancer studies via hormonal effects of high-fat diets in various human populations; also dietary studies on colon carcinogenesis utilizing fecal analyses. 3) Molecular Biology and Pharmacology: study of the mechanism of the high-fat effect on breast cancer development using animal models and cell cultures; also the mechanism by which alcohol may act as a cocarcinogen in oral cavity cancer. 4) Experimental Pathology: model systems for the study of the pathogenesis of tumor development. 5) Experimental Carcinogenesis: investigation of the carcinogenic action of hydrazines, nitrosamines, and methylated polynuclear hydrocarbons, in addition to bracken fern. 6) Occupational Health and Toxicology: assessment of cancer risk to welders as a model population.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. $587,179

3.0591,
SOCIAL EPIDEMIOLOGY AND CONTROL OF CANCER

S. Graham, State University of New York, Health Science Center at Buffalo, School of Medicine, Depts. of Sociology/Social & Preventive Medicine, *3435 Main St., Buffalo, New York* 14214 (P01 CA 11535-11)

We request renewal of support of this program of research in Social Epidemiology and Control of Cancer. In the area of epidemiology, we would complete analyses on data already collected in the following areas: dietary vitamins, meats, fiber, cruciferous vegetables and other aspects of diet in cancer of the esophagus and larynx, to be studied in cases and controls from Roswell Park Memorial Institute (RPMI); reliability of diet interviewing, based on spouse interviews, diet diaries and 24-hour recall of diet in our Western New York Study; the interrelationships of herpes simplex virus 2, numbers of sex partners and other factors in cancer of the cervix in Los Angeles blacks and Chicanos; epidemiology of melanoma in 450 cases and 450 controls from RPMI. In addition, we wish to continue our ongoing data collection for the epidemiologic study of: cancer of the mouth, esophagus, stomach, larynx, colon, rectum, lung and bladder being carried out among all pathologically confirmed cases in Monroe, Niagara and Erie Counties and controls residing in the neighborhoods of cases; cancer of the testis and penis patients residing in New York State, as compared with controls residing in their neighborhoods; the interaction of oral contraceptives with other risk factors in the epidemiology of breast cancer; a prospective study of cancer among approximately 200,000 physicians and nurses in New York State, emphasizing diet. Throughout the period of study, we would carry on analyses of most of the above-named cancers for human genetics relationships.

Because many measures that can prevent or control cancer devolve from the epidemiology of those diseases and can involve changes in the human behavior, we are interested in the social and behavioral factors associated with cancer prevention and control. Thus, we wish to complete data collection in our study of the efficacy of breast self-examination (BSE) by comparing the proportion of breast cancer patients with advanced and early lesions who have practiced BSE. We also plan study of lower-middle, upper-middle and rural residents of Erie County, building upon our earlier inquiry on blacks, to ascertain their knowledge of cancer.

BIBLIOGRAPHIC REFERENCES: Saxon Graham: Social Epidemiology and the Control of Cancer. Dominant Issues in Medical Sociology, Howard Schwartz and C.S. Kart, editors, 1978. Gregg Wilkinson, Edwin Mirand, Debra Walsh, John Wilson, Saxon Graham: Utilization of a Cancer Telephone Information Facility: A Comparison of Callers and Non-Caller Controls. The American Journal of Public Health 68:1211-1213 (1978).

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. $985,419

3.0592,
EASTERN COOPERATIVE ONCOLOGY GROUP

R.G. Hahn, Mayo Foundation, Dept. of Oncology, *200 1st St. S.W., Rochester, Minnesota* 55901 (R10 CA 13650-08)

The specific objective of this project is to participate in group activities aimed at improving the total care of cancer patients. This would include efforts to improve diagnostic procedures and therapy, and particular clinical pharmacologic studies on new cancer chemotherapeutic agents. Although emphasis would be placed on direct patient care, primarily conducted on an outpatient basis, we would also hope to participate in group activities pertinent to immunologic studies, epidemiologic studies, and the natural history and biologic patterns of specific neoplasms. This activity would be accomplished not only by the inclusion of Mayo Clinic patients in such studies, but also those of our satellite cancer control affiliates in North Central Cancer Treatment Group.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. $373,873

3.0593,
EPIDEMIOLOGY AND NATURAL HISTORY OF BREAST CANCER

N.L. Petrakis, University of California, San Francisco Campus, School of Medicine, Dept. of Epidemiology & International Health, *551 Parnassus Ave., San Francisco, California* 94122 (P01 CA 13556-09)

The intent of this program-project grant is to investigate the epidemiology of breast cancer and benign breast disease. The work will include: the determination of epidemiologic characteristics of women diagnosed as having different histologically defined breast conditions; epidemiological and laboratory studies of the secretion of mutagenic substances into breast fluids, including their chemical characterization and potential DNA-damaging and repair activity on cells in human breast fluids and their metabolic activation by rat mammary tissue; epidemiologic investigations of estrogen-binding beta-globulin in blood and breast fluids; and research on the value and effects of breast cancer risk counseling.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. $572,014

3.0594,
RESEARCH IN ENVIRONMENTAL CANCER

N. Nelson, New York University, School of Medicine, Dept. of Environmental Medicine, *100 Washington Sq. E., New York, New York* 10003 (P30 CA 13343-08)

This proposal seeks continued support for a NCI Center Grant entitled 'Research in Environmental Cancer'. This Center Grant provides core support for the Institute in the area of cancer research including partial salary support for professional staff, developmental funds, and limited support for items of shared equipment and central services. The research and teaching program in cancer at the Institute has the broad objective of identifying environmental causes of cancer and developing methods for the control of carcinogenic hazards. The program is interdisciplinary in character and ranges from studies at the subcellular level on mechanisms of action to whole animal, epidemiological and environmental studies.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. $478,976

3.0595,
CANCER CENTER CORE SUPPORT GRANT(COMPREHENSIVE)

J.R. Durant, University of Alabama in Birmingham, School of Medicine, Dept. of Medicine, *1919 7th Ave. S., Birmingham, Alabama* 35233 (P30 CA 13148-10)

The Comprehensive Cancer Center at the University of Alabama in Birmingham conducts programs in immunobiology, immunogenetics, genetics and cell biology, RNA virology, DNA virology, molecular biology, experimental pathology, x-ray crystallography, NMR spectroscopy, tumor immunology, membranes, surgical oncology, radiation oncology, gynecologic oncology, medical oncology, pediatric oncology, nursing, biostatistics, and dentistry. It provides shared resources for immunosuppressed mice, NMR, x-ray crystallography, animal radiation, biostatistics, media preparation and tissue culture, histology, tissue procurement, and electron microscopy and proposes to develop a shared resource in fluorescence. It proposes to develop a program in epidemiology and the sequencing of proteins and nucleic acids, and to continue to support promising young investigators.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. $1,614,741

3.0596,
HUMAN RADIATION CARCINOGENESIS STUDY

E.D. Woodard, University of Rochester, School of Medicine & Dentistry, Dept. of Radiology, *601 Elmwood Ave., P.O. Box 607, Rochester, New York* 14642 (R18 CA 19764-04)

This application proposes continuation of long-term prospective studies of three well-defined populations irradiated for benign conditions: (1) persons whose thymus glands were irradiated in infancy; (2) persons given x-ray and/or radium treatments for hypertrophy of adenoidal tissue during childhood; and (3) women whose breasts were treated with x-rays for acute post-partum mastitis. The objective of the program is to determine the risk of radiation-induced disease (neoplasia, autoimmune and psychiatric illness) with particular attention to the dose-response relationship for neoplastic disease. A second objective is to detect (by periodic mammographic-thermographic screening) and treat early cases of breast cancer in a high-risk population (mastitis-irradiated series). Additionally, findings in the screening program will be evaluated for predictive significance.

The health of the irradiated subjects and their non-irradiated sibling controls is followed by mailed health questionnaire. Significant illnesses and operations are verified with the attending physician and/or hospital. Sections of neoplasms of selected sites (breast, thyroid, and salivary glands) are requested for review. The breast-irradiated women and eligible controls (NCI guidelines) will be offered annual mammographic-thermographic screening. Laboratory studies of B and T lymphocytes will be conducted on selected individuals in the thymus series. Additional dosimetry calculations will be performed for selected tissue sites in the head-irradiated series (thyroid, pituitary, and salivary glands) and thymus-irradiated series (breast tissue).

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. $104,877

3.0597,

CHILDREN'S CANCER STUDY GROUP

R.L. Chard, Childrens Orthopedic Hospital & Medical Center, Division of Hematology Oncology, *4800 Sand Point Way N.E., Box C-5371, Seattle, Washington* 98105 (R10 CA 10382-15)

This proposal is for continuation of research into the natural history, treatment and epidemiology of the statistical conduct, design, collation, and publication of childhood cancer. It will continue to emphasize multimodal aspects of the Children's Cancer Study Group which has realized such excellent results in the past in Wilms' tumors and rhabdomyosarcoma and has now helped in defining acute childhood lymphocytic leukemia as more than one disease entity which requires different treatments for different groups. Also, treatment has been improved in osteogenic sarcoma and Ewing's sarcoma and, though advances are more meager, there have also been statistical improvements in survival of neuroblastoma patients. Childhood nonlymphocytic leukemia patients have also shown improved survival and the Children's Cancer Study Group has now combined in a Groupwide study to compare bone marrow transplantation in first remission to more standard conventional chemotherapy in a controlled fashion.

During the period from November, 1976 to December, 1979, 389 children with childhood cancer were seen at this institution; 182 with leukemia, 148 who were treated on study, 44 who were not on study, and 207 children with solid tumors. We have been a member of the Children's Cancer Study Group since 1959 and strong permanent referral patterns have been established. It is therefore anticipated that the patient load will continue to be stabilized and slightly increased over the next several years. A close working relationship with the adult leukemia center under Dr. E. Donnall Thomas at the Fred Hutchinson Cancer Research Center continues. This includes the exchange of professional personnel on the Fellowship level. Forty-three bone marrow transplantations on children with acute leukemia have been done at this institution from 11/1/76 to 12/1/79. Collaborative studies continue in immunology with the Fred Hutchinson Cancer Research Center, primarily through the efforts of Irwin D. Bernstein, M.D.

BIBLIOGRAPHIC REFERENCES: Bleyer, W.A., Krivit, W., Chard, R.L., Hammond, D.: Phase II study of VM-26 in acute leukemia, neuroblastoma and other refractory childhood malignancies. Cancer Treat. Rep. Vol. 63 6:977-981, 1979. Nesbit, M., Chard, R., Evans, A., Karon, M., Hammond, G.D.: Evaluation of intramuscular versus intravenous administration of L-asparaginase in childhood leukemia. Am. J. Pediatr. Hematology/Oncology Vol. 1, 1:9-13, 1979.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. $161,141

3.0598,

METABOLIC EPIDEMIOLOGY OF COLON CANCER

B.S. Reddy, American Health Foundation Inc., Naylor Dana Institute for Disease Prevention, *Hammond House Rd., Valhalla, New York* 10595 (R26 CA 16382-06)

OBJECTIVE: The overall objective of the proposed research is to: (a) acquire significant information on the mechanisms related to, and the role played by: dietary components, intestinal microflora and their metabolites on the etiology of colon cancer in man, (b) identify specific environmental and dietary components that either directly cause colon cancer or indirectly promote the formation and development of colon neoplasms, and (c) develop key biochemical and/or microbial indicators which distinguish low- and high-risk populations for colon cancer.

APPROACH: The proposed study will determine: the fecal cholesterol and bile acid metabolites and fecal bacterial 7 alpha-dehydroxylase, cholesterol dehydrogenase and nuclear dehydrogenase activities and fecal bacterial transnitrozation reaction in members of high-risk cancer families, patients with familial polyposis and healthy controls consuming a mixed-Western diet. We also continue the present study in determining the metabolic activity of fecal microflora (above enzyme parameters) in patients with colon cancer and adenomatous polyps to permit an evaluation of these discriminants for colon cancer. In addition, we propose to isolate and identify the mutagens (presumptive carcinogens) in the feces of above study populations.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. $95,722

3.0599,

CORE CANCER CENTER SUPPORT GRANT

R.A. Cooper, University of Rochester, School of Medicine & Dentistry, Dept. of Pathology, *601 Elmwood Ave., P.O. Box 607, Rochester, New York* 14642 (P30 CA 11198-12)

The University of Rochester Cancer Center is a multidisciplinary Center with broad responsibilities for clinical research, primary and consultative interdisciplinary care, and conduct of coordinated programs in cancer education, nursing and basic research.

Clinical research and treatment in the Center is community based and involves a consortium of five general hospitals in Monroe County and affiliated hospitals in the Finger Lakes region. Clinical research emphasizes combined modalities and cooperative group trials and includes participation in R.T.O.G., E.C.O.G., PSYCOG, C.C.S.G., and G.O.G. An in-house clinical investigations committee translates basic research advances into clinical research.

Basic research is focused in fields particularly relevant to treatment advances. The integrating research theme of the Center is the comparative study of damage and repair of macromolecules and organelles critical to cell survival (DNA, RNA, and membranes) and the influence of these on treatment. Biostatistics-Epidemiology Registry, Experimental Pathology/Ultrastructural, Centrifugal Elutriation, and the Animal Tumor Research Facilities serve as broad, shared resources of the Center.

Complementing the core research programs are cancer control and cancer education programs. The Center is, thus, not only as a community, regional, and national clinical research resource, but also resource for basic research and for the development of education and cancer control models.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. $1,469,506

3.0600,

CLINICAL CANCER RESEARCH CENTER

E. Frei, Sidney Farber Cancer Center Inc., *44 Binney St., Boston, Massachusetts* 02115 (P01 CA 19589-05)

A coordinated, multi-disciplinary program in clinical cancer investigation is carried out at this Comprehensive Cancer Center. Emphasis is placed on development of new clinical approaches, drawing particularly upon the research in basic and bridging sciences which is underway at this Center.

This integrated clinical oncology program includes projects in the following areas: pharmacology, immunology, pediatric oncology, epidemiology, microbiology, blood components, cytogenetics and biostatistics.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. $1,784,882

3.0601,

DEVELOPMENTAL CANCER CONTROL PROGRAM (WISCONSIN)

R.O. Johnson, University of Wisconsin, Madison Campus, Medical School, Dept. of Human Oncology/Surgery, *450 N. Randall Ave., Madison, Wisconsin* 53706 (R18 CA 16405-05)

GOAL: To decrease the morbidity and mortality from cancer in Wisconsin.

OBJECTIVES: 1. Planning and Legislation. To develop a comprehensive plan for control of cancer in Wisconsin and a strategy for the plan's enactment into formal legislation. 2. Epidemiology and Evaluation. To further develop and maintain a strong WCCC biometry component to aid in the planning, implementation and evaluation of Wisconsin cancer control programs. 3. Public Information and Education. To develop and promote needed programs to inform the public about cancer. 4. Professional Information and Education. To conduct necessary and valuable programs to inform and educate health professionals about cancer. 5. Prevention and Early Detection. To promote optimal practices in cancer prevention and early detection. 6. Diagnosis and Treatment. To organize regional, cooperative, site-oriented programs, networks and task forces dedicated to improving the diagnosis and treatment of cancer. 7. Rehabilitation and Continuing Care. By demonstration, to inform the public and professional communities in Wisconsin about effective rehabilitation and continuing care possibilities and practices for cancer patients. 8. New Projects Development. To catalyze, encourage and support the development of new ideas in cancer control.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. $570,837

3.0602,

CANCER INCIDENCE AND RISK FACTORS BY KINSHIP

M.H. Skolnick, LDS Hospital, *325 8th Ave., Salt Lake City, Utah* 84103 (R01 CA 16573-06S1)

From a Utah Mormon genealogy of more than one million individuals linked to a Cancer Registry of more than 30,000 cases, we will: (1) Determine the genetic contributions to the occurrence of cancer for specific sites in a general population, including the estimation of heritability for specific age-sex categories. (2) Fit specific genetic models which will best explain any observed patterns of the occurrence of specific cancer sites or groups found to cluster in large pedigrees. Components of the models will include modes of inheritance and factors which influence gene expression (such as age, sex, and pertinent environmental factors when known). In-depth pedigree and chromosomal marker studies provide important additional data for this analysis. (3) Investigate the potential association of a large number of immunologic, biochemical, and anthropomorphic genetic markers to various forms of cancer in an effort to characterize these traits for people who are at high genetic risk for acquiring the disease and then attempt to use this information for early detection or prevention of the cancer.

BIBLIOGRAPHIC REFERENCES: Kravitz, K., Skolnick, M., Cannings, C., Carmelli, D., Baty, B., Amos, B., Johnson, A., Mendell, N., Edwards, C., Cartwright, G: Genetic Linkage between Hereditary Hemochromatosis and HLA. American Journal of Human Genetics 31:601-619, 1979. Hunt, S.C., Williams, R.R., Skolnick, M.H., Lyon, J.L., Smart, C.R.: Breast Cancer and Reproductive History from Genealogical Data. The Journal of the National Cancer Institute, 1980, in press.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. $28,966

3.0603,

CANCER CENTER SUPPORT GRANT

R.A. Cooper, University of Pennsylvania, School of Medicine, Dept. of Medicine, *36th & Hamilton Walk, Philadelphia, Pennsylvania* 19174 (P30 CA 16520-06)

The University of Pennsylvania Cancer Center (UPCC) study is a multidisciplinary program in cancer research, education and clinical care. Based in the School of Medicine, it involves faculty from many schools of the University. The UPCC is one component of the Fox Chase-U. of P. Comprehensive Cancer Center. Interdisciplinary clinical research programs of the UPCC exist in hematology-oncology, radiation therapy, surgical oncology and gynecologic oncology. A multidisciplinary program has been established in head and neck tumors, and similar programs are developing in neuro-oncology and urologic cancer. Clinical research programs utilize the shared resources of the Center's inpatient Oncology Study Unit, Clinical Trials Data Center, Pharmacology Core and Nutrition Support Service. Interdisciplinary fundamental research programs exist in immunobiology, cell biology, virology, genetics, and radiobiology. Program development involving tumor immunology and bone marrow culture is planned. Fundamental research programs utilize the shared resources of an animal breeding colony and tissue culture core, and they are strengthened by a Visiting Scientist Program. Acquisition of a fluorescence activated cell sorter is also planned. The Center's Epidemiology and Statistics Unit includes epidemiologic studies of occupational carcinogenesis and biostatistical research. The Unit established a biostatistics shared resource for the UPCC and a patient data system compatible with the CCPDS. A multidisciplinary Psychosocial Program, recently established, addresses needs in areas of research, service and education. Other Educational Programs have been established as well, and the UPCC provides a range of opportunities for medical and nursing students, fellows, practicing physicians and other health professionals. The UPCC Cancer Control Program extends to community hospitals in Pennsylvania and New Jersey. An information letter, Cancer Update, provides UPCC news and cancer education for Center members and other professionals who relate to the UPCC.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. $561,790

3.0604,

CASE CONTROL STUDY OF CARCINOMA OF THE ESOPHAGUS

T.M. Mack, University of Southern California, School of Medicine, Dept. of Community Medicine & Public Health, *2025 Zonal Ave., Los Angeles, California* 90033 (R01 CA 19496-05)

The study proposed is a large case control study to be performed prospectively in Los Angeles County. It has been designed to permit simultaneous examination of multiple antecedent risk factors.

Cases with cancer of the esophagus will be identified by the LAC/USC Cancer Surveillance Program. A questionnaire has been designed to obtain data on environmental exposures - tobacco and alcohol consumption, diet, occupation and medical history and treatment. It will be administered to both cases and neighborhood controls as soon as possible after the cases have been diagnosed. Standard matched pair analyses of multiple variables will be performed on the data from the questionnaire.

BIBLIOGRAPHIC REFERENCES: Ross, R, McCurtis JW, Henderson BE, Menck HR, Mack TM, Martin SP: Descriptive epidemiology of testicular and prostatic cancer in Los Angeles. Br. J. Cancer 39:284-292, 1979.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. $99,463

3.0605,

LYMPHOMA-LEUKEMIA PROGRAM/LAC-USC CANCER CENTER

R.J. Lukes, University of Southern California, School of Medicine, Dept. of Pathology, *2025 Zonal Ave., Los Angeles, California* 90033 (P01 CA 19449-05)

The Lymphoma-Leukemia Program is a unified multidisciplinary study of malignant lymphomas and related leukemias and immunoproliferative disorders that has as its goal the definition of their cellular and clinical characteristics in terms of modern understanding of immunology, including the T and B lymphocytic systems and alterations of lymphocyte transformation. It combines a multiparameter approach employing a variety of immunologic surface marker technics with cytochemistry, ultrastructural, in vitro and immunoglobulin detecting technics for the cellular definition and with in-depth Hodgkin's staging technics for the defining of clinical expressions. The results of the initial definitional phase during the first two years have demonstrated the effectiveness of this multiparameter definitional approach in characterizing human lymphoid neoplasms according to the T and B cell systems and relating these neoplasms to abnormalities of lymphocyte transformation and to the functional lymphoma classification of Lukes and Collins. A Southern California Lymphoma Group involving 28 major area hospitals also has been developed, as part of the regional collaboration to enhance the collection of fresh lymphoma case material for study. It also extends to the community the morphologic, technical and clinical expertise that influences the quality of patient care. This program interrelates with regional epidemiologic and cancer control programs. In the renewal phase of the program the definitional phase will be continued as a basis for in depth areas of investigation that have evolved out of the initial phase. These involve the following areas: IV. Control Mechanisms in Lymphoma Induction and Progression; V. Membrane and Cytoplasmic Immunoperoxidase; VI. Exploratory Data Analysis; VII. Animal Models; VIII. Cell Surface Receptors and Antigens; IX. Cell Kinetics; X. Cytogenetics; XI. Role of Stromal Cells; XII. HLA and B Cell Typing; XIII. Epidemiology.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. $477,235

3.0606,

CANCER CENTER SUPPORT (CORE) GRANT

S.K. Carter, Northern California Cancer Program Inc., *770 Welch Rd., Suite 190, Palo Alto, California* 94304 (P30 CA 19408-05)

NCCP, through the efforts of Dr. Carter and staff will continue to provide administrative and scientific leadership throughout the region on state and national cancer issues. Specifically, in clinical research, NCPP will continue to be forum for collaboration and mechanism for developing and managing multi-institutional and community based research efforts. NCPP will coordinate under the Biological Response Modifiers program from the Division of Cancer Treatment. Drs. Carter and Torti will continue to integrate clinical research efforts with NCCP programs in Basic Science, Cancer Control, Community Outreach and Epidemiology. Dr. Taber will further develop cooperative research projects in anti-cancer drug development along the lines described in the progress report.

NCCP will provide leadership in the development of a state cancer plan and legislation and policies designed to address the cancer problem in California. Martha Kaplan, M.P.H. will continue to staff this effort.

In conjunction with NCCP's regional affiliates throughout the region the Core grant will provide the resources to coordinate local activities in data collection, tumor registry development, plan and program development that make the NCCP a truly active cancer center without walls.

We also anticipate the recruitment of a senior epidemiologist who will further expand our collaborative efforts throughout the NCCP region.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. $529,598

3.0607,

GENETIC EPIDEMIOLOGY OF CANCER

K.M. Weiss, University of Texas, Health Science Center at Houston, Graduate School of Biomedical Sciences, Center for Demographic & Population Genetics, *P.O. Box 20334, Houston, Texas* 77025 (R01 CA 19311-04)

This study will link vital records of the Mexican-American city of Laredo, Texas into extended genealogies. These records consist of civil and church birth, death, marriage, and other records. Cause of death will be mapped onto the assembled genealogies with respect to death from various forms of cancer. Genetic models for heterogeneity in cancer susceptibility will be tested. The demographic epidemiology of death, when many causes compete and age of onset is variable, will be studied using this population. A first-order assessment of environmental effects in familial clustering of cancer deaths will be made. Laredo is over 90 percent Mexican-American and Roman Catholic. By use of 1900 as a base population, this study will have a well-ascertained, large, isolated population as its basis, and will contribute to cancer genetics and epidemiology and to the epidemiology of disease in Mexican-Americans in general.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. $131,845

3.0608,

OPTIMIZATION OF SCREENING FOR CERVIX CANCER

B.A. Barron, Columbia University, College of Physicians & Surgeons, Dept. of Obstetrics & Gynecology, *630 W. 168th St., New York, New York* 10032 (R01 CA 19145-05)

Cancer of the uterine cervix contributes significantly to the total cancer morbidity and mortality among women in the United States. Cytologic screening using the Papanicolaou smear has become a widely accepted modality for detecting cervical neoplastic disease. The cost-effectiveness of Papanicolaou smear screening on an annual basis has been questioned. Recently, recommendations have been made for modifying current practices by increasing the interval between successive cytologic examinations among those women identified as being at 'low risk' of incidence. In no instance have the sequelae of such proposed changes been examined in terms of expected changes in incidence, survival and mortality for cancer of the cervix.

The natural history of cervical neoplastic disease has been described by us and other investigators. Several cytologically defined lesions are thought to be precursors of invasive cancer of the cervix and there is wide acceptance that carcinoma-in-situ is antecedent to invasive disease. This lesion is potentially 100% curable and will, if untreated, progress to invasive cancer in the majority of cases. The transition times and probabilities of the stages of cervical neoplastic disease have been presented previously. Using these data together with age-specific incidence rates currently available from a variety of sources and available estimates of incidence, the studies proposed here will generate estimates of the incidence, survival and mortality for cervix cancer among defined populations exposed to specified cytologic screening regimens.

BIBLIOGRAPHIC REFERENCES: Barron, B.A., Cahill, M.C., and Richart, R.M. (1978) A statistical model of the natural history of carcinoma-in-situ of the uterine cervix. Gynecologic Oncology Vol. 6, 196-205. Barron, B.A. (1978) Estrogen and endometrial cancer: an unresolved issue. Comprehensive Therapy Vol. 4,3, 45-51.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. $55,288

3.0609,

STATISTICAL PROBLEMS IN CLINICAL CANCER RESEARCH

J.H. Klotz, University of Wisconsin, Madison Campus, Center for the Health Sciences, Dept. of Statistics/Human Oncology, *500 Lincoln Dr., Madison, Wisconsin* 53706 (R01 CA 18332-05)

Work is proposed in the following general areas: 1. Analysis of Censored Survival Data -- one sample, multisample, and regression models (Models of Cox, Breslow -- work on time-dependent covariates); 2. Low Dose Extrapolation (Models of Mantel and Bryan, Armitage and Doll); 3. Discrete Time Response -- relapse models with censoring (Geometric Models); 4. Design of Clinical Trials (Biased Coin Designs, Sample Size Problems); 5. Multiple Tumor Data Models (Negative Binomial and other Count Models); 6. Retrospective Studies (Models of Breslow and others); 7. Cost Effective Screening and Evaluation; 8. Compact Portable Biostatistical Software (APL and BASIC programs); 9. Research Problems that arise from Cancer Center Consulting.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. $70,650

3.0610,

CANCER CENTER SUPPORT (CORE) GRANT

E.L. Wynder, American Health Foundation Inc., *320 E. 43rd St., New York, New York* 10017 (P30 CA 17613-06)

This grant provides funding for principal personnel and central services for the overall prevention-oriented research program at the American Health Foundation. Support services include a research animal facility, and instrumentation, histology, and computer facilities. The Foundation's research program includes projects in cancer epidemiology, chemical carcinogenesis in animal models and cell culture, effects of cigarette smoke and chemical characterization of smoke from various tobaccos, cancer control through risk factor identification and reduction programs in schools and the workplace, and related economic studies. Other laboratory studies cover diet-related investigations of carcinogenesis of the colon, prostate, and other sites.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. $1,650,693

3.0611,

USC CANCER CENTER EPIDEMIOLOGY AND BIOSTATISTICS UNIT

B.E. Henderson, University of Southern California, School of Medicine, Dept. of Pathology, *2025 Zonal Ave., Los Angeles, California* 90033 (P01 CA 17054-04A1)

This proposal requests continuing support for an Epidemiology and Biostatistics Research Program as a major component of the Los Angeles County/University of Southern California Cancer Center.

A large part of the research effort is the Cancer Surveillance Program (CSP) headed by Dr. Thomas Mack. The CSP provides prompt reporting and detailed demographic data on virtually all new cancer cases diagnosed in the entire population of seven million residents of Los Angeles County. A major function of the CSP is to provide cancer patient identification for etiologic field studies. The descriptive information from the CSP provides additional etiological clues and a system for checking the consistency of suggested causal associations with cancer rates in the population. The CSP also identifies high risk program targets, and constitutes a cancer research organization with a presence in each of the county's diagnostic facilities.

The Biostatistics Unit headed by Dr. Malcolm Pike supports some field staff as well as the analytic component of our field studies. Development of new statistical methods to deal with these field studies and other cancer related studies is also undertaken by this unit. Funds for most field studies are currently being obtained from several research contracts and grants. The desirability of having the capability of making a rapid and flexible response to newly sug-

gested hypotheses demands some field staff without unalterable commitments.
SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. $1,033,533

3.0612,
CHLORINATED WATER AND MEMBRANE FUNCTIONS AND NEOPLASIA
A.Y. Sun, University of Missouri, Columbia Campus, Sinclair Comparative Medicine Research Farm, *Rte. 3, Columbia, Missouri* 65201 (R01 CA 26586-02)
Chlorine is suspected to be a cancer risk because it interacts with organic matter in water and in biological systems leading to the formation of various toxic chloroderivatives. The overall objective of this proposed study is to investigate the interaction of chlorine and/or chlorinated compounds with the cellular constituents under the physiological condition in relation to the biochemical mechanism of tumor formation as induced by this interaction. Specifically, we shall: (1) study the effect of acute and chronic treatment of chlorinated water on the structure and function of biological membranes, (2) evaluate synergism and promotion in tumorigenesis when chlorine water ingestion is combined with other chemical carcinogens and (3) examine the inhibitory effect of dietary antioxidants on the chemical carcinogenesis as induced by chlorine and dimethylnitrosamine (DMN). The change in the compositions (lipids and proteins) and functions (membrane-bound enzymes, transport activities) of erythrocyte membranes, kidney and liver mitochondria and synaptic plasma membranes will be studied and compared in control and experiment animals. The growth rate, tumor incidence and associated histological and membrane change with either chlorine or combined with DMN administration will be examined. In addition, the inhibitory effect of dietary vitamin E and selenium on the chemical carcinogenesis as induced by chlorine alone or in combination with DMN will be evaluated. It is anticipated that the result of this investigation will provide more information about the prevalence of mutagenic agents in drinking water and in the biological system. Possible preventive measures to the chemical carcinogenesis may be developed as a result of this study.
BIBLIOGRAPHIC REFERENCES: Vogt, C.R., Liao, J.C. and Sun, A.Y. (1980) Extraction and determination of chloroform in rat blood and tissue by gas-chromatography-electron-capture detection: distribution of chloroform in the animal body. Clin. Chem. 26:66-68. Vogt, C.R., Liao, J.C., Sun, G.Y. and Sun, A.Y. (1980) Chlorination in vivo and its effect on membrane function. Trace Substances in Environmental Health 13:453-460.
SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. $69,793

3.0613,
IN VIVO NITROSAMINES AND CANCER IN RENAL FAILURE
M.L. Simenhoff, Thomas Jefferson University, Jefferson Medical College, Dept. of Medicine, *1025 Walnut St., Philadelphia, Pennsylvania* 19107 (R01 CA 26571-02)
The research study will try to answer the question whether in vivo generation of volatile nitrosmaines occur in the gut of patients with chronic renal failure. This is proposed because of the finding that bacterial overgrowth and high levels of secondary amines occur in the proximal small intestine in patients with advanced kidney failure. A high incidence of cancer in end-stage kidney disease has been reported from various parts of the world including the United States. We are currently examining biological fluids in patients with end-stage kidney disease for precursor compounds and nitrosamines. These measurements for nitrosamines are being performed by gas chromatography thermal energy analysis. Also, and epidemiological survey is being carried out to define more carefully the true incidence of cancer in chronic renal failure. Preliminary results show that nitrosamine generation is occuring in water treatment systems used for dialysing patients with chronic renal failure. Because of the potential danger of this finding, exact definition of this occurrence is being intensively studied. A source for ex vivo nitrosamine formation has been identified in dialysis units, and measured in the blood of patients where such nitrosamine production has occurred. The implications of this work are obvious in reviewing water treatment systems.
BIBLIOGRAPHIC REFERENCES: L. Lakritz, M.L. Simenhoff, S.R. Dunn and W. Fiddler. N-nitrosodimethylamine in human blood. Fd. Cosmet. Toxicol. 18: 77, 1980. M.L. Simenhoff, S. Dunn, J. Smiley. N-nitrosodimethylamine in dialysate water and blood of chronic dialysis patients. Amer. Soc. of Nephrol. Abstracts p. 52A, 1980.
SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. $98,329

3.0614,
DETROIT SSMA POPULATION-BASED CANCER REGISTRY
M.J. Brennan, Michigan Cancer Foundation, *110 E. Warren Ave., Detroit, Michigan* 48201
OBJECTIVES: Maintain a cancer information system in the three counties of the Detroit metropolitan area. Collect data in sufficient detail so that each cancer can be classified and coded. Collect complete information regarding extent of disease, diagnostic procedures, and first cause of cancer directed therapy on all patients diagnosed since 1973. Utilizing all available methodologies, obtain active follow-up of all cases diagnosed since 1973. In conjunction with participation in the SEER Program, cooperate with NCI field staff in its quality control activities. Maintain a core staff including both professional and technical people. Submit annual progress reports in August of each year. Conduct, in consultation with the Computer Science Section of NCI, a detailed analysis of the current data processing system and develop a detailed plan to upgrade the existing system.
SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. $805,626

3.0615,
EPIDEMIOLOGIC STUDIES OF FELINE LEUKEMIA VIRUS
W.D. Hardy, Sloan Kettering Inst. for Cancer Research, *410 E. 68th St., New York, New York* 10021 (P30 CA 08748-156807)
This project is part of a broader program (CA 08748).
SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. funds n.a.

3.0616,
CANCER EPIDEMIOLOGY
F.P. Li, Sidney Farber Cancer Center Inc., *44 Binney St., Boston, Massachusetts* 02115 (P30 CA 06516-180012)
This project is part of a broader program (CA 06516).
SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. funds n.a.

3.0617,
ESTROGENS AND GENITAL ANOMALIES AND CANCER IN OFFSPRING
S.J. Robboy, Massachusetts General Hospital, *32 Fruit St., Boston, Massachusetts* 02114
OBJECTIVE: A study of the incidence and natural history of genital tract anomalies and cancer in offspring exposed in utero to synthetic estrogens.
SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. funds n.a.

3.0618,
METROPOLITAN ATLANTA SEER PROGRAM
M.A. Child, Emory University, School of Medicine, Dept. of Medicine, *1364 Clifton Rd. N.E., Atlanta, Georgia* 30322
As a participant in the SEER Program, this Contractor is to provide data for incidence and end results reporting on all cancers diagnosed among residents of the Metropolitan Atlanta area. During the initial contract period, the Contractor will undertake the planning and development of data acquisition, coding, processing, and editing necessary to the implementation of the SEER Program in the Atlanta Metropolitan area. During the second contract period, the reporting system will concentrate on cases diagnosed during 1976 and may, as time allows, pick up cases diagnosed during 1972-1975 so that continuous incidence data from 1969 forward will be available by virtue of Atlanta's participation in the Third National Cancer Survey. The data are to be recorded in accordance with rules agreed upon by SEER Program participants and will periodically be submitted to the Biometry Branch, NCI, for analysis.
SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. $592,624

3.0619,
PROSPECTIVE STUDY OF DIET AND CANCER IN WOMEN
F.E. Speizer, Harvard University, Boston Campus, Peter Bent Brigham Hospital, *721 Huntington Ave., Boston, Massachusetts* 02115 (R01 CA 26560-02)
This study is designed to address questions regarding the possible association between the intake of various dietary components and cancer of the breast and large bowel, as well as other disease outcomes. This is to be done by taking advantage of an existing prospective study of risk factors for breast cancer in 121,000 women who complete a mail questionnaire on a biennial basis.
The questionnaire is designed to provide relative scores for individuals on: intake of animal fat, vegetable fat, cholesterol, potein, fiber, Vitamin A, and 'trans' fatty acids. Data on potential confounding factors, including physical activity, for risk of breast cancer and large bowel cancer are being collected and will be controlled by multiple logistic analyses. To validate the questionnaire, 200 subjects will complete detailed 7-day food use diaries four times over 1-year period. Blood specimens will be assessed for carotene and vitamin A levels.
Outcome measure will include both fatal and non-fatal cancer incidence rates. Reported cases of cancer will be documented by obtaining copies of hospital records and causes of death will be obtained from death certificates as well as hospital records.
SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. $142,686

3.0620,
RELATIONSHIP BETWEEN CHOLECYSTECTOMY AND ASCENDING COLON
L.H. Kuller, University of Pittsburgh, Graduate School of Public Health, Dept. of Epidemiology, *4200 5th Ave., Pittsburgh, Pennsylvania* 15260 (R01 CA 24739-03)
Bile acids and/or by-products as a result of bacterial degradation are believed to be related to large bowel carcinogenesis. Cholecystectomy has been shown to alter bile acid metabolism. A retrospective study involving 706 cases of large bowel cancer grouped by subsite, sex, and age, identified during the Third National Cancer Survey was recently completed. Thirty-eight of 291 patients (13%) with cancer of the ascending or transverse colon (right-sided large bowel cancer) had hospital records indicating a history of prior cholecystectomy as compared to 26 of 415 patients (6.3%) with descending, sigmoid, or rectal cancer (left-sided large bowel cancer). When comparing right-sided large bowel cancer patients with left-sided large bowel cancer patients, the estimated relative risk was found to be 2.23 with 9% confidence limits of 1.33 to 3.75. Although the results are significant, a possible bias associated with review of hospital records could account for this relationship. Therefore, we are currently replicating this study and validating prior history of cholecystectomy in hospital records. Operative notes and X-rays have been reviewed to validate the absence or presence of the gallbladder at time of colon cancer surgery. Interviews with the surgeon and/or family are also being conducted. Finally, a neighborhood control group is also being interviewed.
BIBLIOGRAPHIC REFERENCES: Vernick, L., Kuller, L., Lohsoonthorn, P., Rycheck, R., and Redmond, C. Cholecystectomy: A risk factor in right-side colon cancer? Am. J. Epidemiol. 110:353, 1979 (Abstract).
SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. $45,513

3.0621,
CANCER STUDIES IN WASHINGTON COUNTY, MD
G.W. Comstock, Johns Hopkins University, School of Hygiene & Public Health, Dept. of Epidemiology, *615 N. Wolfe St., Baltimore, Maryland* 21205 (R01 CA 24758-03)
The proposed project has several related objectives. First is to maintain a serum-bank and cancer registry as a facility for studies of the epidemiology of major cancers, with special reference to serum factors

antedating the diagnosis with serum assays of matched control specimens drawn at the same time, and also comparing serum assays of cancer cases before and after diagnosis which will identify risk factors, thereby adding useful knowledge of cancer etiology and helping to focus preventive practices. The second objective is to compare serum estrogen and androgen levels in serum specimens drawn in 1974 from breast cancer cases diagnosed since that time and their matched controls. The control experience will also be useful to see if serum hormone levels are related to other breast cancer risk factors. An additional study will measure disability and mood among breast cancer cases and age-matched controls. This will confirm and amplify a preliminary study that indicated that disability and mood changes observed in women several years after mastectomy resulted from age and not from their diagnosis or treatment.

A fourth objective is to study serum estrogen and androgen levels among groups of postmenopausal women from a general population. Sufficient numbers of serum specimens can be examined to allow reasonably firm conclusions about normal levels in this cancer-prone age group and to relate these levels to a variety of personal characteristics. Finally, it is proposed to ascertain if there are long-term changes in a variety of serum hormone levels with storage at minus 70 degrees C. This information is not currently available and is badly needed not only for this study, but also for other investigations that rely on frozen serum specimens.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. $93,370

3.0622,
EPIDEMIOLOGY OF APLASTIC ANEMIA IN BALTIMORE

M. Szklo, Johns Hopkins University, School of Hygiene & Public Health, Dept. of Epidemiology, *615 N. Wolfe St., Baltimore, Maryland* 21205 (R01 CA 24757-03)

The objectives of this study are: Phase I - the examination of temporal trends in incidence rates of aplastic anemia (AA) and acute nonlymphocytic leukemia (ANLL; Phase II - examination of the role of environmental agents in AA and ANLL by means of a case-control epidemiologic investigation.

Phase I of the study is almost completed. Thus far, 140 cases of AA and 723 cases of ANLL have been identified through a hospital record search. Death certificate search is underway and should help to ascertain additional cases. Additionally, a search will be carried out of hospital records at the NIH Clinical Center, in order to identify possible cases who may have sought care in the D. C. area.

Phase II of the study will start in December, 1980. Procedures for the collection of data, as well as selection of controls, have been designed.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. $141,404

3.0623,
PROSTATIC CANCER - GENETIC AND ENDOCRINE RISK FACTORS

A.W. Meikle, Utah Higher Education System, University of Utah, School of Medicine, Dept. of Internal Medicine, *1400 E. 2nd S., Salt Lake City, Utah* 84112 (R26 CA 25031-03)

Our major goal is to determine the role of genetic factors in the development of prostatic cancer. Our hypothesis is that genetic factors affect secretion of sex-hormones and prolactin and predispose men to the early development of prostatic cancer in response to endogenous hormones and environmental carcinogens. Our probands will be less than 61 years of age when the diagnosis of prostatic cancer is made. We will determine whether (1) the plasma concentrations of sex steroids (estradiol-17beta, estrone, testosterone and dihydrotestosterone) and prolactin are abnormal in probands and first-order relatives as compared to age-matched in-law controls and whether the plasma concentrations of the hormone are affected by heredity; (2) the risk of the development of prostatic cancer is higher in first-order relatives and maternal and paternal relatives of the index cases than in age-matched controls; (3) the prevalence of some apparent epidemiologic risk variables are observed more commonly in probands and their first-order relatives as compared to age-matched controls. The investigation is novel in that the hereditary, endocrine and epidemiologic risk variables for the development of prostatic cancer will be investigated in younger men with the cancer and their relatives.

The investigation is feasible because of the availability of a population with large families and a high incidence of prostatic cancer.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. $128,791

3.0624,
MALE ROLE IN CERVICAL CANCER

I.I. Kessler, University of Maryland, Baltimore Professional Schools, School of Medicine, Dept. of Social & Preventive Medicine, *655 W. Baltimore St., Baltimore, Maryland* 21201 (R01 CA 25019-03)

Funds are requested to renew our ongoing study on the role of the male sex partner in the etiology of cervical cancer. The considerable evidence for the relationship between cervical cancer and venereally transmitted genital herpesvirus HSV-2 has been augmented by preliminary findings from this study which are strongly suggestive of a significant male role in cervical carcinogenesis.

Our prospective study is designed to test the venereal hypothesis in cervical cancer pathogenesis. We are seeking a scientifically valid answer to the following question: Is the risk of developing cervical cancer increased in the current wives of men who - at some other time were married to other women who developed this disease?

Over the past 25 years we have identified nearly 4,200 women with histopathologically confirmed cervical cancer. The husbands of these women are being followed up for the purpose of identifying all their previous and subsequent wives who in turn are traced prospectively through time. The lifetime risk of cervical cancers of these 'case' wives is then compared with that of a cohort of demographically similar 'control' wives. This approach affords an epidemiologically valid test of the role of HSV-2, or any other venereally transmitted male factor, in cervical cancer.

At present, marital clusters of cervical cancer have been confirmed in both wives of each of 45 men, with somewhat more than 1000 husbands and 'other wives' to be traced.

Our work was substantially disrupted by the transfer from Johns Hopkins to the University of Maryland. Funds are requested to complete this unique project.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. $172,618

3.0625,
A PROSPECTIVE STUDY OF CANCER RISK IN TUBERCULOSIS

I.I. Kessler, University of Maryland, Baltimore Professional Schools, School of Medicine, Dept. of Epidemiology & Preventive Medicine, *655 W. Baltimore St., Baltimore, Maryland* 21201 (R01 CA 25018-02S1)

Interest in the hypothesized association between tuberculosis and cancer has been intensified by studies demonstrating that tubercle bacilli (i.e.BCG) potentiate host immune responses against cancer challenge. Recent experiments in man suggest that BCG acts not only to evoke non-specific cell-mediated immunity but also to increase host resistance against specific tumors such as melanoma, sarcoma and breast cancer.

In view of the above, a type of natural experiment in cancer prevention is underway. A large cohort of tuberculosis patients is being followed prospectively through time to death or suuvival as of December 31, 1974. The outcome variables of interest are cancer mortality and morbidity. Observed cancer risks will be compared with those of the general population similar in age, sex and race. Additional analyses will focus upon cancer risk according to clinial severity of tuberculosis, with adjustment for smoking habit. Consideration will also be given to cancer risks among close family members as a further test of the antitumor immunogenicity of exposure to tuberculosis.

The prospective design of this study is relatively free of biases inherent in earlier efforts. This will also make possible the study of the association between tuberculosis and all types of cancer. A significant relationship between the two could suggest the possibility of BCG or tuberculin vaccination as a cancer preventive.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. $8,596

3.0626,
BREAST PARENCHYMAL PATTERNS AND BREAST CANCER RISK

A.S. Morrison, Harvard University, Boston Campus, School of Public Health, Dept. of Epidemiology, *55 Shattuck St., Boston, Massachusetts* 02115 (R01 CA 24797-02)

The principal objectives of this study are: a. To evaluate the relationship between specific mammographic parenchymal characteristics and the incidence of female breast cancer; b. to evaluate the relationship between mammographic parenchymal characteristics and risk factors for breast cancer.

Other objectives are to identify histologic correlates of mammographic parenchymal characteristics and to evaluate both right-left concordance of parenchymal pattern, and observer reliability in the assessment of these patterns.

All women (including 800 new cases of breast cancer) having xeromammograms in any of seven collaborating radiology units during 1978 or 1979 will be enrolled. Information on status with respect to breast cancer risk factors, parenchymal pattern (Wolfe's classification) and pathologic diagnosis will be obtained from the subjects' radiology records. From this series, 400 cases and 800 controls, equally divided between the age groups less than 55 and 55-74, will be selected for a detailed 'blind' review of both xeromammogram and histologic slides. For women in each age group relative risk of breast cancer according to parenchymal pattern, with the N1 pattern as the referent, will be estimated. If necessary, these estimates will be corrected for confounding by other risk indicators. Possible interactions will also be quantified.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. $77,952

3.0627,
CASE-CONTROL STUDY OF LUNG CANCER AND DIETARY VITAMIN A

L.N. Kolonel, University of Hawaii System, Manoa Campus, Pacific Biomedical Research Center, Epidemiology Program, *2538 The Mall, Honolulu, Hawaii* 96822 (R01 CA 26515-02)

This case-control study will test the hypothesis that dietary vitamin A may be protective against the development of lung cancer.

We will take advantage of the multiethnic population of Hawaii, with its dietary heterogeneity, to interview 500 newly diagnosed patients with primary lung cancer. These patients will be identified through the seven major hospitals on Oahu and will be men and women of Japanese, Caucasian, Filipino, Chinese and Hawaiian ethnic groups. For each lung cancer patient, two age- and sex-matched controls will be identified using the random-digit dialing method. Both cases and controls will be interviewed in their homes by trained multilingual interviewers, using a questionnaire designed to elicit quantitative information on the consumption of a large number of dietary items containing preformed vitamin A and vitamin A precursors. A detailed smoking history and history of exposure to occupational lung carcinogens will also be part of the questionnaire.

The data will be analyzed to determine the dietary vitamin A consumption of cases and controls with adjustment for smoking and occupational history. Further analysis will determine the dietary vitamin A consumption of cigarette-smoking cases versus cigarette-smoking controls with adjustment for covariates. The demonstration of relatively low dietary vitamin A intake among lung cancer patients, particularly among those who are smokers, would suggest that the incidence of this very common cancer might be reduced by increases in vitamin A intake.

BIBLIOGRAPHIC REFERENCES: Kolonel, L.N. Smoking and Drinking Patterns among Five Ethnic Groups in Hawaii. In: Second Symposium on Epidemiology and Cancer Registries in the Pacific Basin, Maui, January, 1978, Natl. Cancer Inst. Monograph 53:81-87, 1979. Hinds, M.W. and Kolonel, L.N. Malignant melanoma of the skin in Hawaii, 1960-1977. Cancer 45:811-817, 1980.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. $74,828

3.0628,

EPIDEMIOLOGIC AND HLA STUDY OF LEUKEMIA

M. Szklo, Johns Hopkins University, School of Hygiene & Public Health, Dept. of Epidemiology, *615 N. Wolfe St., Baltimore, Maryland* 21205 (R01 CA 26500-02)

The major objective of this research is to study the postulated association between CLL and chronic antigenic stimulation (related to infections, inflammatory processes and autoimmune diseases) by means of medical chart review and interview in a case-control study. We are also exploring the postulated increased familial incidence of CLL and other lymphoproliferative malignancies. We are examining possible associations of CLL with occupation, smoking, alcohol use, immunizations and operative procedures involving the lymphoproliferative system (tonsillectomy, splenectomy, etc.) in order to develop additional etiologic hypotheses.

A medical record room search of all Baltimore SMSA hospitals is one of the prime sources for ascertaining cases. Physicians have reviewed 339 charts at 2 of the 3 major university hospitals and at 2 of the largest community hospitals where a large proportion of CLL cases are expected to have been seen. At present, this has yielded 121 cases diagnosed as CLL. Actually, 11/121 (9%) cases called CLL did not meet the criteria for CLL as established by the NCI CLL/Myeloma Task Force because of absolute lymphocyte counts less than 15,000/mm3. 28/121 (23%) of cases called CLL are probably cases of well-differentiated lymphocytic lymphoma.

Each case is matched with two controls with any malignancy other than a lymphoproliferative neoplasm and two controls with any non-malignant disease. The matching variables include age (within 5 years), sex, race, date of diagnostic admission and hospital of admission.

We have just begun the interview and blood-drawing portion of the study. We hope to identify differences in HLA types between patients with CLL and controls. We will then attempt to correlate these differences with epidemiologic and clinical characteristics of the various subgroups of our population of cases and controls.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. $223,973

3.0629,

BREAST CANCER DETECTION BY BREAST SELF-EXAMINATION

R.S. Foster, University of Vermont & State Agricultural College, School of Medicine, Dept. of Surgery, *85 S. Prospect St., Burlington, Vermont* 05401 (R18 CA 26363-01)

We propose studies to obtain data to confirm or refute the hypotheses: 1. That breast self-examinaton can lead to earlier breast cancer detection and decreased breast cancer mortality, and 2. that public health education programs can significantly increase the frequency and quality of breast self-examination in a population of women.

We plan to extend our previous findings which suggested a relationship between increased frequency of breast self-examination performance and more favorable clinical and pathologic stages of breast cancer. This will be done by determining the relationship between breast self-examination performance and breast cancer mortality. Studies are planned to determine the effect of public education on the frequency and quality of breast self-examination performance. A public health education program on breast cancer and breast self-examination was conducted in the State of Vermont during the years 1974-1978 and it is our intention to determine the effect of that program on both the clinical and pathologic stages of breast cancer in Vermont women in the years 1979 through 1984.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. $108,241

3.0630,

BLADDER CANCER RISK FACTORS IN UTAH

D.W. West, Utah Higher Education System, University of Utah, School of Medicine, Dept. of Family & Community Medicine, *1400 E. 2nd S., Salt Lake City, Utah* 84112 (R26 CA 26362-02)

Previous epidemiological studies have identified several risk factors in the etiology of bladder cancer and a national study has been completed recently to determine whether these factors are associated with the disease. This was a case-control study of incidence cases in defined geographic areas and randomly selected population controls. Utah participated in this 12-month study, but the number of cases identified in Utah in 12 months (127) will not allow adequate sample size to perform the multivariate analysis techniques needed to test several important hypotheses. Since coffee and tobacco consumption are low in the Utah population, hypotheses concerning these risk factors can be studied without the problems found in other populations where the groups of non-users are small. In particular, coffee can easily be studied in Utah, as well as caffeine and the interaction of both with tobacco in the etiology of bladder cancer. Urban-rural differences and an increasing incidence for older males have also been noted in the state and identification of risk factors for these findings may suggest new hypotheses. The proposed plan will utilize the same design as used in the national study, but collect more data on coffee consumption. This will be done for two years and a year will be necessary for data analysis.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. $83,914

3.0631,

EPIDEMIOLOGIC STUDY OF CHILDHOOD GLIOMAS

P.C. Nasca, State Bureau of Cancer Control, *Empire State Plaza, Tower Bldg. Rm. 565, Albany, New York* 12237 (R01 CA 26194-02)

Our general objective is to determine, by means of an epidemiologic case-control study, the importance of various prenatal and childhood environmental exposures in the etiology of childhood gliomas. Special emphasis will be placed on prenatal and early childhood exposures to drugs, chemicals, radiation, tobacco, immunizations and animals. Selected birth characteristics including maternal age, parity and season of birth will also be examined.

Approximately 400 patients with childhood gliomas should be available for study. This sample size and a control-to-case ratio of 2:1 shall enable us to investigate the study variables with respect to the more common histologic subtypes. Demographic, pathologic and clinical data will be collected from the hospital records of each patient, utilizing a standardized form. Further data will be collected through telephone interviews with the mothers of each patient and control. These will be validated by comparing the mothers' responses with physician and hospital records.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. $81,052

3.0632,

FIBROCYSTIC BREAST DISEASE - EPIDEMIOLOGY AND HISTOLOGY

J.L. Kelsey, Yale University, School of Medicine, Dept. of Epidemiology & Public Health, *333 Cedar St., New Haven, Connecticut* 06510 (R01 CA 26021-02)

This case-control epidemiological study will examine the relationship between use of oral contraceptives and fibrocystic breast disease categorized histopathologically according to the extent of epithelial atypia; the specific hypothesis stating that there is a positive association between long-term use of oral contraceptives and the degree of epithelial atypia will be tested. Cases will be women who have had fibrocystic breast disease diagnosed from biopsy at four large Connecticut hospitals over a 22-month period. Their slides will be read by a pathologist associated with the study, and classified according to extent of epithelial atypia. Controls will be women admitted as inpatients or outpatients to certain surgical services of these same hospitals. Information on oral contraceptive use, demographic characteristics, and other variables of interest will be obtained from cases and controls by means of a structured questionnaire administered by trained interviewers, supplemented by queries to physicians. Previous use of oral contraceptives and exposure to other factors of interest will be studied in four groups categorized according to extent of epithelial atypia, as well as in controls, and the results will be compared. This study should increase our knowledge of the epidemiology of fibrocystic disease and potentially our understanding of the epidemiology of breast cancer, since fibrocystic disease with marked epithelial atypia has been found to be the form of fibrocystic disease most strongly associated with subsequent breast cancer.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. $271,356

3.0633,

EPIDEMIOLOGY OF UROTHELIAL CANCER IN HAWAII

A.M. Nomura, University of Hawaii System, Manoa Campus, Pacific Biomedical Research Center, Epidemiology Unit, *2538 The Mall, Honolulu, Hawaii* 96822 (R26 CA 25903-02)

This study will investigate the association of urothelial cancer with coffee, artificial sweeteners, hair dye, vitamin A and vitamin C in two ethnically-distinct groups which have different levels of risk for this disease (high risk for Caucasians and intermediate risk for Japanese). It will also include data on the association of this cancer with cigarettes and occupation. An attempt will be made to identify all initially-diagnosed cases on the Hawaiian island of Oahu during the period of the study. For each case, two controls from the general population, matched by sex, race, and age within three years, will be identified and interviewed. The questionnaire and format of the study is similar in design to an ongoing case-control study being conducted by the Harvard School of Public Health in three different populations (including the low risk Japanese in Nagoya, Japan). By this arrangement, we will be able to compare the findings between the Japanese in Hawaii and Nagoya, as well as between the Caucasians and Japanese in Hawaii to identify factors which may contribute to the difference in risk between the respective groups.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. $66,158

3.0634,

EVALUATION OF LOW LEVEL PLUTONIUM AND CANCER

C.J. Johnson, Jefferson County Health Dept., *260 S. Kipling St., Lakewood, Colorado* 80226 (R01 CA 25729-02)

Because of documented contamination of a large area of land with plutonium and other transuranic radionuclides in the vicinity of the Rocky Flats nuclear weapons plant in the Denver Standard Metropolitan Statistical Area, there is community concern regarding possible health effects in populations living in this area as well as concern for the safety of further residential development near the plant. A preliminary study of age-corrected cancer death rates in eight contaminated census tracts around the plant compared with a control area of 19 census tracts with a similar population in a relatively uncontaminated part of the S.M.S.A. disclosed a significant increase in deaths from Leukemia and lung cancer in the contaminated area. The study has been expanded to evaluate incidence and mortality rates of leukemia, lung cancer, and other types of cancer in census tract areas selected by concentrations of plutonium in soil or in surface respirable dust. The first phase of the study is the evaluation of cancer incidence in the contaminated and uncontaminated census tract areas of the S.M.S.A., utilizing data from the Third National Cancer Incidence Survey of 1969-71 by the National Cancer Institute. Cancer incidence in the contaminated areas, corrected for age, sex, race, ethnicity, income and education, will be compared to that in the uncontaminated census tract area of the S.M.S.A. by several methods, including regression analysis. The second phase is the evaluation of cancer death rates between 1970 and 1980, and the third phase will be an analysis of cancer incidence in the period 1979-81, using the same study and control areas as in the first phase. Cancer death and incidence data will be supplied by the Colorado Health Department, Division of Vital Statistics and the Colorado Cancer Registry. The effects of exposure to small concentrations of plutonium and other transuranics on a general population living in a contaminated area has never yet been evaluated with this epidemiologic approach, and the results will be of considerable value in selecting sites for plutonium processing plants and nuclear-electric generating plants in relation to population centers.

This study will be followed by a prospective study extending to 1991 (Phase four).

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. $32,792

3.0635,

EPIDEMIOLOGY OF CANCER OF THE RENAL PELVIS AND URETER

R.K. Ross, University of Southern California, School of Medicine, Dept. of Family & Preventive Medicine, *2025 Zonal Ave., Los Angeles, California* 90033 (R01 CA 25669-02)

The proposed research is a continuation of a case-control study of the epidemiology of cancer of the renal pelvis and ureter in Los Angeles County. The study is designed to test for multiple antecedent risk factors or these diseases with special emphasis on prior heavy analgesic consumption, occupational exposures, cigarette smoking, and coffee consumption. The study is in year 2 of a proposed five-year program. The final case group will consist of 200 cases of carcinoma of the renal pelvis and ureter identified by the Los Angeles County/USC Cancer Surveillance Program. Controls are neighborhood controls individually matched to the cases by date of birth (plus or minus 5 years), sex, and race.

Data are obtained by telephone interviews conducted by a trained nurse epidemiologist with questionnaire information focusing on the above items. The study will evaluate the relative importance of each of these suspected risk factors in disease development and, for analgesic usage, the specific analgesic component responsible for increased risk.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. $36,126

3.0636,

DIET AND COLON CANCER IN MAN - THE EFFECTS OF FIBER

A.W. Sorenson, Utah Higher Education System, University of Utah, School of Medicine, Dept. of Family & Community Medicine, *1400 E. 2nd S., Salt Lake City, Utah* 84112 (R01 CA 25580-01)

This case-control study will attempt to find relationships between dietary fiber and colon cancer etiology. The dietary fiber intake of Utah residents, a population at low risk of colon cancer, is believed to be higher than that of other U.S. populations because of the high consumption of home preserved foods, i.e., fruits, vegetables and cereal grains.

Both commercial and home preserved foods will be assayed for the fiber components, cellulose, hemicellulose, lignin, pectin and other selected vitamins, minerals and trace elements thought to be related to colon cancer. Using this nutrient data base and interview schedules, the dietary fiber intake will be determined for Utah colon cancer patients and a randomly selected control group and differences in diet noted. Dietary intake data will also be compared to serum lipids, and trace elements and to fecal steroids found in specimens collected from subsample of cases and controls. A second part of the study is concerned with determining the effect of the various types of dietary fiber on selected enzyme systems thought to be related to colon cancer and other cholesteremic diseases.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. $467,285

3.0637,

PRIMARY PREVENTION OF CANCER IN CHILDHOOD

C.B. Arnold, American Health Foundation Inc., *320 E. 43rd St., New York, New York* 10017 (R18 CA 25521-01)

Nine hundred students, initially ages 9 and 10 years, will take part in a controlled clinical trial in which the major objective will be: (1) To identify major cancer and other disease risk factors. (2) To reduce elevated risk status through planned intervention activities. (3) To reinforce and maintain reduced risk status.

The major outcome sought will be the primary prevention of cigarette smoking through a peer group approach. In addition nutrition activities will seek to improve nutritional habits and decrease clinical indices of overnutrition. Four program components will provide a motivational sequence of events favoring health-related behavior change. These components are (a) screening, (b) return of screening results to child, (c) curriculum education materials, and (d) anti-smoking and other interventions. Evaluation will be done by comparing smoking onset rates in study versus control schools. In addition, overall risk index scores will be compared as determined from annual re-screening and questionnaires.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. $407,204

3.0638,

STUDY OF MALES EXPOSED IN UTERO TO DIETHYLSTILBESTROL

L.T. Kurland, Mayo Foundation, *200 1st St. S.W., Rochester, Minnesota* 55901 (R01 CA 25441-03)

DES (diethylstilbestrol) has been shown, in studies of animals and on a small scale in humans to be associated with genitourinary abnormalities and possible reduced fertility in males exposed to the drug in utero. Human studies to date do not demonstrate an association with cancer in the DES-exposed male. However, preliminary reports of case control studies in progress have suggested such an association. Whether the exposed young men will have an increased propensity to develop cancer at a later date remains speculative.

The proposed study is primarily designed to determine if DES-exposed males are at a higher risk of genitourinary problems or infertility than non-exposed males. This would be accomplished by identifying and examining a cohort of 300 DES-exposed and 300 non-exposed males and by a follow-up over a 2-year period. The DES-exposed males will be identified through the DESAD Project (the study of DES-exposed females) at Mayo Clinic. The young men will be examined for clinical abnormalities and variations in levels of FSH, LH and testosterone. It is expected that the study will give further information regarding the prevalence of abnormalities in DES-exposed males-information relating to the role of DES in teratogenesis and the public health aspects of the problem. Ultimately, this study should lead to greatly increased accuracy of assessment of the health status of the DES exposed men and to recommendations regarding their long-term surveillance (and health care, if needed).

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. $149,867

3.0639,

CERVICAL CANCER EPIDEMIOLOGY IN PANAMA

W.C. Reeves, Gorgas Memorial Inst. of Tropical & Preventive Medicine Inc., Dept. of Virology, *2007 I St. N.W., Washington, District of Columbia* 20006 (R01 CA 25419-02)

In this application we propose to evaluate an unusually high uterine cervical cancer incidence in the Republic of Panama. Panama not only has one of the highest reported cervical cancer rates in the world but also demonstrates marked geographic clustering and a shift in age specific incidence to women in the age group ranging from 20-39 years.

We plan to evaluate this by first recording all cervical cancer cases which occurred between 1974-1978 in a standardized national cancer register. We will then do a seroepidemiologic case-control study compering socioeconomic, sexual and herpes group virus risk factors which operate in cases and controls. In addition we plan to measure other variables which might account for the unique aspects of cervical cancer seen in Panama. Lastly we will evaluate the effects of the existing Pap smear program and collaborate in initiation of a more intensive screening program.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. $108,789

3.0640,

CANCER CONTROL DEVELOPMENT:

C.R. Buncher, Childrens Hospital Medical Center, Cincinnati Cancer Control Program, *3245 Burnet Ave., Cincinnati, Ohio* 45229 (R18 CA 25299-01S1)

The Cancer Control Support and Demonstration effort represents a community-wide program to impact Cincinnati's higher mortality rate and lower level of organized cancer management treatment and service resources. The proposal requests funds to: (1) geographically map cancer in Cincinnati, (2) plan community resources, (3) develop a comprehensive occupational/industrial worker education and survey program and (4) a program to develop basic treatment capabilities within the medical community.

This will be accomplished with a small core staff, a broad base of community nurses and hospital administrators and specialist expertise such as that within Cincinnati's Kettering Laboratory.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. $11,474

3.0641,

COLORECTAL CANCER AMONG CALIFORNIA MORMONS

L. Breslow, University of California, Los Angeles Campus, School of Public Health, Health Service & Hospital Administration, *405 Hilgard Ave., Los Angeles, California* 90024 (R26 CA 25157-02)

Based on our analysis of Church records, religiously active Mormon males in California and Utah compared with U.S. white males have standardized mortality ratio of 60% for colon cancer, 40% for rectum cancer, and 55% for colorectal cancer. Active Mormons abstain from tobacco, alcohol, and caffeine by Church prescription. However, the specific reasons for their low colorectal cancer rates are unknown.

The first objective is to pursue this descriptive mortality data with a prospective epidemiologic study of active California Mormon adults of both sexes. Using a questionnaire survey, demographic, lifestyle, dietary, occupational, and medical history data relevant to colorectal cancer etiology will be obtained on about 20,000 active Mormons, who will subsequently be followed for mortality over a four-year period. Furthermore, Church-based mortality rates covering the years 1960-67 and 1976-79 will be ascertained for all 350,000 California Mormons in order to supplement the existing rates for the years 1968-75. The questionnaire data on dietary and other lifestyle characteristics will be related to the colorectal cancer mortality rates. In addition to intra-Mormon comparisons, active Mormons as a whole will be compared with other California, U.S., and international populations which already have been studied with respect to colorectal cancer.

The second objective is to do a correlation analysis of extensive dietary and lifestyle data from the 1971-73 U.S. Health and Nutrition Examination Survey (HANES) with U.S. and California colorectal cancer mortality rates by country of birth and state of residence. Several etiologic variables of interest, including beef, fat, fiber, and beer consumption, will be examined for consistency with international correlations and previous epidemiologic findings. Special emphasis will focus on Spanish Americans born in Mexico, who have colorectal cancer death rates as low as those of active Mormons. The above analyses should yield new understanding of the etiology and prevention of large bowel cancer in the United States.

BIBLIOGRAPHIC REFERENCES: J. E. Enstrom: Health and dietary practices and cancer mortality among active California Mormons. Banbury Report No.4, Cold Spring Harbor Laboratory. (June 1980), in press. L. Breslow and J.E. Enstrom. Persistence of health habits and their relationship to mortality. Preventive Medicine 9, (1980), in press.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. $80,881

3.0642,

EXPLORATORY STUDIES OF CANCER PATIENT DATA CONTROL

S.J. Cutler, Georgetown University, School of Medicine, Dept. of Community & Family Medicine, *3800 Reservoir Rd. N.W., Washington, District of Columbia* 20007 (R10 CA 25146-03)

This application provides for support to enable the Epidemiology and Statistics Unit of the Georgetown University component of the Georgetown University-Howard University Comprehensive Cancer Center (the Vincent T. Lombardi Cancer Research Center), under the direction of Sidney J. Cutler, Sc.D., Professor, Department of Community and Family Medicine, further develop and maintain an effective computerized cancer information system and epidemiologic research program. The system, using codes, definitions, and procedures compatible with the Centralized Cancer Patient Data System, will help promote active collaboration between Georgetown University and Howard University and will be the basis for the development of a community-oriented epidemiological research program. Data on approximately 1,000 new cancer patients plus information on an additional 3,500 active cases are entered into the data base each year and utilized for analyses of patient characteristics, treatment and its end-results, and other descriptive reports. These analyses should provide clues on trends and patterns which warrant special studies, and any pertinent data will provide Georgetown Medical Center committees and the Cancer Coordinating Council of Metropolitan Washington means for implementing or changing cancer control programs or medical care policies.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. $23,655

3.0643,

VARIATION IN CANCER PATIENT SURVIVAL BY RACE

Z.H. Bentwich, Kaplan Memorial Hospital, Dept. of Medicine & Clinical Immunology, *P.O.B. 1, Rehovot, Israel* (R01 CA 24418-03)

OBJECTIVES: Comparative study of survival of Gastrointestinal cancer patients in Israel, as a function of ethnic background, and immune response.

Israel has well defined ethnic populations differing genetically (HLA) as well as in cultural habits (diet, family size, use of health services). Marked differences in the incidence of GI cancer has been recorded between these populations, i.e. the incidence among East European Jews being much higher than that among Afro-Asian Jews. There is also a suggested difference in the fatality rate among these populations.

In the proposed study approximately 200 new GI cancer patients will be studied prospectively in the course of 4 years. Their survival according to their ethnic background will be determined and correlated with immune status during the course of the disease. The following immune parameters will be determined sequentially: a) General immune response - humoral response (serum Ig, antibodies to Fc and Fab, antinuclear antibodies, circulating immune complexes) and cellular immume response (mitogen response). b) Tumor immunity - 1) Leucocyte adherence inhibition (LAI) assay for tumor associated antigen. 2) CEA 3) Analysis of lymphoreticular cell infiltration around tumor cellular response to autologous tumor tissues.

In the analysis of the data, age, sex, stage and type of tumor will all be taken into consideration.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. $47,853

3.0644,

ENDOMETRIAL CANCER EPIDEMIOLOGY AND CONTROL

P. Greenwald, State Bureau of Cancer Control, *Empire State Plaza, Tower Bldg. Rm. 565, Albany, New York* 12237 (R01 CA 24367-03)

This epidemiologic study of endometrial cancer monitors the incidence, severity, and mortality trends in a sample of cases reported to the New York State Cancer Registry during the years 1971 through 1981. Cases will be validated through histologic re-examination and re-staging of this sample. This will indicate if incidence is increasing for both advanced and early stages of the disease, and what effect this may have on future mortality rates.

The epidemiologic case-control component of the research focuses on the association between endometrial cancer and the use of estrogens. Specifically, we wish to determine if estrogen use is associated with advanced stage disease, and if there is a risk decline following termination of use. Additionally, we will ascertain through multivariate methods the factors which discriminate low grade and/or early stage cases from high grade, advanced stage cases. One hundred and fifty advanced stage and 200 early stage newly diagnosed endometrial cancer patients will be interviewed. A case to control ratio of 1:2 for advanced stage cases and 1:1 for early stage cases will be used.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. $160,953

3.0645,

AN EPIDEMIOLOGIC STUDY OF CANCER OF THE OVARY

G.B. Hutchison, Harvard University, Boston Campus, School of Public Health, Dept. of Epidemiology, *55 Shattuck St., Boston, Massachusetts* 02115 (R01 CA 24209-02)

This epidemiologic study is designed to identify rsk factors for the several histologic types of ovarian cancer using caso-control methodology. Exposures of specific interest are occupation, diet, medical and reproductive history, and drug use, particularly oral contraceptives and estrogens for menopause. Our goal is to identify risk factors that primarily may be modified to reduce disease ocurrence or that secondarily may be of clinical usefulness in defining the woman at risk for ovarian cancer, to achieve better control of the course of the disease.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. $80,553

3.0646,

ENVIRONMENTAL EXPOSURES AND CHILDHOOD LEUKEMIA

T.W. Pendergrass, Childrens Orthopedic Hospital & Medical Center, Division of Hematology & Oncology, *4800 Sand Point Way N.E., Box C-5371, Seattle, Washington* 98105 (R23 CA 24186-03)

Little is known of the role of parental occupational exposures or perinatal drug ingestion in the subsequent development of childhood acute lymphocytic leukemia. This study has two goals: a) development of a method for obtaining information on parental occupational and perinatal drug exposures, and b) testing of this method on parents of children diagnosed as having acute lymphocytic leukemia, between 1972 and 1979, in the State of Washington. Cases have been identified in the three major hospitals treating children with cancer in the State. For each case a hospital control has been selected to attempt to control for any differences in recall between parents of ill and presumably well children. General population controls will be obtained by use of a random digit dialing method. To date, 80% of case parents have been interviewed. Occupational data include a detailed review of occupational history and review of each job-related exposure. A detailed review of perinatal drug ingestion is obtained.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. $28,504

3.0647,

CASE-CONTROL STUDY OF URINARY CANCER, COPENHAGEN

O.M. Jensen, Finseninstitutet, Danish Cancer Registry, *Strandboulevarden 49, DK2100 Copenhagen, Denmark* (R26 CA 24119-03)

Case-control studies of the aetiological role of occupational exposures, and personal habits including smoking, coffee-drinking and use of artifical sweeteners and analgesics by comparing cases of bladder cancer, cancer of the ureter and cancer of the renal pelvis with controls drawn from the general population as well as matched hospital controls for renal pelvis and ureteral cancer are ongoing. Relative risk estimates as well as attributable risks will be derived for each factor individually. The interaction between factors will be investigated.

The final study size will be some 550 cases of bladder cancer, 1100 group matched population controls, and some 150 ureter and pelvis carcinoma-cases to be compared with 450 age- and sex-matched hospital controls. Data collection is estimated to be finished by June 1981.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. $4,334

3.0648,

IMMUNOBLASTIC LYMPHADENOPATHY AND HISTIOCYTIC LYMPHOMA

R.K. Ross, University of Southern California, School of Medicine, Dept. of Family & Preventive Medicine/Pathology, *2025 Zonal Ave., Los Angeles, California* 90033 (R01 CA 24082-02S1)

We are studying the epidemiology of histiocytic lymphomas, and a possibly related disease entity, immunoblastic lymphadenopathy (IBL), in Los Angeles County. The study is designed to test for multiple antecedent risk factors for these diseases, with special emphasis on therapeutic agents previously implicated. The study is a two-part case-control study. The case group will consist of 100 cases of histiocytic lymphoma identified by the Los Angeles County/USC Center Surveillance Program, plus 50 cases of immunoblastic lymphadenopathy identified by the pathologic consulting service of Dr. Robert Lukes. Data will be obtained by interviews conducted by a trained nurse epidemiologist. Questionnaire information will focus on therapeutic history, environmental exposures at work and at home, allergic and other possible relevant past disease history, and family history of tumors. Medication history will be validated by contacting personal dentists and physicians of cases and controls.

In addition, venous blood specimens will be obtained on a group of IBL and histiocytic lymphoma cases and controls in order to help characterize the immune responses and assist in determining the affected cell types of these patients.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. $52,826

3.0649,

UCLA CANCER CONTROL DEVELOPMENTAL OUTREACH GRANT

J.W. Cullen, University of California, Los Angeles Campus, School of Medicine, Center for the Health Sciences, *2025 Zonal Ave., Los Angeles, California* 90024 (R18 CA 23974-03)

This is a renewal application for programmatic and administrative core support for the Division of Cancer Control, UCLA Jonsson Comprehensive Cancer Center. The specific aims and objectives of this grant focus on the planning, evaluation, administration and program maintenance needs of the Division in order to manage the Cancer Control Program of this Center. The objectives of the application are the following: 1. To demonstrate need for core support by describing programs/activities in selected cancer control intervention which require personnel and other core resources for implementation. 2. To secure the personnel necessary to continue the planning, development and implementation of cancer control programs in prevention, psychosocial rehabilitation, and professional and public education. 3. To establish evaluation and epidemiology core support services to assist in the planning, organization and implementation of all cancer control activities in the specific intervention areas noted above.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. $653,801

3.0650,

THERAPY-INDUCED GROWTH DISORDERS IN CHILDHOOD CANCER

S.C. Duck, Medical College of Wisconsin, School of Medicine, Dept. of Pediatrics, *561 N. 15th St., Milwaukee, Wisconsin* 53233 (R01 CA 23968-03)

Acute lymphocytic leukemia (ALL) is the most common malignancy of childhood. Currently about 50% of children diagnosed as having ALL will survive for 5 or more years. With improved survival times, many serious adverse effects of cancer therapy are being manifested: some of these are leucoencephalopathy, disrupted growth and development and neuroendocrine dysfunction. At present it is uncertain whether one can predict which children will experience these particular adverse effects and what if anything can be done to prevent expression of hormone dysfunction. The specific objectives are: 1. To establish if at any stage of therapy for ALL, there is an impairment of the neuroendocrine-endocrine end-organ axis, and to what extent such impairment is exposed clinically by disturbed growth and development. 2. To establish the relative 'necessity' and 'potential benefit' of appropriately timed trials of exogenous hormone therapy based on the temporal characteristics of these endocrine disruptions. Methods will involve four-year prospective evaluation of newly diagnosed children with ALL. The new patients will be enrolled during the first 2 years of the study, allowing 2-3 year follow-up for the survivors. Each patient will be evaluated by extensive, sequential anthropometric parameters, bone age analyses, and basal and 'stress'-released hormone levels, measured at each phase of cancer therapy.

BIBLIOGRAPHIC REFERENCES: Duck, S.C., Drucker W.D.: Cortisol response to ACTH1-24 and insulin-induced hypoglycemia in children treated for acute leukemia. The Endocrine Society (Washington, D.C.), 1980, in press.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. $70,561

3.0651,

A PROSPECTIVE COHORT FOR RISKS IN BREAST CANCER

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This investigation is designed to follow prospectively a cohort of approximately 121,000 women, ages 30-54, in whom exposure to oral contraceptives, estrogens, cigarette smoking, and hair dyes has been documented. Morbidity and mortality for a variety of cancers including breast, endometrial, ovary, lung and others, as well as cardiovascular events, benign breast disease, and other benign obstetric and gynecologic events such as infertility and outcome of pregnancies will be followed. The approach is by mail questionnaire with further documentation of events by review of hospital records and pathologic specimen.

The cohort was defined from the register of Registered Nurses collected by the American Nurses' As-

sociation in 1972 and recorded at the time as being married women. Those women who on January 1, 1976 were between the ages of 30 - 54 and who responded to an inquiry in 1976 which collected - besides data mentioned above - information on menstrual history, height, weight, current contraceptive status and family history of myocardial infarction and breast cancer in female relatives constitute the cohort. In addition, an estimate of social class status at age 16, based upon parental occupations, was obtained. Personal past medical events related to cardiovascular, thromboembolic, benign and malignant breast disease, and other cancers were collected also. These variables will be used in multivariate models to define levels of risk of the above mentioned outcome events.

The 190 biennial assessment will add a detailed dietary evaluation as well as continue to collect outcome events.

BIBLIOGRAPHIC REFERENCES: Rosenberg, L., Hennekens, C.H., Rosner, B., Belanger, C., Rothman, K.J., and Speizer, F.E.: Oral Contraceptives use and non-fate myocardial infarction. Amer. Journal of Epidemiology, 111:59, 1980. Bain, C., Speizer, F.E., Rosner, B., Hennekens, C.H., and Belanger, C.: Family history of breast cancer as a risk indicator for the disease. American Journal of Epidemiology, 111:301, 1980.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. $199,570

3.0652,

IMMUNOPATHOLOGY OF THE X-LINKED LYMPHOPROLIFERATIVE SYNDROME

D.T. Purtilo, University of Massachusetts, Medical School at Worcester, School of Medicine, Dept. of Pathology, *55 Lake Ave. N., Worcester, Massachusetts* 01605 (R01 CA 23561-03)

Our objective is to study the immunopathology of the X-linked recessive lymphoproliferative syndrome (XLP) which is expressed phenotypically as diverse lymphoproliferative disorders: acquired agammaglobulinemia, fatal infectious mononucleosis, or malignant lymphoma. Three comprehensive approaches are proposed: (1) Development of a registry to ascertain the prevalence, delineation of phenotypic expressions, and development of diagnostic criteria. Cases will be ascertained by referrals and review of medical literature; cases in tumor registries and in pediatric and general hospitals will also be included. (2) Patients with the XLP will be evaluated for general immunocompetence using clinical, hematopathological and immunological and virological techniques. Blood, bone marrow, biopsy and autopsy specimens will be studied intensively using the above techniques. Males with XLP are probably immunodeficient to Epstein-Barr virus (EBV) and hence, we will test our hypothesis by demonstrating: a) spontaneous outgrowth of EBV-infected B cells in vitro; b) EBV shedding in saliva; c) failure to develop antibody to EBV; and d) abnormal autologous T cell responses to B cells infected by EBV in vitro. Testing is important diagnostically and could identify the immunopathogenetic mechanisms of the XLP. (3) Genetic screening for affected males with XLP and female carriers is being done by studying the Xga blood group and oculocutaneous markers, measuring general and EBV-specific immunocompetence, and detecting abnormal lymphocytes with heteroantisera raised to lymphocytes of patients and HLA-matched female siblings. Karyotyping of lymphoblastoid cell lines of patients will determine whether chromosomal breakage and marker chromosomes occur following infection by EBV in males with XLP. The development of a repository of their frozen sera, saliva and cultured lymphoblastoid cells for future studies is another objective of our study.

BIBLIOGRAPHIC REFERENCES: Purtilo, D.T., Sakamoto, K., Paquin, L.A., Yang, J.P.S., Sparling, S., McAuley, R., Hutt, L.M., and Beberman, N.: Persistent transfusion-associated infectious mononucleosis with transient acquired immunodeficiency. Am. J. Med. 68:437-440, 1980. Purtilo, D.T.: Epstein-Barr virus-induced oncogenesis in immune deficient individuals. Lancet i:300-303, 1980.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. $132,711

3.0653,

CASE-CONTROL STUDY OF MALIGNANT MELANOMA

A.K. Bahn, University of Pennsylvania, School of Medicine, Dept. of Research Medicine, *36th & Hamilton Walk, Philadelphia, Pennsylvania* 19174 (R01 CA 23544-02)

This is a two-year case-control study of 225 cases and matched controls resident in Northern New Jersey. All white males between the ages of 30 and 64 years in the selected counties with a diagnosis of malignant melanoma who were first diagnosed between July 1, 1978, and December 30, 1980, will be eligible as cases. Age-sex-race population matched controls will be selected.

Information obtained from records of private dermatopathology laboratories and hospital pathologist records will be used to determine cases aided by the New Jersey, New York and Pennsylvania cancer registers. All cases will be ascertained as malignant melanoma by a board certified dermatopathologist. Home interviewing of cases and controls will obtain information on: residence history, work exposure history (particularly to chemical substances), sun exposure, history of cancer in the family and history of chloracne dermatitis.

Preliminary work has provided suggestive evidence of a large relative risk of malignant melanoma among workers exposed to polychlorinated biphenyls (PCBs) and other chemicals. New Jersey has been selected as the locale for the study because this state has the largest number of workers in chemical and related industries in the nation and because high melanoma mortality rates (for an area outside the South) have been noted among males.

Investigation will be carried out to determine if there are significant differences between cases and controls in exposure to chemical substances, exposure to sunlight, or a previous history of chloracne dermatitis.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. $91,104

3.0654,

EPIDEMIOLOGY OF MYELOMA AND LYMPHOCYTIC LEUKEMIA

N.S. Weiss, Fred Hutchinson Cancer Research Center, Program in Epidemiology & Biostatistics, *1124 Columbia St., Seattle, Washington* 98104 (R01 CA 23350-02)

We propose a collaborative case-control study to identify and evaluate risk factors for multiple myeloma and chronic lymphocytic leukemia. Cases of these diseases will be identified through population-based cancer registries in Washington State, Utah, Detroit and Atlanta, over a three-year period. Control subjects will be identified from the general populations from which the cancer cases arose. Probability sampling methods, such as area sampling and random digit dialing, will be used for selection of controls. Cases and controls will be interviewed with particular attention to variables related to chronic antigenic stimulation e.g., past illnesses, allergies, drugs, etc. We will also obtain detailed residence and occupational information in an attempt to generate new etiologic hypotheses.

BIBLIOGRAPHIC REFERENCES: Weiss N.S., Peterson A.S.: Racial variation in the incidence of the histologic types of ovarian cancer. Amer J. Epid 107:91-95, 1978. Weiss N.S., Szekely D.R., English D.R., Schweid, A.I.: Endometrial cancer in relation to patterns of menopausal estrogen use. JAMA 242:261-264, 1979.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. $189,346

3.0655,

CANCER CONTROL DEVELOPMENT AND SUPPORT GRANT AT FOX CHASE

M.H. Donaldson, Fox Chase Cancer Center, *7701 Burholme Ave., Philadelphia, Pennsylvania* 19111 (R18 CA 23321-03)

The primary purpose of this proposal is to expand and strengthen the core resource capability of the Fox Chase Cancer Center to conduct and stabilize an effective program in cancer control. A model mechanism of a multidisciplinary team of health professionals with support from complementary professions - such as epidemiology, health education, biostatistics, health planning and communications - will be used to plan and conduct site specific demonstration projects on colo-rectal cancer and melanoma. Screening and early detection and targeted education projects will also be performed. Support is also requested to establish new developmental projects.

BIBLIOGRAPHIC REFERENCES: Hyams, J.S., Donaldson, M.H., Metcalf, J.A. and Richard K. Root: Inhibition of Human granulocyte function by methotrexate. Cancer Research 38(3):650-655, 1978.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. $961,294

3.0656,

LUNG CANCER AND VITAMIN A

A. Lopez, Louisiana State University, Medical Center, School of Medicine, Dept. of Medicine, *1542 Tulane Ave., New Orleans, Louisiana* 70112 (R01 CA 23205-02)

The objective of this research project is to ascertain the relationship between vitamin A and lung cancer. This study is being carried out in Louisiana, a state known to have very high incidence of lung cancer. Preliminary analysis of available data (National Nutrition Surveys and HANES) indicates a negative correlation between beta-carotene (precursor of vitamin A) and mortality rates due to respiratory system cancers and also with mortality from all neoplasms, but not with total deaths. We have also initiated case control studies in which dietary intakes and vitamin A concentration in hepatic tissue of patients who died of lung cancer will be compared with those in appropriate controls. Studies have also been started in living patients suffering from lung cancer. Serum level concentrations and dietary intakes of vitamin A are measured and compared with those from matched controls. The information to be obtained from these studies would provide evidence for the suggested relationship between vitamin A (and/or other nutritional factors) and lung cancer.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. $92,598

3.0657,

STUDIES OF CHILDHOOD SOLID TUMORS

J.V. Simone, St. Jude Childrens Research Hospital, *332 N. Lauderdale St., P.O. Box 318, Memphis, Tennessee* 38101 (P01 CA 23099-03)

The overall objective of this project is to develop a coordinated effort to improve the results of treatment of children with solid tumors. This goal is to be achieved through the systematic development of specific treatment regimens for primary care of children with solid tumors as well as for the testing of new agents in Phase I and Phase II studies. In addition, there will be an attempt to develop an epidemiological approach to the children with cancer seen at St. Jude Hospital and also to develop a pharmacological approach to the altered drug pharmacokinetics in children with cancer. The goals set for the current year, the second in this project, are: 1) To develop a multidisciplinary approach to the treatment and evaluation of children with neuroblastoma. 2) To develop a multidisciplinary treatment program for children with osteosarcoma. 3) To plan and initiate an epidemiological program involving the solid tumor patients at St. Jude Hospital with special reference to the unusual occurrence of adenocarcinoma of the colon in childhood and adolescence in this region. 4) To investigate in animal systems and later in children with solid tumors the mechanism by which biotransformation of drugs is altered in experimental neoplasms and the relationship of this effect to polyamines. 5) To study the biological activity of new anticancer chemotherapeutic drugs in children with solid tumors using Phase I and Phase II type testing programs.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. $848,064

3.0658,

SECOND CANCERS IN PATIENTS WITH HODGKIN'S DISEASE

G.B. Hutchison, Harvard University, Boston Campus, School of Public Health, Dept. of Epidemiology, *55 Shattuck St., Boston, Massachusetts* 02115 (R01 CA 22849-04)

GENERAL OBJECTIVE: To determine the long-range hazard, in terms of carcinogenesis, of radiotherapy and chemotherapy used in treatment of Hodgkin's disease.

SPECIFIC AIMS: (1) To determine the incidence of second primary malignancies in patients treated with modern modalities for primary Hodgkin's disease. (2) To determine the variation in incidence of second primary malignancies by modality of therapy for pri-

mary Hodgkin's disease, comparing - (a) No intensive treatment; (b) Intensive radiotherapy alone: (c) Intensive chemotherapy alone; (d) Intensive both. (3) To determine the variation in incidence of second primary malignancies by specific drugs used in treatment of Hodgkin's disease. (4) To determine the variation in incidence of second primary malignancies by time since initiation of therapy for Hodgkin's disease. (5) To determine the distribution by organ site of second primary malignancies. (6) To determine the variation in incidence of second primary malignancies as in aims (1), (2), (3), and (4) above for all cancers, for leukemias only, and for all cancers other than leukemia.

METHODS: A cohort study is planned, using retrospective data on patients treated in 1940 to 1975 and followed to 1980 or death before 1980 and using prospective data on these same patients followed to 1984. Patients with Hodgkin's disease will be ascertained through registration records of large cancer therapy centers. The total study population will consist of 3000 patients (1500 diagnosed before 1970 and 1500 diagnosed in 1970-75).

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. $63,032

3.0659,

CANCER AMONG HOUSEHOLD CONTACTS OF ASBESTOS WORKERS

H.A. Anderson, City University of New York, Mount Sinai School of Medicine, School of Medicine, Dept. of Community Medicine, *1 Gustave L. Levy Pl., New York, New York* 10029 (R01 CA 22792-03)

The increased cancer risk (lung, pleural, mesothelioma and colon) associated with direct occupational exposure to asbestos has been well documented. Growing evidence of an increasing prevalence of asbestos associated disease among 'bystanders' (non-asbestos trade employees working in close proximity to asbestos workers) is being described. Concern has been extended to members of asbestos worker households (over 70 mesotheliomas reported in the literature). The current study will be the first to systematically examine the mortality experience of a well defined cohort of household members of amosite asbestos workers. During Year I, cohort workers were identified utilizing pre-existing records. Year II has been spent tracing the cohort and establishing vital status. The cohort now contains 2,205 members; all but 511 (23%) have had their vital status determined. Of 1,694 whose status has been updated, 1,164 are known alive and 620 deceased. Death certificates are being gathered and 553 have been obtained. Available information has been transcribed onto computer readable cards. Where death certificates indicate that death occurred in a hospital, and especially for those on whom a post-mortem was performed, written permission has been sought to acquire this information. Identification, tracing and updating of the cohort is proceeding as scheduled and is expected to reach 95% of the cohort.

The information from this study, when combined with the experience of index workers who have been occupationally exposed to the same fiber, from the same source, in the same years and geographical location, will make it possible to establish risk levels for these various asbestos exposures. It should also indicate whether the risk of household asbestos exposure warrants consideration by government, labor and industry and any proposed for surveillance of asbestos exposed individuals.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. $75,412

3.0660,

BIOMATHEMATICAL APPROACHES TO CANCER

A.G. Knudson, Inst. for Cancer Research, *7701 Burholme Ave., Philadelphia, Pennsylvania* 19111 (R01 CA 22780-03)

This is a multi-investigator project that applies mathematical and statistical methods to the etiology of cancer and to the elucidation of biological mechanisms relevant to cancer biology. (1) Data on experimental cancers and on the incidences of various human cancers are being compared with mathematical models that allow for growth of stem cells and the occurrence of two or more critical cancer mutations. (2) Selected international populations are being investigated for the development of hepatic cancer following infection with hepatitis B virus. Immune responses are monitored and the roles of congenital viral infection, nutritional status, and serum iron and ferritin levels evaluated. (3) Linear discriminant analysis is applied to data on the age-specific incidences of cancers of various kinds in rats as a function of early nutritional history with the objective of discovering diets conducive to reduction in risk of neoplasia. (4) The interactions of carcinogens with nucleic acids of enzymes with substrates and metals, and of proteins with drugs are being studied by X-ray crystallography and NMR spectroscopy. Theoretical molecular models are built and 3-dimensional representations displayed graphically. (5) Mathematical programs are being developed to permit the calculation of the number of molecules of a particular RNA species at a given time following viral infection and to facilitate the analysis of viral nucleotide sequence information. (6) Stochastic models are being developed for the study of antibody diversity, the analysis of family clusters, the mechanism of bacteriophage attachment, and the analysis of RNA processing during development. (7) The thermodynamic theory of fluctuations is being applied to epigenetic variation in cell biology. (8) The growth of cells in culture is being simulated by computer in order to interpret data on cell cycles. (9) New methods are being developed for the analysis of clinical research data.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. $274,095

3.0661,

EPIDEMIOLOGY OF BRAIN TUMORS

F.H. Hochberg, Massachusetts General Hospital, Neurology Service, *32 Fruit St., Boston, Massachusetts* 02114 (R01 CA 22533-03)

This is a case-control study involving 230 patients and 230 'best friend' controls designed to elucidate risk factors in the development of primary glial tumors of the brain. The control, who is provided by the patient, is a person of the same sex, within 5 years of age, living within 100 miles and not a blood relative. Both patients and controls are given a 45 page questionnaire to complete. Telephone followups are performed to further clarify responses. Areas covered by the questionnaire include family history, medical background, environmental and occupational exposures.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. $79,299

3.0662,

A PILOT DEMONSTRATION DETECTION PROGRAM

V.F. Greco, Community Cancer Corp. of Luzerne County, *Box 1345, Wilkes Barre, Pennsylvania* 18703 (R18 CA 22190-03)

This pilot detection program is the first effort in implementing cancer control plan, begun by area physicians several years ago and supported in part by a Cancer Center Planning Grant. The pilot proposes to use specially trained nurse clinicians to perform screening tests and examinations in Luzerne County, Pennsylvania. During the three-year program, nurses, recruited from the community and trained at Hahnemann Oncologic Institute, will perform complete screening examinations in two hospital-based clinics. A projected population of 10,944 people over the age of 40 will be screened for cancer of the mouth, throat, cervix, prostate, breast, skin, and rectum.

Demonstration pilot efforts include the training and utilization of nurse clinicians in this unique fashion, study of variables in patient participation, acceptance of nurse clinicians by both patients and physicians, examination of the validity and reliability of this form of community based cancer screening, analysis of cost variables and the progressive development of programmatic self-support by the community. The pilot is further designed to encourage the introduction of a single county tumor registry and to encourage additional epidemiologic research in future years although funds are not requested for these purposes here.

The applicant is the Community Cancer Corporation of Luzerne County (CCC), a new non-profit corporation which has been created to plan and manage this and other cancer related service projects. The corporation and indeed this pilot request are an outgrowth of the extremely high incidence of cancer in the county, the high degree of physician and community support for the project and the potential applicability of the pilot to other similar regions of the country.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. $166,594

3.0663,

THE EPIDEMIOLOGY OF MULTIPLE MYELOMA

S. Grufferman, Duke University, School of Medicine, Dept. of Community Health Science/Pediatrics, *Box 3711, Durham, North Carolina* 27710 (R01 CA 22104-04)

The major objective of this case-control study is to learn more about the epidemiology of multiple myeloma (MM). Surprisingly little is known about the epidemiology of MM, available information is dated, and there are few etiologic hypotheses. To our knowledge, this will be the first case-control study specifically involving MM cases.

The study will have 2 major components, a medical record review of 450 MM cases and an interview study of an additional 150 MM patients, both components involving matched hospital controls. In addition to seeking associations with available demographic variables, associations between MM and socioeconomic class (S-E), occupation, environmental exposures, diet, and diseases causing 'immune stimulation' will be evaluated. Particular attention will be paid to evaluation of the association between S-E class and MM. Paradoxically, MM is reported as being positively associated with high S-E class whereas incidence rates are twice as high in blacks as in whites.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. $106,297

3.0664,

STUDIES ON CANCER PATIENT DATA CONTROL (CCPDS)

R.B. Warnecke, Illinois Cancer Council, *36 S. Wabash Ave., Suite 700, Chicago, Illinois* 60603 (R10 CA 21898-04)

The objective of this proposal is to develop a centralized statistical data base for the Illinois Comprehensive Cancer Center. The data base will contain a standard set of items that are uniformly defined and coded with a standard coding scheme on all patients of the Center, and will enable participation by investigators associated with the Illinois Cancer Council in cooperative research protocols. The proposed work will also provide a base of support for the development of a regional multi-faceted data base, linked by a uniform patient index combining data on all cancer patients in the region participating in ICC projects including the CCPDS, regional and national protocols, and case-control studies of etiology and/or cancer control initiatives.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. $142,717

3.0665,

STUDIES OF OCCUPATIONAL CANCER

A.E. Blair, U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst., Occupational Studies Section, *9000 Rockville Pike, Bethesda, Maryland* 20205 (Z01-CP-04480-04 EEB)

This project involves identification of cancer patterns among occupational groups that may reflect exposures in the work environment and investigation of methodological issues in occupational studies. Study groups are selected because of 1) known or potential exposure to established or suspect carcinogens, 2) prior reports suggesting an unusual cancer experience for the group, 3) requests by outside institutions, and 4) availability of useful resources. Resources used included employment and death records maintained by companies, labor unions or professional organizations, and records from government agencies. Studies during the past year include cohort mortality studies of persons employed in dry cleaning, non-agricultural pest control, chemical plants, non-ferrous smelters, taconite mines, jewelry manufacturing, embalming, welding, shipyards, chemical and medical laboratories, ship inspection, and hematite mining. Proportionate mortality studies being conducted involve tobacco workers, petrochemical workers, pottery workers, fur dyers, veterinarians, and embalmers. Death certificates are used to investigate occupational origins of leukemia, Hodgkin's disease, non-Hodgkin's lymphoma, multiple myeloma, and cancers of the prostate and colon.

BIBLIOGRAPHIC REFERENCES: Blair, A.: Mortality among workers in the metal polishing and plating industry, 1951-1969. J. Occup. Med. 22: 158-162, 1980. Blair, A. and Hayes, H.M.: Cancer and other

causes of death among U.S. veterinarians, 1966-1977. Int. J. Cancer. 25: 181-185, 1980.
SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. funds n.a.

3.0666,
METHODOLOGIC STUDIES IN EPIDEMIOLOGY

W.J. Blot, U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst., Analytical Studies Section, *9000 Rockville Pike, Bethesda, Maryland* 20205 (Z01-CP-04500-03-EEB)

The objectives of this project are to develop, adapt, expand, and evaluate methodological procedures useful in epidemiologic studies of cancer. Methods of design and analysis of epidemiologic studies were given particular emphasis with attention focusing on the adaptation and evaluation of multivariate logistic models for analysis of case-control data. Investigation of general epidemiologic techniques for studying environmental cancer continued, including publication of a text and series of papers on biostatistical methods and review of methods to evaluate the magnitude of low-dose radiation risks.

BIBLIOGRAPHIC REFERENCES: Decoufle, P., Thomas, T.L., and Pickle, L.W.: Comparison of the proportionate mortality ratio and standardized mortality ratio risk measures. Am. J. Epidemiol. 111: 263-264, 1980. Lubin, J.H.: Some efficiency comments on group sizes in study design. Am. J. Epidemiol. 111:453-457, 1980.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. funds n.a.

3.0667,
STUDIES ON CANCER PATIENT DATA CONTROL

S.H. Walker, Colorado Regional Cancer Center Inc., Division of Epidemiology & Statistics, *1655 Lafayette St., Suite 301, Denver, Colorado* 80218 (R10 CA 21878-04)

The objective of this proposal is to implement an operational plan and mechanisms for the Colorado Regional Cancer Center Data Control System to include standardized input of statistical data, computerized processing, quality control procedures, statistical analysis, and reporting. The Data Control System will facilitate evaluation of Cancer Center activities, provide the capability of sharing data with other Cancer Centers, and support epidemiological and clinical research activities in institutions affiliated with the Colorado Regional Cancer Center, Inc. Activities will support the establishment of the 'Statistical Data Base of a Comprehensive Cancer Center' as specified in objectives established by the National Cancer Advisory Board for the Cancer Centers Program. A model computerized tumor registry will be developed in the University of Colorado Hospital to include on-line data entry and editing and computer generation of reports. Methods and procedures developed and implemented will be transportable to other institutions. Assessing patient load, referral and survival patterns, incidence and etiology of various neoplasms, and effectiveness of treatment programs in numerous institutions will be facilitated by implementation of the Data Control System.

BIBLIOGRAPHIC REFERENCES: Franz, L.W., Ferguson, S.W., Sutherland, J.V., Berg, J.W. and Walker, S.H. (1978) Cancer in Colorado. American Cancer Society, Colorado Affiliate, March 1978. In press.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. $89,784

3.0668,
RADIATION-INDUCED THYROID CANCER

A.B. Schneider, University of Chicago, Michael Reese Hospital & Medical Center, Dept. of Medicine, *2929 S. Ellis Ave., Chicago, Illinois* 60616 (R01 CA 21518-05)

The major objective of this research proposal is to study radiation-induced thyroid cancer by a coordinated program of clinical and basic endocrinological investigations. The clinical studies are designed to determine the current risk and continuing incidence of radiation-induced thyroid cancer and to evaluate methods of diagnosis and medical and surgical approaches to treatment. This will be accomplished by a longitudinal study of patients who have been evaluated at Michael Reese Hospital because of a history of childhood head and neck irradiation. Of 5,200 patients who were so treated, 1,700 have been examined and another 1,400 have been contacted. In this population there is a 32 percent prevalence of nodules and among those who have had surgery 36 percent have had thyroid cancer. Follow-up examination of patients who were initially normal will provide an estimate of the continuing incidence of radiation-induced thyroid cancer. Follow-up examination of patients who were initially abnormal will provide an evaluation of the various methods of treatment which have been used. Together these will provide the information necessary to develop clinical guidelines for the care of persons with a history of head or neck irradiation.

Laboratory studies will focus on the role of serum thyroglobulin in the diagnosis of thyroid tumors. Plasma thyroglobulin is elevated in majority of patients with thyroid nodules and in 12 percent of patients who have a history of irradiation but who otherwise appear completely normal. This project will determine whether an elevated thyroglobulin level indicates an especially high risk for the formation of thyroid nodules and study the role of serum thyroglobulin measurements in managing patients with thyroid cancer.

Detailed studies of the molecular properties of serum thyroglobulin using physical-chemical methods will continue in order to improve its diagnostic usefulness and to understand how it enters the circulation. The mechanisms controlling thyroglobulin synthesis and secretion will be studied by perfusion of isolated thyroid cells and follicles. The Wollman transplantable thyroid tumor line 1-1C2 will be used as a model system to study plasma thyroglobulin and thyroid cancer.

BIBLIOGRAPHIC REFERENCES: Ikekubo, K., Pervos, R. and Schneider, A.B.: Clearance of Normal and Tumor Thyroglobulin from the Circulation of Rats: Role of the Terminal Sialic Acid Residues. Metabolism 29:673-681, 1980. Ikekubo, K., Jutton, J. and Schneider, A.B.: Radioimmunoassay of Human Thyroglobulin with Use of Thyroglobulin-free Plasma Prepared by Ultracentrifugation as Diluent. Clin. Chem. 26:1566-1568, 1980.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. $60,559

3.0669,
A CANCER CENTER PATIENT DATA SYSTEM

M.D. Keller, Ohio State University, Columbus Campus, School of Medicine, Dept. of Preventive Medicine, *370 W. 9th Ave., Columbus, Ohio* 43212 (R10 CA 21751-04)

This application is submitted in support of the Epidemiology and Biostatistics Unit of the OSU Comprehensive Cancer Center (OSUCCC). The Epi-Stat Unit is responsible for OSUCCC's participation in the Centralized Cancer Patient Data System (CCPDS). Development of the University Hospitals Tumor Registry will continue in accordance with the data collection and analysis procedures recommended by the CCPDS program. In addition, epidemiologic and biostatistical studies will be conducted utilizing the CCPDS and other relevant data bases described in this proposal. The data system will be expanded to meet regional and national needs through collaboration with other tumor registries in Ohio and with other Comprehensive Cancer Centers.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. $76,148

3.0670,
ENVIRONMENTAL EPIDEMIOLOGIC STUDY OF PANCREATIC CANCER

L. Gordis, Johns Hopkins University, School of Hygiene & Public Health, Dept. of Epidemiology, *615 N. Wolfe St., Baltimore, Maryland* 21205 (R26 CA 21642-03S1)

Since pancreatic cancer is now the fourth leading cause of cancer death in the United States, intensive efforts are needed to reduce the impact of this disease. In view of the rapid clinical course of pancreatic cancer and the grim prognosis, it is likely that the greatest hope for progress in treatment of this disease will be through prevention and early detection. A three-part environmental epidemiologic study of pancreatic cancer is therefore proposed to identify specific risk factors and possible etiologic agents and mechanisms. The first phase will describe the changing incidence and mortality rates of pancreatic cancer over a 15 year period in a defined community, metropolitan Baltimore. The second phase of this study will be a case-control investigation of pancreatic cancer patients and various control groups to explore possible etiologic factors; in particular, environmental and occupational characteristics including exposure to chemical agents and to health care environments and occupations. In addition, younger and older cases will be compared with respect to these characteristics, to determine whether pancreatic cancer in the young is the same as in the elderly. Finally, a non-concurrent prospective study will be carried out to determine whether the risk of developing or dying from pancreatic cancer is higher in patients with chronic pancreatitis than in a non-pancreatitis control group. The approaches outlined above are designed to provide the basis for modifying environmental exposures and thus developing measures for preventing the disease. Secondly, the results may permit the identification of populations which are at high risk of the disease who might benefit from close medical surveillance and intensive efforts at early detection using the newer diagnostic techniques currently being developed.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. $43,690

3.0671,
COMPREHENSIVE MODELS FOR CANCER SURVIVAL AND MORTALITY

V.K. Murthy, Cedars Sinai Medical Center, *4833 Fountain Ave., Los Angeles, California* 90029 (R01 CA 21380-03)

The overall objective of this project is to investigate and evaluate the State-of-the-art statistical techniques for the analysis of survival data. Particular emphasis is placed on estimation and hypothesis testing on prognostic factors and treatment effects in the context of competing risks and complicating clinical correlates as related to cancer survival.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. $105,911

3.0672,
STUDIES OF RADIATION-INDUCED CANCER

C.E. Land, U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst., Radiation Studies Section, *9000 Rockville Pike, Bethesda, Maryland* 20205 (Z01-CP-04481-04-EEB)

The objective of this project is to examine cancer incidence and mortality among populations exposed to ionizing and non-ionizing radiation, especially low-dose levels. As pressure mounted to identify the health effects of low-level radiation, a Radiation Studies Section was organized and large-scale studies of irradiated populations initiated. Groups studied include 80,000 Japanese A-bomb survivors, over 100,000 cervical cancer patients treated with radium implants, 20,000 former tuberculosis patients who received multiple chest fluoroscopies, 3,500 children exposed to head and neck irradiation, other patients exposed to diagnostic and therapeutic radiation, workers with histories of occupational exposures to radiation, and the populations of SEER reporting areas with different levels of solar UV radiation. In addition, project members have served on committees and task forces of DHEW, EPA, DOE, NIH, and NCI formulating government responses to current problems associated with health effects of ionizing radiation.

BIBLIOGRAPHIC REFERENCES: Boice, J.D., Jr., Land, C.E., Shore, R.E., Norman, J.E., and Tokunanga, M.: Risk of breast cancer following low-dose radiation exposure. Radiology 131: 589-597, 1979. Land, C.E. and Beebe, G.W.: Radiation-Induced Cancer in Atomic Bomb Survivors. In Margison, G.P., Ed.: Advances in Medical Oncology. Research and Education. Oxford, Pergamon Press, 1979, Vol. 1, Carcinogenesis, pp. 125-135.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. funds n.a.

3.0673,
FIELD STUDIES IN HIGH-RISK AREAS

W.J. Blot, U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst., Analytical Studies Section, *9000 Rockville Pike, Bethesda, Maryland* 20205 (Z01-CP-04779-04-EEB)

The objectives of this project are to identify and describe environmental and host determinants of cancer in areas of the U.S. at high risk of cancer through the use of analytical epidemiologic techniques, particularly case-control studies of specific cancers. Completed during the year were interview studies of (a) respiratory tumors in Tidewater, Virginia, which showed a 70% smoking-adjusted excess of

lung cancer and a 1500% increase of mesothelioma associated with employment, primarily during World War II, in area shipyards; (b) esophageal cancer among black males in Washington, D.C., which revealed a dominating effect of alcohol consumption, although other interesting nutritional differences were also uncovered; and (c) colorectal cancer in rural Nebraska which identified an increased risk among persons of Czechoslovakian descent and a familial clustering. Also completed was death certificate review of lung and pancreatic cancer in Louisiana; results indicated an excess of petroleum industry occupations associated with both of the cancers and shipbuilding employment associated with lung cancer and a higher frequency of lung cancer among the older Acadian (Cajun) minority.

BIBLIOGRAPHIC REFERENCES: Blot, W.J. and Fraumeni, J.F., Jr.: Lung cancer in the United States: Shipyard correlations. Ann. N.Y. Acad. Sci. 330: 313-316, 1979. Pickle, L.W. and Gottlieb, M.S.: Pancreatic cancer mortality in Louisiana. Am. J. Public Health. 70: 256-259, 1980.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. funds n.a.

3.0674,

SPECIAL NON-MELANOMA SKIN CANCER INCIDENCE SURVEY AND EPIDEMIOLOGY STUDY

J. Scotto, U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst., Biometry Branch, *9000 Rockville Pike, Bethesda, Maryland* 20205 (Z01-CP-04475-04-B)

This project, a collaborative effort by the NCI, EPA and other federal agencies, was initiated to provide more data relative to skin cancer and harmful solar ultraviolet. An urgent need for these data has existed since recent scientific reports have warned about the decomposition of stratospheric ozone by nitrogen oxides and chlorofluoromethanes (CFMs). Federal regulatory agencies have already recommended bans on the use of aerosol spray cans which use CFMs as propellants. In the near future, there will be critical reviews of all pertinent information by government as well as individual interests concerned with the threat of increased human skin cancer due to excess amounts of UV-B reaching the earth's surface, as its protective ozone shield is depleted. As mandated by Public Law 95-95 (amendment to the Clean Air Act of 1977), the NCI will continue its investigations by adding 2 new locations to its data bases during this fiscal year. This will provide more reliable national estimates of the degree of morbidity from nonmelanoma skin cancer as well as epidemiologic data on host and environmental factors, other than solar ultraviolet, associated with increased risk. New leads from 8 surveys just being completed will be pursued in two new surveys being implemented.

BIBLIOGRAPHIC REFERENCES: Scotto, J. and Fears, T.R.: Skin Cancer Epidemiology: Research Needs. In Proceedings of the International Conference on Ultraviolet Carcinogenesis. Natl. Cancer Inst. Monorgr. 50: 169-177, 1979. Scotto, J. and Nam, J.: Skin Melanoma and Seasonal Patterns. Am. J. Epidemiol. 111: 309-314, 1980.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. funds n.a.

3.0675,

IMMUNOLOGIC FACTORS IN CANCER ETIOLOGY

R.N. Hoover, U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst., Environmental Studies Section, *9000 Rockville Pike, Bethesda, Maryland* 20205 (Z01-CP-04401-04-EEB)

The purpose of this project is to identify and study populations with altered immunologic states experiencing unusual rates of malignancy. Risks of cancer of different sites are quantified for various groups of such patients, compared with each other, and characteristics and possible determinants of unusual risks are sought. The populations studies include renal transplant recipients, patients with inherited and acquired immune deficiency syndromes, groups of immune-stimulated persons (e.g., hyperimmunized, autoimmune syndromes) and patients experiencing conditions for which sequelae related to immunity are suspect but unknown (e.g., splenectomy patients). Both cohort studies of these groups of patients and case-control studies of such patients who also developed cancer are conducted.

BIBLIOGRAPHIC REFERENCES: Kinlen, L.J. and Hoover, R.: Lymphomas in transplant recipients: A search for clustering. Br. J. Cancer. 40:798, 1979.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. funds n.a.

3.0676,

FAMILIAL, CONGENITAL AND GENETIC FACTORS IN MALIGNANCY

J.J. Mulvihill, U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst., Field Studies & Statistics Section, *9000 Rockville Pike, Bethesda, Maryland* 20205 (Z01 CP 04377-09 CEB)

Study of genetic diseases with neoplastic manifestations and detailed investigation of families with high risk of cancer may help detect environmental and genetic influences in carcinogenesis, especially when appropriate laboratory assays are used.

Besides results from our Clinical Studies Section and the Family Studies Unit of the Environmental Epidemiology Branch, laboratory reports were made on abnormal lymphocyte responses in four families with malignant melanoma complicating BK mole syndrome, an excess frequency of HLABw35 in 13 Hodgkin's disease families, and in vitro radiosensitivities in a family with acute myelogenous leukemia and a radiogenic rectal carcinoma. A monograph on neurofibromatosis was edited and a collaborative NIH clinical-laboratory investigation of neurofibromatosis begun. Various groups of patients who survived cancer were studied for reproductive performance. Syndromes that do or may predispose to cancer were discovered or further delineated. Various methods to stimulate similar research were used including guest lectures, literature reviews, and participation in committee activities.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. funds n.a.

3.0677,

U.S. CANCER MORTALITY SURVEY

T.J. Mason, U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst., Population Studies Section, *9000 Rockville Pike, Bethesda, Maryland* 20205 (Z01-CP-04378-05-EEB)

The objective of this study is to examine the cancer mortality experience in the United States relative to cancer etiology. Special emphasis is placed upon the selection of areas in the U.S. for intensive study. Publications from this area of interest have facilitated the design of ongoing analytical investigation to test specific etiologic hypotheses. Possible prenatal origins of childhood cancer are being investigated by focusing on potential exposures realized by the pregnant mother. The rising rates of myeloma in blacks suggest genetic and environmental factors that need to be tested in analytic epidemiologic studies. Analysis of non-Hodgkin's lymphoma at the county level for 1950-1975 detected associations with higher social class and also large percentages of residents of Russian and Greek descent. Changes in age-specific rates for breast cancer appear related to the changing patterns of childbearing among young adult women of the first two-thirds of this century. Analyses of changing patterns in the rates of thyroid cancer in Connecticut detected findings consistent with the use of radiation therapy from the early 1920's to the late 1950's.

BIBLIOGRAPHIC REFERENCES: Blattner, W.J., Mason, T.J., and Blair, A.: Changes in mortality rates from multiple myeloma. New Engl. J. Med. 302: 814-815, 1980. Blot, W.J., and Fraumeni, J.F., Jr.: Lung cancer mortality in the United States: Shipyard correlations. Ann. N.Y. Acad. Sci. 330: 313-315, 1979.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. funds n.a.

3.0678,

STUDIES OF CANCER INCIDENCE AND MORTALITY AND RELATED ETIOLOGIC FACTORS

E.S. Pollack, U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst., Biometry Branch, *9000 Rockville Pike, Bethesda, Maryland* 20205 (Z01 CP 04258-12 B)

During the past year, research on stomach cancer and precursor lesions continued in Japan, Hawaii and Colombia. Research also continued on colorectal cancer in these same areas. The Norwegian migrants studies are continuing and a concerted effort is beng made to analyze large sets of data in Minnesota and Norway which is expected to produce more useful information on important dietary factors related to gastrointestinal cancers. Cancer mortality among Chinese in the United States is being studied. Groups in California, Hawaii and New York City constitute about 70% of the U.S. Chinese population. Comparisons with Chinese in Taiwan have been planned. The mortality experience of Chinatowners in New York City and San Franciso has been compared with that of the general Chinese population. Another study is in progress on selected indications on health and major causes of death in the People's Republic of China.

BIBLIOGRAPHIC REFERENCES: King, H. and Locke, F.B.: A Century of Occupational Transition Among the Chinese, with Particular Reference to Health Risks. International Migration Review. Vol. XIV, No. 1, Spring 1980. Haenszel, W. Locke, F.B. and Segi, M.: Case-Control Study of Large Bowel Cancer in Japan. Proceedings of the Workshop on Low Risk Population. JNCI 64: 17-22, 1980.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. funds n.a.

3.0679,

CONSULTATION ON CLINICAL TRIALS

D.P. Byar, U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst., Clinical & Diagnostic Trials Section, *9000 Rockville Pike, Bethesda, Maryland* 20205 (Z01 CP 04260-20 B)

The purpose of this project is to provide consultative services in statistical and epidemiological methodology in the design, interpretation, and evaluation of clinical trials and other studies requiring this kind of expertise. For some trials the section provides full statistical support including development of detailed study plans, randomization of patients, collection, processing, editing, and analysis of data, and preparation of scientific papers. At present, members of the Section are involved in studies concerned with prostate cancer, testis cancer, breast cancer, lung cancer, brain tumors, and mycosis fungoides. In addition to these major projects, a variety of other consultative activities, including review of scientific articles, arise in response to special requests.

BIBLIOGRAPHIC REFERENCES: Byar, D.P.: Review of the Veterans Administration Studies of Cancer of the Prostate and New Results Concerning Treatment of Stage I and II tumors. In Pavone-Macaluso, M., Smith P.H., and Edsmyr, F. (Eds.): Bladder Tumors and Other Topics in Urological Oncology. New York, Plenum Press, 1980, pp. 471-492. Byar, D.P.: VACURG studies of post-prostatectomy survival. Scand. J. Urol. and Nephrology, May, 1980.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. funds n.a.

3.0680,

STUDIES OF THERAPEUTIC END RESULTS AND PROGNOSTIC FACTORS

M.H. Myers, U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst., Biometric Research & Analytic Studies Section, *9000 Rockville Pike, Bethesda, Maryland* 20205 (Z01 CP 04257-23 B)

Among white cancer patients significant increases in survival over the 10 year span from 1960-63 to 1970-73 were observed for 7 of the 10 most frequently occurring cancers (Lung, Stomach and Pancreas were the exceptions). Among black patients significant increases were noted for cancers of the uterine corpus, uterine cervix, urinary Bladder and prostate. The most remarkable improvements in survival were observed for Acute Lymphocytic Leukemia in Children less than 15. A newly developed age-dependent mathematical model for cancer screening has lead to a more complete understanding of length bias than had previously been possible. Women with lobular carcinoma in situ are at an increased risk of developing subsequent contralateral carcinoma. No elevated risk was observed for intraductal carcinoma. Cervical cancer patients treated by radiotherapy are at an increased risk of developing leukemia and cancers of the lung, bladder, kidney and genital organs. Adjustment of black-white differences in incidence of breast and cervical cancer for socioeconomic levels explained substantial portions of the observed differences for each site. A statistical method utilizing the interval of time between successive diagnoses of cancers has application in monitor-

ing time trends of cancer incidence and for assessment of disease clustering.
SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. funds n.a.

3.0681,
EPIDEMIOLOGY AND ANTIMICROBIAL PROPHYLAXIS OF INFECTION
L.S. Young, University of California, Los Angeles Campus, School of Medicine, Dept. of Medicine, *2025 Zonal Ave., Los Angeles, California* 90024 (P01 CA 15688-070023)
This project is part of a broader program (CA 15688).
SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. funds n.a.

3.0682,
EPIDEMIOLOGY
A.T. Meadows, Childrens Hospital of Philadelphia, *3400 Civic Ctr. Blvd., Philadelphia, Pennsylvania* 19104 (P01 CA 14489-070016)
This project is part of a broader program (CA 14489).
SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. funds n.a.

3.0683,
CELLULAR IMMUNITY TO TUMOR ANTIGENS
P.I. Terasaki, University of California, Los Angeles Campus, School of Medicine, Dept. of Surgery, *2025 Zonal Ave., Los Angeles, California* 90024
OBJECTIVES: Utilizing the cellular immunity test, establish the specificity of antigens which exist on human tumors, particularly of those antigens which are associated with possible oncogenic viruses. Study the epidemiology of cellular immunity to these virus-associated tumor antigens. Study the linkage of HL-A antigens to susceptibility to tumors. Perform HL-A testing for other VCP investigators as directed by the Project Officer.
SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. $24,630

3.0684,
ESTROGENS AND GENITAL ANOMALIES AND CANCER IN OFFSPRING
R.H. Kaufman, Baylor College of Medicine, School of Medicine, Dept. of Obstetrics & Gynecology, *1200 Moursund Ave., Houston, Texas* 77025
OBJECTIVE: Identify and study offspring of women who received synthetic estrogens during pregnancy between 1943 and 1963. Repeat examinations at regular intervals, perform diagnosis and follow-up and treatment as necessary. Approximately 1,000 offspring are to be examined on this contract.
PROPOSED COURSE: The contractor will establish standard definition of eligibles and develop suitable approaches to elicit eligibles through information campaigns directed at physicians and the general public via mass media. Evaluation will be performed and reported.
PROGRESS: A total of 548 participants had been entered by March 1976. Of these, 519 are active participants, with 446 having documentation of DES exposure in utero. Chart reviewing by physicians in the Houston area has been the primary source of participants. Also, the health services at local universities have been used as an outreach to women students. Consent forms have been utilized.
SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. funds n.a.

3.0685,
STUDY OF GENITAL TRACT ANOMALIES
D.E. Townsend, University of Southern California, School of Medicine, Dept. of Obstetrics & Gynecology, *2025 Zonal Ave., Los Angeles, California* 90033
OBJECTIVES: Identify and study offspring of women who received synthetic estrogens during pregnancy between 1943 and 1963. Repeat examinations at regular intervals, perform diagnosis and follow-up and treatment as necessary. Approximately 1,000 offspring are to be examined on this contract.
PROPOSED COURSE: The contractor will establish standard definition of eligibles and develop suitable approaches to elicit eligibles through information campaigns directed at physicians and general public via mass media. Evaluation will be performed and reported.
PROGRESS: A total of 585 participants had been entered by March 1976. Of these, 508 are active participants, with 374 having documentation of DES exposure in utero. Prenatal record review process has been used to obtain participants. Consent forms have been utilized.
SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. funds n.a.

3.0686,
JAPAN-HAWAII CANCER STUDY
A.M. Nomura, Kuakini Medical Center, *347 N. Kuakini St., Honolulu, Hawaii* 96817
The objective has been to use the Japanese migrating to Hawaii for epidemiological studies of host characteristics and environmental factors in site-specific cancers with special attention to stomach, large bowel, prostate and breast. To elaborate leads obtained through case-control studies a cohort of about 10,000 Hawaiian Japanese (originally assembled by NHLI for studies of cardiovascular disease) has been examined and remains under active surveillance for morbidity and mortality experience. Surveillance includes autopsies of cohort members (35-40 percent of all deaths).
SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. $569,562

3.0687,
CORRELATION OF EPIDEMIOLOGIC AND METABOLIC PARAMETERS
S.L. Romney, Yeshiva University, Bronx Campus, Albert Einstein School of Medicine, Dept. of Obstetrics & Gynecology, *1300 Morris Park Ave., Bronx, New York* 10461
This project will be coordinated with other DNCP projects in epidemiology and also with associated clinical and laboratory investigations. These studies will be oriented to further defining known or suspected dietary links to cancer through correlation of body pools of specific compounds and dietary intake with the incidence of carcinogenesis. The Contractor will collect data on dietary and nutrient intake and associated metabolic information for 'at risk' population groups. The Contractor may be required to provide various biological samples and specimens for possible collaborative analysis by other researchers.
SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. $73,500

3.0688,
SUPPORT SERVICES FOR FIELD STUDIES
A. Toledo, Westat Inc., Research Division, *11600 Nebel St., Rockville, Maryland* 20852
The Epidemiology Branch of the National Cancer Institue conducts studies to define the distribution and determinants of cancer in man. The objectives of this contract are to provide technical (non-professional), mamagerial, and clerical support for the field studies directed by the Epidemiology Branch. The contractor will function in purely supportive role, carrying out specific tasks, whenever requested, anywhere within the United States.
SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. $98,390

3.0689,
EPIDEMIOLOGY OF MEDULLARY AND LOBULAR BREAST CANCER
P.P. Rosen, Memorial Sloan Kettering Cancer Center, *1275 York Ave., New York, New York* 10021
The primary objective is to compare risk factors for the less common histologic types of breast cancer, such as lobular and medullary cancers with the more common infiltrating ductal types which comprise approximately 80% of breast cancers in the United States. Preliminary epidemiologic data is suggesting that the less common types of breast cancer may havesome epidemiologic characteristics of their own. Although lobular and medullary breast cancers are relatively rate, it is conceivable they may fit into epidemiologically definable patterns.
SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. $18,069

3.0690,
EPIDEMIOLOGY OF PRE- AND POST-MENOPAUSAL BREAST CANCER
D.C. Deubner, Duke University, School of Medicine, Dept. of Community & Family Medicine, *Box 3711, Durham, North Carolina* 27710
This study consists of 400 breast cancer patients undergoing surgery at hospitals, 800 age-race matched surgical, medical, or family practice patients not having breast or gynecological surgery at the same hospitals, and 1800 subjectsfrom the community. Data collection is by interviews and review of hospital charts. Laboratory studies on tissue and serum from patients will include quantitative estrogen and progesterone receptor determinations, evaluation of histologyand progesterone standardized protocol, and estrogen and progesterone serum determinations. Statistical analyses will estimate the relative strength of association between breast cancer in pre- and post-menopausal women and such factors as age of menarche, first delivery, obesity, and family history of breast cancer. Associations between risk factors andtumor cell biology and morphology will be sought by comparing the laboratory results in women with and without single ormultiple risk factors.
SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. $22,832

3.0691,
SEROEPIDEMIOLOGICAL STUDIES ON NASOPHARYNGEAL CARCINOMA AND BURKITT'S LYMPHOMA
C.A. Linsell, Centre International de Recherche sur le Cancer, *150 Cours Albert Thomas, 69372 Lyon Cedex 2, France*
SCOPE: Research activities aimed at studying the association between EBV, Burkitt's lymphoma and NPC.
Results will be helpful in defining the viral etiology of various types of human cancer and in defining approaches for this control.
The studies under this contract are being developed as three projects: 1. The prospective study in Africa (Uganda) to determine the serological status of African children in relation to EBV. 2. The epidemiology of EBV in different population groups. 3. Studies on the etiology of nasopharyngeal carcinoma.
SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. $81,970

3.0692,
SAN FRANCISCO RESOURCE FOR CANCER EPIDEMIOLOGY
D.F. Austin, State Health & Welfare Agency, *915 Capitol Mall, Room 200, Sacramento, California* 95814
Maintain a cancer reporting system in the five counties of the San Francisco-Oakland metropolitan area. The system will utilize standardized abstracts of records on all cancer patients seen in the 75 hospitals in the area as well as for all five-county area resident patients who are diagnosed or treated in hospitals in other areas for active cancer. All death certificates of residents dying in the area or outside the area where cancer is mentioned on the death certificate as well as the death certificate of any case listed in the registry will be abstracted. Records of private laboratories and radiotherapy units will be utilized in order to insure complete coverage of cases. Records of nursing homes which provide the services of diagnostic physicians and/or laboratories to patients will also be utilized. Reporting and data processing procedures are to be maintained so as to produce valid incidence rates within eleven months after the end of each calendar year.
SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. $1,560,885

3.0693,
SUPPORT FOR TUMOR REGISTRY
C.R. Key, University of New Mexico, School of Medicine, Dept. of Pathology, *University Hill N.E., Albuquerque, New Mexico* 87131
The Principal Investigator is Director of New Mexico Tumor Registry. This involves developmental expansion of an existing cancer registry facility within the New Mexico Regional Medical Program toward the existence of a population-based cancer registry with potential for meaningful epidemiologic studies.
SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. funds n.a.

3.0694,

EPIDEMIOLOGY OF BENIGN BREAST DISEASE

G.H. Spivey, University of California, Los Angeles Campus, School of Public Health, Dept. of Epidemiology, *405 Hilgard Ave., Los Angeles, California* 90024

Esamine the epidemiology of major types of benign breast disease and compare identifiable risk factors for benign diseases with those for breast cancer. Examine a recently developed histologic classification scheme based on grading of cellular atypia comparison to the commonly used histopathologic scheme.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. $62,800

3.0695,

CANCER AND RELATED CONDITIONS IN DOMESTIC ANIMALS - EPIDEMIOLOGIC COMPARISONS WITH MAN

H.M. Hayes, U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst., Environmental Studies Section, *9000 Rockville Pike, Bethesda, Maryland* 20205 (Z01-CP-04411-04-EEB)

The continuing purpose of this project is to identify animal models applicable to further research into the etiology of cancer in humans. Additionally, as cases accumulate, the probability increases that domestic pets with some types of spontaneous cancers can be identified as representing the effects of low level environmental exposure to carcinogenic agents. The frequency of cancer in these animals would serve as a warning of general environmental hazards to man. The topics of current interest include: 1) Environmentally influenced cancer in dogs relative to the level of industrialization in their county of residence; 2) the epidemiologic features of splenic neoplasms, gastrointestinal cancer, colo-rectal cancer, and prostatic cancer in dogs; 3) a case-control study of the long-term effects of Promone in dogs; 4) morbidity among military working dogs compared to that in pet German shepherds.

BIBLIOGRAPHIC REFERENCES: Selby, L.A., Corwin, R.M., and Hayes, H.M., Jr.: Risk factors associated with canine heartworm infection. J. Am. Vet. Med. Assoc. 176: 33-35, 1980. Blair, A.E. and Hayes, H.M., Jr.: Cancer and other causes of death among U.S. Veterinarians, 1966-1977. Int. J. Cancer 25: 181-185, 1980.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. funds n.a.

3.0696,

STUDIES OF CANCER-PRONE FAMILIES

W.A. Blattner, U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst., Environmental Epidemiology Branch, *9000 Rockville Pike, Bethesda, Maryland* 20205 (Z01-CP-04410-04-EEB)

The purpose of this project is to conduct and coordinate interdisciplinary studies on cancer-prone families in order to clarify the role of genetic mechanisms and host-environmental interactions in carcinogenesis. Clinical studies of high-risk families have suggested etiologic relationships between cancers, constellations of which may cluster in individuals (multiple primary neoplasms) or may be scattered over the family tree (familial neoplastic syndromes). Discovery of laboratory test abnormalities in certain cancer-prone families, such as subclinical immune dysfunction in family members predisposed to lymphoma, melanoma, and some gastrointestinal malignancies, immunogenetic determinants in acute leukemia, Hodgkin's disease, and Waldenstrom's macroglobulinemia, DNA repair defects in leukemia and other familial neoplasm syndromes, metabolic defects in bladder cancer-prone families, and clinically apparent premalignant conditions in individuals prone to colon cancer and melanoma, have provided insights into the mechanisms of susceptibility to cancer.

BIBLIOGRAPHIC REFERENCES: Blattner, W.A.: Epidemiology of Multiple Myeloma and Related Plasma Cell Disorders: An Analytic Review. In Potter, M. (Ed.): Progress in Myeloma, Biology of Myeloma. New York, Elsevier North Holland, Inc., 1980, pp. 1-66. Greene, M.H., Mead, G.D., Reimer, R.R., Bergfeld, W.F., and Fraumeni, J.F., Jr.: Melanoma and Charcot-Marie-Tooth disease. Am. J. Med. Genet. 5: 69-71, 1980.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. funds n.a.

3.0697,

POPULATION-BASED CANCER EPIDEMIOLOGY RESEARCH CENTER

E.P. Isacson, University of Iowa, School of Medicine, Dept. of Preventive Medicine & Environmental Health, *Jessup Hall, Iowa City, Iowa* 52240

The aim of this project is to reactivate state-wide cancer incidence data collection. Existing data will be analyzed and examined to determine the type and extent of information to be obtained on a continuing basis. The long range goal,based on a continuing basis, based on a continuing registry operation, is to develop and implement epidemiologi studies of the distribution and determinants of cancer in Iowa.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. $1,209,964

3.0698,

CANCER MORTALITY RELATED TO OCCUPATION AND SOCIAL CLASS

J. Esteve, World Health Org., *150 Cours Albert Thomas, Lyon, France*

OBJECTIVE: Work on the obtainment, examination, review, and interpretation of data relating to cancer mortality that have been produced historically in successive studies from the General Registrar Office of England and Wales. This shall include analysis of the relationship of mortality from cancer to occupation and social class, analysis of trends over time, as well as comparison with relevant material from other countries. This analysis shall be performed in collaboration with the Project Officer.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. $59,041

3.0699,

CARCINOGENIC EFFECTS OF THERAPEUTIC DRUGS

R.N. Hoover, U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst., Environmental Studies Section, *9000 Rockville Pike, Bethesda, Maryland* 20205 (Z01-CP-04412-04-EEB)

The purpose of this project is to study the long-term health effects of therapeutic drugs as they may relate to carcinogenicity. Cohort studies of exposed groups are conducted, as well as case-control studies of selected cancer sites which involve lifetime drug use histories. Emphasis in the past year has been on the evaluation of various types of estrogenic preparations, immunosuppressive drugs, and cancer chemotherapeutic agents.

BIBLIOGRAPHIC REFERENCES: Boice, J.D., Greene, M.H., Keehn, R.J., Higgins, G.A., and Fraumeni, J.F., Jr.: Late effects of low-dose adjuvant chemotherapy in colorectal cancer. J.N.C.I. 64: 501-511, 1980. Hoover, R.: Association of Exogenous Estrogens and Cancer in humans. In: Proceedings of Symposium on Estrogens in the Environment. New York, Elsevier North Holland, Inc., 1980, pp. 353-376.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. funds n.a.

3.0700,

METHODS OF ANALYTICAL EPIDEMIOLOGY AND ANALYSIS

B.E. Henderson, University of Southern California, School of Medicine, Dept. of Pathology, *2025 Zonal Ave., Los Angeles, California* 90033 (P01 CA 17054-050002)

This project is part of a broader program (CA 17054).

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. funds n.a.

3.0701,

DIET AND NONCONTRACEPTIVE ESTROGENS IN BREAST CANCER

A.M. Nomura, University of Hawaii System, Manoa Campus, John A. Burns School of Medicine, Dept. of Biochemistry & Biophysics, *2444 Dole St., Pacific Biomedical Res. Ctr., Honolulu, Hawaii* 96822

OBJECTIVE: To conduct a combined study of the possible association of dietary factors and non-contraceptive exogenous estrogens with breast cancer.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. funds n.a.

3.0702,

EPIDEMIOLOGY SECTION

M.Y. Heshmat, Howard University, School of Medicine, Dept. of Community Health & Family Practice, *2400 6th St. N.W., Washington, District of Columbia* 20059 (P30 CA 14718-070005)

This project is part of a broader program (CA 14718).

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. funds n.a.

3.0703,

CLEARINGHOUSE FOR ONGOING WORK IN CANCER EPIDEMIOLOGY

C.S. Muir, Centre International de Recherche sur le Cancer, *150 Cours Albert Thomas, 69372 Lyon Cedex 2, France*

OBJECTIVE: Establishment of a clearinghouse for ongoing work in cancer epidemiology.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. $102,810

3.0704,

EPIDEMIOLOGICAL INVESTIGATION OF CANCER IN UTAH

J.L. Lyon, Utah Higher Education System, University of Utah, School of Medicine, Dept. of Surgery, *1400 E. 2nd S., Salt Lake City, Utah* 84112

Patient follow-ip after diagnosis and treatmetn has been a major objectiv e of teh registry since its beginning in 1966. Information is collected from hosptials, physicisans, pathology laboratories, radiotherapy centers and the Utah State Division of Health and is processed quarterly by computer. If a patient has not been seen by a physician within one year, the computer will generate a follow-up letter to be sent to the responsible physician. The registry has accessioned over 33,000 cases, approximately half of which are alive and being followed. About 2,000 cases are registered each year from Utah and another 2,000 from the neighboring states of Nevada, Idaho, Montana, Wyoming other states are processed separately and the registry is paid $1.50 per case for this service. Reporting is not compleservice. Reporting is not complete in these stes so no incidence data are available.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. $463,033

3.0705,

EPIDEMIOLOGICAL STUDIES

S. Jablon, National Academy of Sciences, *2101 Constitution Ave. N.W., Washington, District of Columbia* 20037

The objective of this project is to develop and conduct a cancer epidemiology program designed to make efficient use of the military-veteran population, utilizing medical, demographic and environmental observations made at entry and during military service, and the subsequent medical history of veterals ascertained through facilities of the Veterans Administration supplemented by mortality data. The Field Studies and Statistics Program is concerned with studies to identify and clarify each etiologic factor in cancer. Work will include a study of Hodgkin's Disease, childhood cancer as it relates to prenatal x-ray, and follow-up of World War II Veterans with certain conditions possibly related to cancer (splenectomy, allergy, orchidopexy, nephrectomy, and alcoholism).

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. $252,810

3.0706,

SMOKING AND HEALTH

N. Lynch, Enviro Control Inc., *11300 Rockville Pike, 1 Central Plaza, Rockville, Maryland* 20852

Inhalation bioassay of cigarette smoke: effect of high and low carbon monoxide content; and effect of high and low nitrogen oxides content. Cigarette smoke dosimetry in man; development of equipment and techniques. A computer simulated cigarette model for use in development in less hazardous cigarettes. International epidemiological study.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. $1,860,432

3.0707,

EPIDEMIOLOGY

B.E. Henderson, University of Southern California, School of Medicine, Dept. of Pathology, *2025 Zonal Ave., Los Angeles, California* 90033 (For CA 19449-050009)

This project is part of a broader program (CA 19449).

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. funds n.a.

3.0708,

SURVEILLANCE OF HEALTH EFFECTS OF POTENTIALLY LESS HAZARDOUS CIGARETTES

G.D. Friedman, Kaiser Foundation Research Inst., *4900 Sunset Blvd., Los Angeles, California* 90027

OBJECTIVES: This is a prospective epidemiologic study designed to investigate the health effects of smoking, with a particular focus on recently introduced smoking products with reduced yields of selected toxic constituents. Hypotheses are to be tested regarding significant differences between health effects of the older and newer smoking products.

A self-administered questionnaire will be completed by all Kaiser health plan subjects who are given a multiphasic health checkup (MHC) at the KFRI Oakland-San Francisco facilities during a two-year period (March 1979 - February 1981). It is expected that approximately 50,000 subjects will be involved annually. The questionnaire contains detailed questions on smoking habits, as well as more general questions on occupation, demographic-socioeconomic characteristics, and dietary practices. Questionnaire responses, in conjunction with mortality and morbidity data (hospitalization stays, physician visits, days of incapacitation) and MHC data, are to be analyzed for relationships between smoking habits and adverse health effects.

This study is planned initially to cover a three-year period (two years of data collection, one year for follow-up and analysis).

MAJOR FINDINGS: Since this study has just begun, there are no findings to report at this time.

SIGNIFICANCE TO BIOMEDICAL RESEARCH AND THE PROGRAM OF THE INSTITUTE: This study addresses two Smoking and Health Program goals: Identification of individuals at high risk to tobacco-related diseases and identification of the toxic constituents of smoking products.

PROPOSED COURSE: Since this is a new effort, it is anticipated that it will be continued for three years in order to accomplish objectives.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. funds n.a.

3.0709,

CASE CONTROL STUDY OF LUNG CANCER IN CUBAN MEN AND WOMEN

O. Joly, Centre International de Recherche sur le Cancer, *150 Cours Albert Thomas, 69372 Lyon Cedex 2, France*

OBJECTIVES: Cuban women have the highest reported incidence of lung cancer of all comparable groups in the Americas (World Health Statistics Annual, 1973); Cuban men have the third highest rates. This study is intended to indentify specific factors associated with these high rates.

The study is similar to the U.S. and Western European case-control studies sponsored by the Smoking and Health Program, with three major differences: the Cuban questionnaire covers reproductive history as well as the topics covered by the other studies; one of the matched controls is a neighborhood resident, as contrasted to both controls being hospitalized patients; and initially the Cuban study was restricted to female respondents. However, male as well as female subjects are now being interviewed. Of primary interest in this study is the investigation of tobacco type (light and dark) associated with lung cancer development. Hypotheses regarding the role that light and/or dark tobacco type plays in the unusually high lung cancer rates will be tested. In addition, data from this study will be compared to data from the U.S. and Western European case-control studies to increase and substantiate our understanding of the association between smoking and lung cancer.

MAJOR FINDINGS: The data accumulated thus far are insufficient to provide meaningful results.

SIGNIFICANCE TO BIOMEDICAL RESEARCH AND THE PROGRAM OF THE INSTITUTE: The results of this study will be compared to those obtained from other Smoking and Health Program case-control studies to clarify the role of smoking usage and other factors in the development of lung cancer. These studies directly address two of the principal Smoking and Health Program objectives: to identify individuals at high risk to tobacco-related diseases, and provide information for possible use by others in developing less hazardous cigarettes.

PROPOSED COURSE: It is anticipated that this effort will be completed in one year.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. funds n.a.

3.0710,

AN INTERNATIONAL EPIDEMIOLOGIC STUDY OF THE RELATIONSHIP BETWEEN TOBACCO USAGE AND LUNG CANCER

M. Kunze, Enviro Control Inc., *11300 Rockville Pike, 1 Central Plaza, Rockville, Maryland* 20852

OBJECTIVES: Since 1968, the Smoking and Health Program has sponsored a case-control study of the relationships between tobacco usage and cancer incidence in several U.S. cities. The purpose of the European studies is to increase and substantiate our understanding of these relationships, particularly with respect to cancer of the lung. The range of tobacco product used, the variations in incidence of lung cancer, the differences in smoking habits, and the diversity of socioeconomic, demographic and occupational characteristics of the European nations provide a promising epidemiologic setting for comparisons with the U.S. experience.

A retrospective case-control design is used, based on the U.S. protocol. Subjects are selected from several hospitals in each country. Cases are hospitalized patients with a histopathologically confirmed diagnosis of lung cancer. Two controls are matched to each case by sex, race, age and hospital status. A detailed questionnaire is administered by a highly trained interviewer, covering, among other topics, tobacco habits and socioeconomic, demographic, and occupational background. For these six studies combined, approximately 2,000 cases (with twice as many controls) are being interviewed annually.

A pilot study in Austria indicates that it is feasible to include pancreatic cancer patients as well as lung cancer patients as cases for these investigations.

MAJOR FINDINGS: Studies of this nature usually require several years of observation before meaningful results are possible; thus, no significant findings are available at this time. However, preliminary results indicate that the variations anticipated among respondents from the different countries are emerging. Statistical analyses and epidemiologic interpretations of the data will be performed as a sufficient number of responses become available.

SIGNIFICANCE TO BIOMEDICAL RESEARCH AND THE PROGRAM OF THE INSTITUTE: The results of this study will be compared to those obtained from other Smoking and Health Program case-control studies to clarify the role of smoking usage and other factors in the development of lung cancer. These studies address two Smoking and Health Program objectives: to identify individuals at high risk to tobacco-related disease, and provide information on smoking habits and patterns related to disease.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. funds n.a.

3.0711,

EPIDEMIOLOGIC INVESTIGATION OF THE RELATION BETWEEN BLADDER CANCER, SACCHARIN USAGE, AND SMOKING

S.D. Stellman, American Health Foundation Inc., *320 E. 43rd St., New York, New York* 10017

OBJECTIVES: The objective of this study is to determine reliability of responses regarding saccharin usage and other epidemiologic indices obtained from bladder cancer cases and matched controls interviewed in two hospital and city settings from 1974 to 1979.

Cases and controls interviewed since 1974 in connection with the Foundation's ongoing Epidemiologic Study of Smoking-Related Diseases comprise the sample for this study. Names, addresses, telephone numbers, and survival status were obtained from hospital records. Subjects not known to be deceased and for whom addresses were available were reached for their consent to participate in the study in the response mode of their preference, i.e., by telephone interview or self-administered questionnaire. Non-respondents to the initial letter of contact were followed up by correspondence and later by telephone. Data were subsequently collected from subjects in the mode of their stated choice. An abridged form of the original questionnaire was used which additionally included a measure of internal consistency of saccharin use. Data analysis consisted of (1) comparison of risk ratios of saccharin usage in relation to bladder cancer between the original data and data obtained from the re-interview, (2) determining reliability measures of the data on use of artificial sweeteners and other variables, (3) comparison of congruence between original and re-interview data obtained from two cities, and (4) comparison of response reliabilities using either the telephone interview or the self-administered questionnaire mode.

MAJOR FINDINGS: This is a short-term study for which only preliminary analyses have been performed thus far.

SIGNIFICANCE TO BIOMEDICAL RESEARCH AND THE PROGRAM OF THE INSTITUTE: This study is in accord with the stated objective of identifying individuals at high risk to tobacco-related diseases. It is designed primarily to address the issue of possible interactive effects between tobacco usage and consumption of artificial sweeteners.

PROPOSED COURSE: This effort expired on January 31, 1980.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. funds n.a.

3.0712,

DEVELOPMENT OF RADIOGRAPHIC TEACHING MATERIALS ON ASBESTOS FOR PHYSICIANS

J. Merchant, U.S. Dept. of Health & Human Services, Public Health Service, Center for Disease Control, National Inst. for Occupational Safety & Health, *944 Chestnut Ridge Rd., Morgantown, West Virginia* 26505

OBJECTIVES: This interagency agreement supports the preparation of a teaching module with an emphasis on the roentgenographic manifestations of asbestos related disease. This agreement will be part of an ongoing contract between the American College of Radiology and the National Institute of Occupational Safety and Health which has produced teaching materials for the Coal Miners' Black Lung Program. This module on asbestos related lung disease will help achieve one of the primary goals of the Division of Cancer Control and Rehabilitation, National Cancer Institute; i.e., the assistance of health professionals in the application of new and available knowledge and technologies to improve the diagnosis and treatment of cancer.

ACCOMPLISHMENTS: The module, which is nearing completion, consists of a written text describing the clinical manifestations, epidemiology, pathology and roentgenology of asbestosis. Associated tables, photographs, slides and radiographs illustrate the text. Case descriptions accompany the radiographic reproductions and slides. Thirty full-size chest x-rays show asbestos related disease including lung cancer and mesothelioma. Instruction in the utilization and application of the International Labor Organization's classification system is also given. A sample classification is completed for each film in the set.

PLANS: The completed module will be distributed to medical school teaching centers for the instruction of residents and medical students. Home study sets will be loaned to physicians on request.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. $608,667

3.0713,

HUMAN HEALTH CONSEQUENCES OF POLYBROMINATED BIPHENYLS (PBBS) CONTAMINATION OF FARMS IN MICHIGAN

C.W. Heath, U.S. Dept. of Health & Human Services, Public Health Service, Center for Disease Control, *1600 Clifton Rd. N.E., Atlanta, Georgia* 30333

OBJECTIVE: As a consequence of the distribution of animal feeds contaminated with PBB, the inhabitants of at least 412 Michigan farms as well as a wide surrounding belt of consumers, were accidentally exposed to that potentially threatening compound. This activity defines and recruits large cohorts of individuals (of several degrees of exposure) and will engage in a long-term follow-up primarily with respect to the incidence of cancer.

MAJOR FINDINGS: The major effort to date has been the development of cohorts. Two blood samples have been taken from all PBB exposed individuals and analyzed for this compound as well as for polychlorinated biphenyls (PCBs); this is of equal interest scientifically and provides gratuitous information. Certain high risk groups (high blood level individuals engaged in the production of the PBB compound and children born during or after the incident) continue to be monitored closely. The initial scientific impression that there were little or no immediate or acute effects on the subject population appears to have been verified.

SIGNIFICANCE TO BIOMEDICAL RESEARCH AND PROGRAM OF THE INSTITUTE: This is a unique situation in which a large group of people had a known exposure to a potential carcinogen under sharply defined circumstances of geography and time. Unfortunate subsequent rises in cancer incidence, if they occur, can thus be charted in this prospective study and correlated with modes and amount of exposure. Major scientific observations on this particular compound and structurally allied compounds can be developed.

PROPOSED COURSE: Cohorts having been defined and recruited, the major effort for the foreseeable future is to maintain their integrity for the long-term determinations. Deaths, illness, pregnancies, etc., will be carefully monitored. It is anticipated that the scaling down of effort will continue to some degree because of the completion of major tasks.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. $200,255

3.0714,

STUDY OF THE HUMAN HEALTH SIGNIFICANCE OF THE POTENTIALLY CARCINOGENIC ENERGY RELATED ORGANIC AND INORGANIC CONTAMINANTS IN WATER

J. Hushon, Mitre Corp., *P.O. Box 208, Bedford, Massachusetts* 01730

OBJECTIVES: To develop a state of the art report on bioassay, monitoring, identification, and classification of energy and environmental chemicals that are carcinogens and mutagens, and delineation of an evaluation of epidemiological studies that relate such aquatic contaminants to adverse effects in aquatic and mammalian species, including carcinogenic effects from such exposures to water contaminants.

MAJOR FINDINGS: This project which has been completed, has delineated all the bioassays used in various animal models, provided a description of all monitoring systems in all federal agencies, a description and cataloguing of over 2,300 chemicals in raw water and specific listing of carcinogens and mutagens in drinking water and an indepth evaluation of the dozen or more epidemiological studies on populations exposed to these contaminants.

SIGNIFICANCE TO BIOMEDICAL RESEARCH AND PROGRAM OF THE INSTITUTE: The preliminary reports made available through a briefing session in July 1979 indicates that this comprehensive survey will provide a very significant report (probably 3 volumes) which puts in perspective for the biomedical community and specifically government agencies, including DOE and NCI, a clear picture of the impact of these contaminants on environmental health including cancer.

PROPOSED COURSE: This project was extended beyond the original one-year plan to eighteen months. It has been completed and the reports are currently being printed.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. $115,999

3.0715,

EPIDEMIOLOGY OF SMOKING-RELATED DISEASES

E.L. Wagner, American Health Foundation Inc., *320 E. 43rd St., New York, New York* 10017

OBJECTIVES: The objectives of this project are to evaluate the risk associated with various smoking habits, including the type of cigarettes smoked, to identify the kinds of cigarettes that may be less carcinogenic to various body organs, and to measure the association between the smoking of various tobacco products and the development of myocardial infarction. This retrospective case-control study uses two sets of controls: One consisting of hospitalized patients and the second consisting of non-institutionalized persons residing in the same neighborhoods as the index cases.

MAJOR FINDINGS: The study continues to demonstrate a dose-response relationship between cigarette smoking and development of cancer of the larynx, lung, oral cavity, esophagus and bladder for both sexes. After adjusting for duration of the smoking habit, inhalation, and butt length, relative risks of developing lung or larynx cancer were consistently lower among long-term smokers of filtered ciagarettes (low tar) than among non-filtered cigarette smokers. For ex-smokers, the risk decreased with increased years of cessation. Risk of mouth cancer for pipe and cigar smokers, who inhaled much less than cigarette smokers, increased with the quantity smoked. Risk of mouth, larynx and esophagus cancer among smokers increased with the quantity of alcohol consumed. More extensive smoking and lower cessation rates were noted among lower socioeconomic groups, suggesting that these groups will bear an ever increasing proportion of the burden of tobacco-related diseases.

In accord with the literature, smoking among women is becoming increasingly more prevalent and, contrary to previous reports, persons smoking filtered cigarettes do not appear to significantly increase their levels of consumption once they have changed from a non-filter to a filter cigarette. In addition, when comparing case cohorts, one finds a significant increase in cigarette consumption among young people. Younger cancer patients generally have smoked more cigarettes than older patients. This is consistent with the observation that industrywide cigarette tar yields have been gradually decreasing over the years, and larger quantities are required to obtain the same risk levels. (Text Abridged.)

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. funds n.a.

3.0716,

CASE-CONTROL STUDY OF LUNG CANCER INCIDENCE IN CUBAN IMMIGRANTS TO THE U.S.

N.A. Dreyer, Equifax Inc., *100 Main St., Reading, Massachusetts* 01867

OBJECTIVES: A case-control investigation of lung cancer incidence in Havana, Cuba, has been sponsored by the SHP for almost three years. A companion study among Cuban immigrants now residing in the Miami/Dade County area of Florida was initiated to complement the information being obtained in Cuba. In particular, the new study is designed to investigate effects on lung cancer incidence associated with changes in the types of tobacco products used, in socioeconomic and demographic variables, in lifestyle factors and in related characteristics that occurred subsequent to immigration.

The protocol for the immigrant study is the same as that being used in Havana; cases and patients hospitalized with histopathologically verified lung cancer, and two controls are matched to each case by age, sex, race, and hospital accommodation. One control is a patient hospitalized for reasons other than a tobacco-related disease and the other control is a non-hospitalized subject residing in the same neighborhood as the case. The questionnaire in both studies is essentially the same. The main difference between the studies is that male and female respondents are recruited in the Havana study, while only male respondents are to be recruited in the Miami/Dade County study.

MAJOR FINDINGS: This study is still in the initial phases of training the interviewers and obtaining hospital cooperation. Data collection as such has not yet started.

SIGNIFICANCE TO BIOMEDICAL RESEARCH AND THE PROGRAM OF THE INSTITUTE: The results of this study will be compared to those obtained from other SHP case-control studies, particularly the Havana study, to clarify the role of smoking and other factors in development of lung cancer. This study directly addresses the two of the principal SHP objectives: To identify individuals at high risk to tobacco-related diseases and provide information for use in developing less hazardous cigarettes.

PROPOSED COURSE: It is planned that this effort will undergo peer review for determination of continued efforts.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. funds n.a.

3.0717,

ETIOLOGIC STUDIES OF CANCER IN NEW JERSEY

R. Altman, State Dept. of Health, *John Fitch Plaza, P.O. Box 1540, Trenton, New Jersey* 08625

OBJECTIVES: Expand the retrospective studies to include cancers other than bladder such as colon, rectum, breast, and lung cancers. Continue analyses of industrial and environmental variables (water supplies, air polution indices, etc.). Pursue methodologies to develop and test hypotheses concerning relationships between occupational and environmental variables and malignancy. Provide information on descriptive epidemiology of common cancer types in New Jersey.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. $424,334

3.0718,

EPIDEMIOLOGY OF SMOKING RELATED DISEASES

E.L. Wynder, American Health Foundation Inc., *320 E. 43rd St., New York, New York* 10017

No summary has been provided to the Smithsonian Science Information Exchange.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. $152,000

3.0719,

INTERNATIONAL EPIDEMIOLOGY STUDY GLASGOW, SCOTLAND

C.R. Gills, Ruchill Hospital, *520 Bilsland Dr., Glasgow G20 9NB, Scotland, United Kingdom*

As part of the National Cancer Institute's Smoking and Health Program, the study is an extension of the tobacco and health survey being conducted in six major cities in the United States and the International Agency for Research on Cancer in Cuba, and the European environment. The program continuation is of significance because the range of smoking products in use by large and diverse human populations of Europe, and the range of incidence of lung cancer among these populations, permit strong comparisons with experience in the United States and Cuba. The project is urgently needed to provide a common (international) basis for measuring risk and clarifying the impact of alternative smoking products on differing human population segments. Data collection and analysis by strictly comparable methods ameliorate uncertainties attendant to past intranational studies and provide information of unique value in regard to smoking and health.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. $45,000

3.0720,

INTERNATIONAL EPIDEMIOLOGY STUDY-VIENNA, AUSTRIA

M. Kunze, Universitat Wien, *Spitalgasse 23, 1090 Vienna, Austria*

No summary has been provided to the Smithsonian Science Information Exchange.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. $57,983

3.0721,

BIOMEDICAL COMPUTING DESIGN & IMPLEMENTATION

N. Shusterman, Operations Research Inc., *1400 Spring St., Silver Spring, Maryland* 20910

Provide computer-related services in support of the scientific activities of the Environmental Epidemiology (EEB) Program Area of the Division of Cancer Cause and Prevention (DCCP), National Cancer Institute (NCI). This support will involve: research and development in computer science to develop specialized software; the use of existing software and

systems; and the development of custom programs and systems.
SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. $708,645

3.0722,
SUPPORT SERVICES FOR EPIDEMIOLOGY STUDIES
J.I. Cahill, Westat Inc., Research Division, *11600 Nebel St., Rockville, Maryland* 20852
Provide technical (non-professinal), managerial, and clerical support for the field studies directed by the EEB. Assist in establishment of new studies based on study designs and data provided by the EEB. Assist in data and biological specimen collections for both descriptive and analytic studies. Assist in recording, computer programming, and summarizing data collected in order to permit detailed analyses of such data. Assist in typing, duplicating, filing, and referencing all data. Assign personnel anywhere in the United States for short or long periods as applicable in order to carry out the particular studies desired.
SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. $1,354,587

3.0723,
SUPPORT SERVICES FOR NCI RADIATION STUDIES
W. Gerber, Systemedics Inc., *100 Main St., Reading, Massachusetts* 01867
This contract is for support services to the Radiation Studies Section, Environmental Epidemiology Branch. The Contractor will do the designing of data collection documents, abstracting, interviewing, tracing individuals, and coding.
SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. $233,464

3.0724,
RADIATION RISK IN ISRAELI CHILDREN WITH TINEA CAPITIS
B. Modan, Chaim Sheba Medical Center, *Bitan 27, Tel Hashomer, Ramat Gan, Israel*
OBJECTIVE: Update a list of persons treated for tinea capitis between 1949-1960 and obtain information about subjects who developed benign tumors or cancer of the thyroid, brain, parotid gland, breast, bone, lung, esophagus, leukemia, and lymphoma. This information will then be compared with that on a control group. The analysis will be done by NCI investigators at the end of the project.
SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. $122,600

3.0725,
MORBIDITY IN CHILDHOOD CANCER SURVIVORS AND OFFSPRING
F.F. Holmes, University of Kansas, Medical Center, School of Medicine, Dept. of Medicine, *39th St. & Rainbow Blvd., Kansas City, Kansas* 66103
OBJECTIVES: Provide information to, and elicit support of, local physicians hospitals concerning the study, where necessary. Identify cohort of cases with characteristics as follows, with or without the aid of ERG case listings, from the local tumor registry records: histologic confirmation of malignant disease; diagnosis prior to age 19; survival of at least five years after diagnosis; and attainment of age 18 by time of death or last follow-up. Prepare a tape of available demographic and medical data on the identified cohort of cases and transmit this information to NCI.
SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. $437,240

3.0726,
MORBIDITY IN CHILDHOOD CANCER SURVIVORS AND OFFSPRING
L.C. Strong, University of Texas, University of Texas System Cancer Center, M.D. Anderson Hospital & Tumor Inst., *6723 Bertner Ave., c/o Texas Medical Ctr., Houston, Texas* 77030
OBJECTIVE: Provide technical and professional support to the Biometry and Clinical Epidemiology Branches necessary to identify, locate, contact and interview cases of childhood cancer survivors and controls, and collect and abstract selected medical and vital records for these individuals (following procedures detailed in individual registry task outlines).
SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. $498,890

3.0727,
MORBIDITY IN CHILDHOOD CANCER SURVIVORS AND OFFSPRING
J.W. Meigs, Yale University, School of Medicine, Dept. of Epidemiology & Public Health, *333 Cedar St., New Haven, Connecticut* 06510
OBJECTIVES: Provide information to, and elicit support of, local physicians and hospitals concerning the study, where necessary. Identify a cohort of cases with characteristics as follows, with or without the aid of ERG case listings, from the local tumor registry records: histologic confirmation of malignant disease; diagnosis prior to age 19; survival of at least five years after diagnosis; and attainment of age 18 by time of death or last follow-up. Prepare a tape of available demographic and medical data on the identified cohort of cases and transmit this information to NCI.
SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. $427,630

3.0728,
MORBIDITY IN CHILDHOOD CANCER SURVIVORS AND OFFSPRING
H.B. Latourette, University of Iowa, School of Medicine, Dept. of Preventive Medicine & Environmental Health/Radiol, *Oakdale, Iowa* 52319
OBJECTIVES: Identify, locate, contact, and interview cases and controls, and collect and abstract selected medical vital records for the study of 'Morbidity in Childhood Cancer Survivors and Their Offspring.'
SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. $167,483

3.0729,
MORBIDITY IN CHILDHOOD CANCER SURVIVORS AND OFFSPRING
D.F. Austin, State Dept. of Health Services, *1450 Broadway, Oakland, California* 94612
No summary has been provided to the Smithsonian Science Information Exchange.
SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. $498,445

3.0730,
PLANNING OF AN EPIDEMIOLOGICAL AND STATISTICAL RESEARCH UNIT
W. Lawrence, Virginia Commonwealth University, Medical College of Virginia, Dept. of Surgery, *1200 E. Broad St., Richmond, Virginia* 23298 (P30 CA 16059-059005)
This project is part of a broader program (CA 16059).
SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. funds n.a.

3.0731,
COUNTY POPULATION ESTIMATES BY AGE, RACE AND SEX FOR THE 1970'S
R. Engels, U.S. Dept. of Commerce, Social & Economics Statistics Admin., Bureau of the Census, *Washington, District of Columbia* 20233
OBJECTIVES: This agreement covers the experimetal development of estimating methodology and the preparation of estimates of the resident population for all United States counties by age, race and sex by calendar year from 1970 (July 1). These estimates are needed between the actual years in which the census is taken (1950, 1960, 1970, 1980, ect.)
METHODS: The county units provided will either be identical with the units used by the National Cancer Institute in its publication of 1950-69 mortality data, or subsets thereof. The estimates will be by age (5-year groups to 85 years and over), cross-classified by sex and race (two groups: White and Black and Other Races). The initial model design will produce estimates for the age groups 65-69, 70-74, and 75 and over, and if the data prove to be of acceptable quality, the age range will be extended accordingly.
MAJOR FINDINGS: The contractor has provided the NCI with preliminary estimates of population by age, race and sex for individual counties in the United States by calendar year from 1970 through 1977. These estimates are currently undergoing testing with regard to their compatibility with earlier population estimates which have been utilized by the NCI. It is currently projected that estimates for county populations for the calendar year 1978 will be available to the NCI by July, 1980.
SIGNIFICANCE TO BIOMEDICAL RESEARCH AND THE PROGRAM OF THE INSTITUTE: There is no readily available source of population estimates at the county level for the time period in question, 1970 to the present. These populations are vital to the continuance of investigations concerning the geographic distribution of malignancy in the United States which the Environmental Epidemiology Branch has developed over the past several years.
PROPOSED COURSE: This project represents the first step in a program designed to produce annual population estimates on a regular basis in the detail specified, so as to meet the needs of the National Cancer Institute. A continuing relationship with the National Cancer Institute in reviewing and improving the estimating methodology is foreseen, and the Bureau of the Census is engaged in a cooperative effort with State agencies to improve the methodology and strengthen the estimates.
SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. $30,000

3.0732,
EPIDEMIOLOGIC STUDIES OF CANCER IN ALASKAN NATIVES
A.P. Lanier, U.S. Dept. of Health & Human Services, Public Health Service, Center for Disease Control, *Washington, District of Columbia* 20201
OBJECTIVES: To study the incidence of cancer in Alaskan natives from 1974 onward and the mortality from cancer in Alaskan natives from 1960 to the present; to investigate several striking familial aggregations of cancer in Alaskan natives, particularly nasopharyngeal cancer and hepatocellular carcinoma; and to search for environmental determinants of nasopharyngeal cancer, with particular emphasis on the presence of nitrosamines in Alaskan preserved fish.
METHODS EMPLOYED: Newly diagnosed cancers and cancer deaths among Alaskan natives will be ascertained through the facilities of the Public Health Service Hospitals in which virtually all Alaskan natives receive their health care. The data will be collected in a format compatible with the SEER Registries to permit comparison with other U.S. populations. Cancer-prone families will be studied in collaboration with professionals from the Family Studies Unit of NCI's Environmental Epidemiology Branch, utilizing clinical and laboratory protocols tailored to the malignancies to be evaluated. This will include hepatitis B and Epstein-Barr virus assays, immunologic and genetic tests, and other serologic markers aimed at uncovering mechanisms of disease susceptibility. A case-control study of nasopharyngeal cancer is planned, which will focus on dietary exposures of possible etiologic interest. Samples of suspect native food items will be assayed for the presence of nitrosamines.
MAJOR FINDINGS: Since the project has only been under way for four months, there are no preliminary findings to report. Necessary personnel have been hired, a SEER-compatible abstract form designed, population estimates for the period of study developed, and the case-control study interview instrument is in the design stages. An agreement has been reached with the Eppley Institute in Omaha to conduct the nitrosamine studies.
SIGNIFICANCE TO BIOMEDICAL RESEARCH AND THE PROGRAM OF THE INSTITUTE: The projects in this proposal are directed toward investigating the unusual patterns of cancer in the culturally and geographically unique population that Alaskan natives represent and identifying risk factors for these cancers.
PROPOSED COURSE: This study is intended to cover a two-year period. The collection of morbidity and mortaligy data will be initiated in the first year. (Text Abridged.)
SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. $120,639

3.0733,

ESTROGEN-BINDING BETA-GLOBULIN BREAST CANCER AND BENIGN BREAST DISEASE (HUMAN)

P. Siiteri, University of California, San Francisco Campus, School of Medicine, Dept. of Epidemiology & International Health, *551 Parnassus Ave., San Francisco, California* 94122 (P01 CA 13556-090003)

This project is part of a broader program (CA 13556).

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. funds n.a.

3.0734,

CANCER EPIDEMIOLOGY AND COMMUNITY INTERACTION

I. Martinez, University of Puerto Rico, Medical Sciences Campus, School of Medicine, *P.O. Box 5067, Rio Piedras, Puerto Rico* 00936 (P30 CA 16598-059002)

This project is part of a broader program (CA 16598).

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. funds n.a.

3.0735,

CANCER IN ARSENIC-EXPOSED POPULATIONS

P.E. Enterline, University of Pittsburgh, Graduate School of Public Health, Dept. of Biostatistics, *4200 5th Ave., Pittsburgh, Pennsylvania* 15260

The mortality experience of workers at a copper smelter in Tacoma, Washington, where nearly all the arsenic trioxide in the United States is produced, is being studied. Men employed a year or more between January 1, 1940, and December 31, 1964, have been followed for deaths through December 31, 1977. The cancer mortality experience of this cohort is being related to duration and intensity of arsenic exposure and latent period. Historic urinary arsenic measurements on workers are used to estimate exposures.

In addition, the mortality experience of persons living near the smelter is being studied to see if any effect of atmospheric contamination on cancer mortality can be detected. This includes: a) follow-up of children from an elementary school in the area using a cohort identified from school records between 1900 and 1919, and b) a study of mortality by census tract for Tacoma in which mortality in areas adjacent to the smelter will be compared to mortality in non-adjacent areas.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. $101,043

3.0736,

SPECIAL PROJECTS IN HEREDITARY CUTANEOUS MELANOMA

W.H. Clark, University of Pennsylvania, School of Medicine, *36th & Hamilton Walk, Philadelphia, Pennsylvania* 19174

Clinical evaluation of families at high risk of cancer is part of the Environmental Epidemiology Branch's responsibilities. Dr. Clark has discovered a genetically determined precursor nevus syndrome in these kindreds. The specific studies to be accomplished under this contract are: electron microscopic analysis of precursor moles; and development of educational materials to support the hereditary cutaneous melanoma project.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. $49,500

3.0737,

INTERNATIOANL EPIDEMIOLOGY STUDY ROME, ITALY

G. Visco, Ente Ospedaliero Monteverde, *Italy*

No summary has been provided to the Smithsonian Science Information Exchange.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. $65,282

3.0738,

INTERNATIONAL EPIDEMIOLOGY STUDY MILAN, ITALY

F. Berrino, Istituto Nazionale per lo Studio e la Cura dei Tumori, *1 Via G Venezian, 20133 Milan, Italy*

No summary has been provided to the Smithsonian Science Information Exchange.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. $44,115

3.0739,

INTERNATIONAL EPIDEMIOLOGY STUDY HEIDELBERG, GERMANY

D. Schmahl, Deutsches Krebsforschungszentrum, *Im Neuenheimer Feld 280, 6900 Heidelberg, Federal Republic of Germany*

No summary has been provided to the Smithsonian Science Information Exchange.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. $33,200

3.0740,

INTERNATIONAL EPIDEMIOLOGY STUDY VILLEJUFF, FRANCE

R. Flamant, Institut Gustave Roussy, *16 bis Ave. Paul Vaillant Cout, 94800 Villejuif, France*

No summary has been provided to the Smithsonian Science Information Exchange.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. $85,154

3.0741,

ASSESS THOROTRAST CASE/CONTROL FILES--RECOMMEND ACTION

L.A. Da Motta, Portugal Ministry of Public Welfare, Dept. of Epidemiology, *c/o Natl. School of Pub. Hlth., Lisbon, Portugal*

Conduct an examination of the existing files to determine: the precise number of cases and controls in the file; the degree of compatibility of the two groups; the specific items of information contained in the file and the completeness of that information; the proportion of each group known to be alive at the most recent follow-up date; and preparation of each group lost to follow-up at the most recent follow-up date. In addition, provide a series of recommendations defining the ways in which the existing data base could best be utilized to provide further information on the carcinogenic effects of Thorotrast itself or the long-term human risk associated with other transuranic elements. Such recommendations should also include an assessment of what further information would be likely to result from attempts to follow the groups in question beyond the most recent follow-up date.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. $5,000

3.0742,

THE POSSIBLE INFLUENCE OF DIET IN CARCINOGENESIS

D.F. Birt, University of Nebraska, Medical Center, School of Medicine, Eppley Inst. for Cancer & Allied Diseases, *42nd & Dewey Aves., Omaha, Nebraska* 68105

No summary has been provided to the Smithsonian Science Information Exchange.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. $113,743

3.0743,

EFFECT OF ORAL CONTRACEPTIVES ON CARCINOGEN METABOLISM

R. Gingell, University of Nebraska, Lincoln Campus, Graduate School, *Lincoln, Nebraska* 68508

There has recently been much concern over the possible association of hormone imbalance with human cancer in various organs. Prominent among these are the proposed association between oral contraceptives and the occurrence of benign hepatomas, and the increased incidence of breast and endometrial cancer in post-menopausal women which is accentuated by estrogen therapy. Despite a reported association of oral contraceptives with breast cancer in women and dogs, a positive correlation remains uncertain, and most current epidemiological evidence would suggest a protective role, if any.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. $61,600

3.0744,

NASOPHARYNGEAL CARCINOMA AND BURKITT'S LYMPHOMA

J. Higgenson, Centre International de Recherche sur le Cancer, *150 Cours Albert Thomas, 69372 Lyon Cedex 2, France*

OBJECTIVE: Continuation of Burkitt's lymphoma (BL) prospective studies, including epidemiological and virological studies in the West Nile. Malaria-related BL studies where EBV serological tests will be performed on selected portions of the population in Tanzania also will be continued. Analysis of genetic markers associated with NPC will be continued. Two HLAs previously identified in the Chinese from Singapore and Hong Kong NPC will be followed from the Singapore group and search for HLA associated with NPC in Tunisia will also be continued. 'la-like' antigens screened previously from serum from multiparous women in the Chinese community in Singapore will be followed. The work on mixed lymphocyte reaction (MLR) and primed lymphocyte transformation for investigation of D locus antigen will also be continued. IARC will maintain the serum bank by aliquoting the serum samples, storing the samples, and maintaining the complete records (clinical and virological testing data).

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. $392,750

3.0745,

LONG-TERM MORTALITY STUDY OF MINNESOTA IRON ORE MINERS

L.M. Schuman, University of Minnesota, Minneapolis Campus, School of Public Health, Dept. of Epidemiology, *1325 Mayo Memorial, Minneapolis, Minnesota* 55455

This is intended to be a collaborative study between the University of Minnesota and the Environmental Epidemiology Branch of the National Cancer Institute. The contract calls for basic data collection activities, whereby information from company employment records is abstracted and put into computer readable form. The work would include data editing and updating files with vital status information.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. $62,789

3.0746,

EVALUATION OF THE VIRAL ETIOLOGY OF BURKITTS TUMOR

F.K. Nkrumah, University of Ghana, School of Medicine, *P.O. Box 4236 Legon, Accra, Ghana*

Collect serum samples and appropriate clinical and epidemiologic data on patients treated by Burkitt Tumor Project, University of Ghana Medical School, as well as appropriate controls designated by the NCI Project Officer. Collect tissues and other biologic samples from patients treated by the Burkitt Tumor Project that are necessarily obtained as a part of the patients' routine diagnostic and therapeutic workup. Provide these biologic samples and appropriate data to the NCI Project Officer.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. funds n.a.

3.0747,

EPIDEMIOLOGY OF LIVER CANCER IN TEXAS

R.A. Buffler, University of Texas, Health Science Center at Houston, School of Public Health, Dept. of Epidemiology, *6515 Freeman, Houston, Texas* 77025

Study mortality from primary liver cancer in selected counties in Texas which were selected because they have the highest rates of primary liver cancer in this country. Use a case-control approach selecting two controls for each caseof primary liver cancer from the next deaths which occur that match on age (within the same five-year age category), sex, and race. The occupation and industry of employment will be coded from death certificates, and, in addition, information regarding employment and exposure in specific industries. Concentrate on Orange and Jefferson counties due to the large percent of the workforce employed in chemicals and related manufacturing industries. The study will include analysis of

data for Orange and Jefferson counties, including a detailed review of occupational histories and available pathology, plus additional studies from the results from Brazoria County.
SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. $23,000

3.0748,
COMPUTER SERVICES FOR THE NONMELANOMA SKIN CANCER STUDY
R.D. Salvatierra, Triton Corp., *1825 Connecticut Ave. N.W., Suite 408, Washington, District of Columbia* 20009
Maintain existing production systems and modify or develop additional production capabilities. Key and verify skin cancer incidence and interview data at regular intervals, at least twice per month. Develop computer programs and generate reports in support of statistical analyses of multiple data bases.
SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. $23,895

3.0749,
CASE STUDY OF CANCER IN SOUTHERN LOUISIANA
P. Correa, Louisiana State University, Medical Center, School of Medicine, Dept. of Pathology, *1542 Tulane Ave., New Orleans, Louisiana* 70112
The Contractor will work with NCI and EPA in the conduct of case-control studies to test hypothesis about cancer risk. Assist in the design of these studies and will assume complete responsibility for their administration and day-to-day conduct. Edit and computerize the collected information and jointly conduct statistical analyses of the data with NCI and EPA Staff. Thus, the Contractor will serve as a collaborator, contributing to decisions concerning the design and analysis of the epidemiologic study, and managing and performing its actual conduct.
SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. $61,500

3.0750,
EPIDEMIOLOGY-REGISTRY SECTION
J. McCusker, University of Rochester, School of Medicine & Dentistry, Dept. of Pathology, *601 Elmwood Ave., P.O. Box 607, Rochester, New York* 14642 (P30 CA 11198-129009)
This project is part of a broader program (CA 11198).
SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. funds n.a.

3.0751,
EPIDEMIOLOGICAL BIOMETRIC PROGRAM ON CANCER
J. Stamler, Northwestern University, Chicago Campus, School of Medicine, Dept. of Preventive Medicine & Community Health, *303 E. Chicago Ave., Chicago, Illinois* 60611 (P30 CA 15145-060060)
This project is part of a broader program (CA 15145).
SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. funds n.a.

3.0752,
PROGRAM OF EPIDEMIOLOGY-STATISTICS
J.W. Cole, Yale University, School of Medicine, *333 Cedar St., New Haven, Connecticut* 06510 (P30 CA 16359-060080)
This project is part of a broader program (CA 16359).
SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. funds n.a.

3.0753,
RENAL PELVIS AND URETER CANCERS
E.L. Wynder, American Health Foundation Inc., *320 E. 43rd St., New York, New York* 10017 (P01 CA 12376-090028)
This project is part of a broader program (CA 12376).
SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer inst. funds n.a.

3.0754,
ORAL CONTRACEPTIVE USAGE AMONG PATIENTS WITH MALIGNANT AND BENIGN LIVER TUMORS
E.L. Wynder, American Health Foundation Inc., *320 E. 43rd St., New York, New York* 10017 (P01 CA 12376-090030)
This project is part of a broader program (CA 12376).
SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. funds n.a.

3.0755,
CLUSTERING AND RISKS OF CANCER TYPES
A.G. Knudson, Inst. for Cancer Research, *7701 Burholme Ave., Philadelphia, Pennsylvania* 19111 (R01 CA 22780-030003)
This project is part of a broader program (CA 18153).
SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. funds n.a.

3.0756,
HEREDITY AND ENVIRONMENT IN CANCER INITIATION (HUMAN, ANIMALS)
A.G. Knudson, Inst. for Cancer Research, *7701 Burholme Ave., Philadelphia, Pennsylvania* 19111 (R01 CA 22780-030001)
This project is part of a broader program (CA 22780).
SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. funds n.a.

3.0757,
BIOSTATISTICS/EPIDEMIOLOGY
D. Thompson, Fred Hutchinson Cancer Research Center, *1124 Columbia St., Seattle, Washington* 98104 (P30 CA 15704-070058)
This project is part of a broader program (CA 15704).
SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. funds n.a.

3.0758,
SPOUSE STUDY
E.L. Wynder, American Health Foundation Inc., *320 E. 43rd St., New York, New York* 10017 (P01 CA 12376-090031)
This project is part of a broader program (CA 12376).
SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. funds n.a.

3.0759,
CORE - BIOSTATISTICS-EPIDEMIOLOGY
R. Prentice, Fred Hutchinson Cancer Research Center, *1124 Columbia St., Seattle, Washington* 98104 (P30 CA 15704-079002)
This project is part of a broader program (CA 15704).
SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. funds n.a.

3.0760,
EXOGENOUS HORMONE USE AND BREAST CANCER DEVELOPMENT
E.L. Wynder, American Health Foundation Inc., *320 E. 43rd St., New York, New York* 10017 (P01 CA 12376-090032)
This project is part of a broader program (CA 12376).
SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. funds n.a.

3.0761,
GASTROINTESTINAL CARCINOMA IN U.S.A. AND YUGOSLAVIA
E.L. Wynder, American Health Foundation Inc., *320 E. 43rd St., New York, New York* 10017 (P01 CA 12376-080033)
This project is part of a broader program (CA 12376).
SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. funds n.a.

3.0762,
DEVELOPMENT OF STATE WIDE INCIDENCE REPORTING
H.D. Rusch, University of Wisconsin, Madison Campus, Medical School, Dept. of Human Oncology, *450 N. Randall Ave., Madison, Wisconsin* 53706 (R18 CA 16405-050008)
This project is part of a broader program (CA 16405).
SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. funds n.a.

3.0763,
EPIDEMIOLOGICAL DATA PROCESSING AND COMPUTER FACILITIES
S. Stellman, American Health Foundation Inc., *320 E. 43rd St., New York, New York* 10017 (P01 CA 12376-090034)
This project is part of a broader program (CA 12376).
SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. funds n.a.

3.0764,
RELIABILITY OF DATA ON ALCOHOL-COFFEE-TOBACCO USE AND CANCER INCIDENCE
E.L. Wynder, American Health Foundation Inc., *320 E. 43rd St., New York, New York* 10017 (P01 CA 12376-090026)
This project is part of a broader program (CA 12376).
SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. funds n.a.

3.0765,
NASOPHARYNX CANCER
E.L. Wynder, American Health Foundation Inc., *320 E. 43rd St., New York, New York* 10017 (P01 CA 12376-080027)
This project is part of a broader program (CA 12376).
SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. funds n.a.

3.0766,
DIET AND CHOLESTEROL METABOLISM IN BREAST CANCER
A.E. Papatestas, City University of New York, Mount Sinai School of Medicine, School of Medicine, Dept. of Surgery, *1 Gustave L. Levy Pl., New York, New York* 10029
OBJECTIVES: To evaluate whether dietary and/or metabolic factors affect patterns of breast cancer development in general, and to identify which components of the diet are those which may affect breast cancer risk directly, or through metabolic changes. An attempt will be made to evaluate whether environmental dietary factors are more important than genetic metabolic factors in affecting cancer risk.
SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. funds n.a.

3.0767,
STUDY ENVIRONMENTAL CANCER - PRE-PAID HEALTH PLAN
A.G. Glass, Kaiser Foundation Research Inst., *5055 N. Greeley Ave., Portland, Oregon* 97217
Evaluate hypotheses concerning environmental causes of cancer by analysis of information in a Pre-Paid Health Plan which has been recorded over many years on large groups of patients having partic-

ular cancers, and to compare the data to those on individuals without the disease. Follow-up these analyses by extensive studies on those individuals who have had known exposures to the particular environmental factors which are suspect in the etiology of the cancers concerned.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. funds n.a.

3.0768,

FOLLOW-UP FLUOROSCOPICALLY EXAMINED TUBERCULOSIS PATIENT

R.R. Monson, Harvard University, Cambridge Campus, School of Public Health, Dept. of Epidemiology, *Cambridge, Massachusetts* 02138

Recontact former Massachusetts tuberculosis sanatoriums and obtain necessary permission and clearances to conduct the study. Select the population to study: both women and men who were discharged alive and who received various treatments for pulmonary tuberculosis. Design forms to abstract medical information and location information from medical records. Abstract medical and location information on all subjected selected for study. Locate the population selected for study. Design a patient questionnaire to obtain information on current and past disease status, especiallycancer history. Mail the questionnaire to all patients located alive. Validate all reported cancer diagnosis. Computerize the medical record data, questionnaire response data, and death certificate data. Determine radiation organ doses as accurately as possible.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. $327,535

3.0769,

STUDY ENVIRONMENTAL CANCER - PRE-PAID HEALTH PLAN

G.D. Friedman, Kaiser Foundation Research Inst., *1956 Webster St., Room 310 B, Oakland, California* 94612

Evaluate hypotheses concerning environmental causes of cancer by analysis of information in a Pre-Paid Health Plan which has been recorded over many years on large groups of patients having particular cancers, and compare the data to those on individuals without the disease. Follow-up on these analyses by extensive studies on those individuals who have had known exposures to the particular environmental factors which are suspect in the etiology of the cancers concerned.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. funds n.a.

3.0770,

EPIDEMIOLOGY OF BENIGN BREAST DISEASE

B. Modan, Chaim Sheba Medical Center, *Bitan 27, Tel Hashomer, Ramat Gan, Israel*

To try to determine the characteristics of patients with different types of non-invasive breast lesions, with particular reference to those factors reputed to be preferentially associated with breast cancer, and to compare the findings with our similarly conducted breast cancer study. The proposal consists of two phases: (a) case control interview study of 600 cases of non-invasive breast disease, in terms of such risk factors as age at first birth; menstrual history; menopausal status; parity; height and weight; familial breast cancer selected drug history; dietary intake and previous radiation exposure; (b) an incidence study of non-invasive breast lesions in a total community. In both phases, particular attention will be paid to the relative frequency of distinct histopathological forms in subpopulations at high and low risk sub-populations for breast cancer (i.e., Eurpoean vs. Asian and African born). The characterization of the breast lesions will take into account the histological pattern, degree of atypia and lymphoreticulo-endothelial response (LRE).

Identifying a high risk population for breast cancer is the utilization of the results.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst. $48,963

3.0771,

TOXOCARA INFECTION AND OCULAR DISEASE

L.T. Glickman, University of Pennsylvania, School of Veterinary Medicine, Dept. of Clinical Studies, *39th & Pine, Philadelphia, Pennsylvania* 19104 (R01 EY 03762-01)

The principal objectives of this proposal are to measure the serologic prevalence of toxocara canis infection in persons in the United States, to determine the epidemiologic pattern of infection with respect to demographic and geographic factors, and to assess the possible association of infection with visual deficits and ocular disease. For this purpose, we will perform the enzyme-linked immunosorbent assay (ELISA) on 8594 sera which were collected during the National Health and Nutrition Examination Survey of 1971-1973. Detailed demographic, medical, and ophthalmologic information is available for each of the participants.

Another objective is to define the clinical, pathological, and immunological response of nonhuman primates with experimental ocular toxocariasis. Cynomolgus monkeys will be infected by either the gastrointestinal or intravitreal route to study the pathogenesis and pattern of larva-specific antibody production in the serum, aqueous and vitreous humor. This information will aid in the interpretation of serologic test results from children with suspected toxocaral visceral larva migrans or ocular toxocariasis.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Eye Inst. $84,072

3.0772,

NATURAL HISTORY OF ANGLE CLOSURE GLAUCOMA SUSPECTS

P.L. Kaufman, University of Wisconsin, Madison Campus, Medical School, Dept. of Ophthalmology, *450 N. Randall Ave., Madison, Wisconsin* 53706 (R01 EY 03503-01)

Primary angle closure glaucoma is a significant cause of visual loss and blindness. Appropriate therapy, however, when administered in time is highly effective in curing the disease and preventing loss of vision. It is also a disease that usually occurs acutely with little or no previous warning. Research to date has done little to provide indicators that might accurately identify eyes at risk so that appropriate treatment could be instituted prior to the onset of an acute (potentially blinding) attack. Recognizing these facts, the National Advisory Eye Council Vision Research Program Planning Committee indicated an urgent need for the study of early detection and treatment of angle closure glaucoma patients. The present project is designed as a two center coordinated study to determine the natural history of angle closure suspect patients. These patients will be subjected to an initial examination that will include a physiologic angle closure provocative test (the dark-room prone test), measurement of the anterior chamber depth by pachometry and determination of the axial length by the use of ultrasonic technique. The patients will then be followed expectantly for five years. It is expected that we will be able to more clearly determine the attach rate in this population and determine whether there are any correlations between the results of the provocative test or the biometric parameters and the subsequent incidence of acute attacks. This information could then provide the hard data that are needed to indicate whether specific Clinical trials or other studies are indicated or justified.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Eye Inst. $18,403

3.0773,

NATURAL HISTORY OF ANGLE-CLOSURE GLAUCOMA SUSPECTS

J.T. Wilensky, University of Illinois, Medical Center at Chicago, Abraham Lincoln School of Medicine, Dept. of Ophthalmology, *1853 W. Polk St., Box 6998, Chicago, Illinois* 60680 (R01 EY 03461-01)

Primary angle-closure glaucoma is a significant cause of visual loss and blindness. Appropriate therapy, however, when administered in time is highly effective in curing the disease and preventing loss of vision. It is also a disease that usually occurs acutely with little or no previous warning. Research to date has done little to provide indicators that might accurately identify eyes at risk so that appropriate treatment could be instituted prior to the onset of an acute (potentially blinding) attack. Recognizing these facts, the National Advisory Eye Council Vision Research program Plan Committee indicated an urgent need for the study of early detection and treatment of angle-closure glaucoma patients. The present project is designed as a two center coordinated study to determine the natural history of angle-closure suspect patients. These patients will be subjected to an initial examination that will include a physiologic angle-closure provocative test (the dark-room prone test), measurement of the anterior chamber depth by pachometry and determination of the axial length by the use of ultrasonic technique. The patients will then be followed expectantly for five years. It is expected that we will be able to more clearly determine the attack rate in this population and determine whether there are any correlations between the results of the provocative test or the biometric parameters and the subsequent incidence of acute attacks. This information could then provide the hard data that are needed to indicate whether specific Clinical Trials or other studies are indicated or justified.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Eye Inst. $29,592

3.0774,

EPIDEMIOLOGICAL STUDY OF DIABETIC RETINOPATHY

R. Klein, University of Wisconsin, Madison Campus, Medical School, Dept. of Ophthalmology, *450 N. Randall Ave., Madison, Wisconsin* 53706 (R01 EY 03083-02)

A population of over 10,000 diabetic patients receiving their primary care from over 450 collaborating physicians (representing over 98 percent of physicians in this category) in an eleven county area were identified. During the first year of the study, charts were reviewed and information such as age of onset and duration of diabetes, current age, medication status level of glucose control, and blood pressure status was recorded.

In the second and third years of the study all juvenile onset insulin dependent diabetic patients (Type I) and a sample of adult onset (Type II) diabetic patients will be examined. The examination will consist of a questionnaire, a complete eye examination with vision determined by ETDRS protocol, stereo fundus photographs, height, weight, and blood pressure determination using HDFP protocol, and urine analysis with C-peptide determination.

The prevalence and severity of diabetic retinopathy will then be determined and the association between the onset, progression and severity of retinopathy and diabetes type, duration, blood pressure level, smoking history and other factors will be determined.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Eye Inst. $144,023

3.0775,

BIOCHEMICAL & CYTOGENETIC MARKERS IN RETINOBLASTOMA

A.L. Murphree, Childrens Hospital of Los Angeles, *4650 Sunset Blvd., Los Angeles, California* 90054 (R01 EY 02715-02)

The linkage between esterase and the retinoblastoma gene on chromosome 13 is being investigated. Various human retinoblastomas from both sporadic and hereditary cases are being propagated intraocularly and subcutaneously in the nude mouse. Esterase D activity and the electrophoretic pattern is being investigated in the primary tumors and those grown in the nude mice. Similarly the chromosome pattern of each tumor is being evaluated using the trypsin-Giemsa banding technique. In addition, blood samples from patients with both hereditary and sporadic retinoblastoma are being evaluated for their esterase D activity. This is a large scale study involving patients throughout the country. Dr. Robert Sparkes at UCLA Medical School is collaborating on this project.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Eye Inst. $53,868

3.0776,

CASE CONTROL STUDY OF DIABETIC RETINOPATHY

L.I. Rand, Joslin Diabetes Foundation Inc., *170 Pilgrim Rd., Boston, Massachusetts* 02215 (R01 EY 02636-03)

We propose a study of age, sex and duration matched long-term diabetics (15 years or more), some of whom gave no evidence of diabetic retinopathy (controls), others with proliferative diabetic retinopathy (cases), in regard to the distribution of selected demographic systemic and ocular factors to determine if the distribution of any one particular, or

any several of these factors, when taken independently or together is sufficiently different between the two groups to be considered a risk factor(s) or a protective factor(s) in the development of diabetic retinopathy.

Patients will have an interview during which questions about medical and social factors possibly associated with the development of diabetic retinopathy will be asked. Patients will also have a standard eye examination, with stereo fundus photographs of seven standard fields taken to be used for classification of retinopathy. Those patients without visible retinopathy will have fluorescein angiography performed according to a standard protocol. Blood specimens will be drawn for analysis to evaluate systemic and metabolic factors that may play a role in the development of diabetic retinopathy.

After all patients have been examined, photographed, interviewed, and had their laboratory evaluation, the data will be analyzed and estimations of relative odds for each individual variable studied will be computed. In addition, it is planned to look at combinations of variables as risk factors and to develop a multivariate risk function analysis of selected variables. Patients free of retinopathy (controls), will be followed prospectively at yearly intervals to evaluate the predictive value of the risk factors identified.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Eye Inst. $200,261

3.0777,

HLA AND GENETIC STUDIES IN DIABETIC RETINOPATHY

R.C. Ramsay, University of Minnesota, Minneapolis Campus, School of Medicine, Dept. of Ophthalmology, *1305 Mayo, Minneapolis, Minnesota* 55455 (R01 EY 02455-03)

Diabetic retinopathy represents a major cause of blindness in the U.S. today. Presently, no method allows a prediction that advanced retinopathy will later develop in an individual with diabetes mellitus. There is evidence from twin and ethnic studies that genetic factors, in addition to metabolic factors, may affect the development of severe retinopathy. The proposed study will test the hypothesis that there are one or more 'microangiopathy genes' in linkage dysequilibrium with HLA genes which determine susceptibility to severe diabetic retinopathy.

Diabetic populations to be studied include groups of JIDD and AOD patients selected by the documented presence or absence of proliferatve retinopathy. The value of HLA antigen associations as predictors of visual outcome will be studied by an evaluation of the patients followed in the DRS and ETDRS at the University of Minnesota. In addition, diabetic multiplex families with a high prevalence of proliferative retinopathy will be studied for linkage analysis.

These students will permit an evaluation of the role of HLA-related genetic markers in the development of proliferative diabetic retinopathy.

BIBLIOGRAPHIC REFERENCES: Barbosa, J., Ramsay, R.C. and Goetz, F.: Plasma glucose, insulin, glucagon and growth hormone in kindreds with maturity onset type of hyperglycemia in young people. Ann. Int. Med. 88:595, 1978.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Eye Inst. $102,516

3.0778,

INCLUSION CONJUNCTIVITIS OF THE NEWBORN

J. Schachter, University of California, San Francisco Campus, School of Medicine, Dept. of International Health, *551 Parnassus Ave., San Francisco, California* 94122 (R01 EY 02216-04)

The overall objectives of this project are to determine the prevalence of common bacterial pathogens in conjunctivitis of the newborn with a specific emphasis on the prevalence of inclusion conjunctivitis (IC). The risk of acquiring inclusion conjunctivitis will be determine by a prospective study based upon screening pregnant women for cervical chlamydial infection and following their infants. In addition to development of eye disease, an effort will be made to determine the incidence and prevalence of extra ocular chlamydial infections in the infants. The major emphasis will be placed on respiratory infection in exposed infants, whether or not they develop eye disease.

BIBLIOGRAPHIC REFERENCES: Schachter, J., M. Grossman, J. Holt, R. Sweet, and S. Spector: Chlamydial Infection in Neonates Involves Multiple Anatomic Sites. J. Inf. Dis., (in press) 1979. Rowe, D.S., E. Aicardi, C.R. Dawson, and J. Schachter: Purulent Ocular Discharge in Neonates: Significance of Chlamydia Trachomatis, (in press) 1979.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Eye Inst. $85,277

3.0779,

TUCSON EPIDEMIOLOGICAL STUDY OF AIRWAYS OBSTRUCTIVE DISEASE (HUMAN)

B. Burrows, University of Arizona, School of Medicine, Dept. of Internal Medicine, *1501 N. Campbell Ave., Tucson, Arizona* 85721 (P50 HL 14136-090009)

This project is part of a broader program (HL 14136).

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Heart Lung & Blood Inst. funds n.a.

3.0780,

WORK-SITE BASED HYPERTENSION DETECTION AND TREATMENT

M.H. Alderman, Cornell University, Medical Center, Cornell Medical College, Dept. of Medicine, *1300 York Ave., New York, New York* 10021 (P50 HL 18323-060035)

This project is part of a broader program (HL 18323).

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Heart Lung & Blood Inst. funds n.a.

3.0781,

INTERSTITIAL LUNG DISEASE - CLINICAL, PATHOLOGIC AND EPIDEMIOLOGIC

E.A. Gaensler, Boston University, School of Medicine, Dept. of Biochemistry, *80 E. Concord St., Boston, Massachusetts* 02215 (P01 HL 19717-040038)

This project is part of a broader program (HL 19717).

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Heart Lung & Blood Inst. funds n.a.

3.0782,

HYPERTENSION DETECTION & FOLLOW-UP PROGRAM CENTER

J.W. Jones, Michigan State University, School of Human Medicine, Dept. of Medicine, *Soil Science Bldg., East Lansing, Michigan* 48824

Continue to carry out mortality surveillance on Stepped Care and Referred Care participants. Carry out surveillance of the normotensive sample. Each year for two years, perform on a 50% sample of Stepped Care and Referred Care a home visit. Participate in review and analysis of data from the continued surveillance as well as prior HDFP data.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Heart Lung & Blood Inst. $79,414

3.0783,

THERAPY FOR HYPERTENSION IN THE GENERAL POPULATION

H.G. Langford, University of Mississippi, Medical Center, School of Medicine, Dept. of Medicine, *2500 N. State St., Jackson, Mississippi* 39216

Continue to carry out mortality surveillance on Stepped Care and Referred Care participants. Carry out surveillance of the normotensive sample. Each year for two years, perform on a 50% sample of Stepped Care and Referred Care a home visit. Participate in review and analysis of data from the continued surveillance as well as prior HDFP data.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Heart Lung & Blood Inst. $13,000

3.0784,

SUPPORT FOR LIPID RESEARCH CLINIC

R.H. Bradford, Oklahoma Medical Ressarch Foundation, *825 N.E. 13th St., Oklahoma City, Oklahoma* 73104

Establish and maintain a Lipid Research Clinic designed to increase knowledge related to improving the diagnosis and management of hyperlipoproteinemia with special reference to coronary artery disease and for establishing opportunities for further research into its causes and treatment. Specific projects: Core lipid measurement, standardization, data management, exercise electrocardiography, tests for secondary hyperlipoproteinemia, prevalence study, intervention study, and distribution of lipoprotein families.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Heart Lung & Blood Inst. $1,474,800

3.0785,

STUDY OF HYPERTENSION IN THERAPY

C.H. Castle, Utah Higher Education System, University of Utah, School of Medicine, Dept. of Internal Medicine, *1400 E. 2nd S., Salt Lake City, Utah* 84112

Continue to carry out mortality surveillance on Stepped Care and Referred Care participants. Carry out surveillance of the normotensive sample. Each year for two years, perform on a 50% sample of Stepped Care and Referred Care a home visit. Participate in review and analysis of data from the continued surveillance as well as prior HDFP data.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Heart Lung & Blood Inst. $176,577

3.0786,

COOPERATIVE STUDY OF HYPERTENSION

E.P. Tuttle, Emory University, School of Medicine, Dept. of Medicine, *1364 Clifton Rd. N.E., Atlanta, Georgia* 30322

Continue to carry out mortality surveillance on Stepped Care and Referred Care participants. Carry out surveillance of the normotensive sample. Each year for two years, perform on a 50% sample of Stepped Care and Referred Care a home visit. Participate in review and analysis of data from the continued surveillance as well as prior HDFP data.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Heart Lung & Blood Inst. $239,814

3.0787,

LONGITUDINAL EVALUATION OF WORKERS EXPOSED TO COTTON DUST

R.N. Jones, Tulane University of Louisiana, School of Medicine, Dept. of Medicine, *1430 Tulane Ave., New Orleans, Louisiana* 70112 (P50 HL 15092-090012)

This project is part of a broader program (HL 15092).

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Heart Lung & Blood Inst. funds n.a.

3.0788,

RESPIRATORY AND IMMUNOLOGIC RESPONSES IN COFFEE PLANT WORKERS

R.N. Jones, Tulane University of Louisiana, School of Medicine, Dept. of Medicine, *1430 Tulane Ave., New Orleans, Louisiana* 70112 (P50 HL 15092-090011)

This project is part of a broader program (HL 15092).

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Heart Lung & Blood Inst. funds n.a.

3.0789,

RISK FACTORS FOR AIRWAYS OBSTRUCTION IN A RURAL COMMUNITY (HUMAN)

M.S. Tockman, Johns Hopkins University, School of Medicine, Dept. of Medicine, *725 N. Wolfe St., Baltimore, Maryland* 21205 (P50 HL 14153-090010)

This project is part of a broader program (HL 14153).

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Heart Lung & Blood Inst. funds n.a.

3.0790,

ENVIRONMENTAL FACTORS IN AIRWAYS OBSTRUCTIVE DISEASES (HUMAN)

M.D. Lebowitz, University of Arizona, School of Medicine, Dept. of Internal Medicine, *1501 N. Campbell Ave., Tucson, Arizona* 85721 (P50 HL 14136-090016)

This project is part of a broader program (HL 14136).

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Heart Lung & Blood Inst. funds n.a.

3.0791,

HEPATITIS B IN NORMAL POPULATIONS - EPIDEMIOLOGY, RISK FACTORS AND TRANSMISSION

W. Szmuness, New York Blood Center of Greater N.Y. Community Blood Coun., *310 E. 67th St., New York, New York* 10021 (P01 HL 09011-170018)

This project is part of a broader program (HL 09011).
SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Heart Lung & Blood Inst. funds n.a.

3.0792,

GENETIC AND ENVIRONMENTAL FACTORS IN CHRONIC PULMONARY DISEASE (HUMAN)

B.H. Cohen, Johns Hopkins University, School of Medicine, Dept. of Medicine, *725 N. Wolfe St., Baltimore, Maryland* 21205 (P50 HL 14153-090001)

This project is part of a broader program (HL 14153).
SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Heart Lung & Blood Inst. funds n.a.

3.0793,

LONGITUDINAL STUDY OF SANDBLASTERS SILICOSIS (HUMAN)

H. Weill, Tulane University of Louisiana, School of Medicine, Dept. of Medicine, *1430 Tulane Ave., New Orleans, Louisiana* 70112 (P50 HL 15092-090002)

This project is part of a broader program (HL 15092).
SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Heart Lung & Blood Inst. funds n.a.

3.0794,

RESPIRATORY AND IMMUNOLOGIC EVALUATION OF TOLUENE DIISOCYANATE EXPOSURE (HUMAN)

B.T. Butcher, Tulane University of Louisiana, School of Medicine, Dept. of Medicine, *1430 Tulane Ave., New Orleans, Louisiana* 70112 (P50 HL 15092-090005)

This project is part of a broader program (HL 15092).
SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Heart Lung & Blood Inst. funds n.a.

3.0795,

EARLY NATURAL HISTORY OF ATHEROSCLEROSIS AND HYPERTENSION (CHILDREN)

G.S. Berenson, Louisiana State University, Medical Center, School of Medicine, Dept. of Medicine, *1542 Tulane Ave., New Orleans, Louisiana* 70112 (P50 HL 15103-090001)

This project is part of a broader program (HL 15103).
SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Heart Lung & Blood Inst. funds n.a.

3.0796,

HYPERTENSION THERAPY IN THE GENERAL POPULATION

R. Berman, Mount Sinai Hospital, *2215 Park Ave., Minneapolis, Minnesota* 55404

Continue to carry out mortality surveillance on Stepped Care and Referred Care participants. Carry out surveillance of the normotensive sample. Each year for two years, perform on a 50% sample of Stepped Care and Referred Care a home visit. Participate in review and analysis of data from the continued surveillance as well as prior HDFP data.
SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Heart Lung & Blood Inst. $170,763

3.0797,

REEXAMINATION OF FRAMINGHAM HEART STUDY COHORT

T.R. Dawber, Boston University, School of Medicine, Dept. of Medicine, *80 E. Concord St., Boston, Massachusetts* 02215

Prepare and print examination forms, perform physical examinations including laboratory tests, assessment reviews, and take medical histories of all surviving members of the Framingham Cohort. For Cohort members who are unable to come to the examination center, arrange or perform a home physical examination. For Cohort members who no longer reside in the Framingham area, determine their health status by the use of mail questionnaires or telephone interviews.
SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Heart Lung & Blood Inst. $25,352

3.0798,

NATURAL HISTORY, REVERSIBILITY OF PULMONARY ABNORMALITIES IN SMOKERS (HUMAN)

J.D. Brain, Harvard University, Boston Campus, School of Public Health, Dept. of Physiology, *55 Shattuck St., Boston, Massachusetts* 02115 (P50 HL 19170-040001)

This project is part of a broader program (HL 19170).
SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Heart Lung & Blood Inst. funds n.a.

3.0799,

EPIDEMIOLOGY OF SUDDEN DEATH (HUMAN)

G.S. Wagner, Duke University, School of Medicine, Dept. of Medicine, *Bc.: 3711, Durham, North Carolina* 27710 (P50 HL 17670-060012)

This project is part of a broader program (HL 17670).
SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Heart Lung & Blood Inst. funds n.a.

3.0800,

SUBCLINICAL PULMONARY DISEASE IN A RURAL ENVIRONMENT (HUMAN)

J.E. Craighead, University of Vermont & State Agricultural College, School of Medicine, Dept. of Medicine, *85 S. Prospect St., Burlington, Vermont* 05401 (P60 HL 17292-060003)

This project is part of a broader program (HL 17292).
SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Heart Lung & Blood Inst. funds n.a.

3.0801,

MINERAL PNEUMOCONIOSES - PATHOGENESIS AND PATHOLOGY (HUMAN)

J.E. Craighead, University of Vermont & State Agricultural College, School of Medicine, Dept. of Medicine, *85 S. Prospect St., Burlington, Vermont* 05401 (P60 HL 17292-060005)

This project is part of a broader program (HL 17292).
SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Heart Lung & Blood Inst. funds n.a.

3.0802,

PROSPECTIVE STUDY OF POST TRANSFUSION HEPATITIS

J.W. Mosley, University of Southern California, School of Medicine, Dept. of Medicine, *2025 Zonal Ave., Los Angeles, California* 90033

Coordinate a well controlled prospective study of post-transfusion hepatitis involving study centers in Los Angeles, St. Louis, and Houston, as a pilot study or a possible five-year study of post-transfusion hepatitis.
SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Heart Lung & Blood Inst. $539,876

3.0803,

SERIAL EXERCISE TESTING IN HIGH RISK MEN

N.L. Lasser, College of Medicine & Dentistry of New Jersey, New Jersey Medical School, School of Medicine, Dept. of Medicine, *100 Bergen St., Newark, New Jersey* 07103 (R01 HL 22848-02)

Although the submaximal graded exercise test (GXT) has become popular for the detection of preclinical ischemic heart disease, its predictive accuracy in asymptomatic subjects is low. The accuracy increases to 85% with serial testing, and the measurement of systolic time intervals (STI's) can greatly enhance predictive power. It is proposed to perform serial GXT's and pre- and post-exercise STI's at each annual examination of men participating in the Multiple Risk Factor Intervention Trial (MRFIT) in Newark. MRFIT, a multiple center collaborative Federally-sponsored clinical trial aimed at determining whether treatment of multiple risk factors (hypercholesterolemia, hypertension, smoking) reduces coronary mortality, is being carried out in 12,000 high risk men, age 35-57, in control and experimental groups, with a 6-year followup. A baseline submaximal GXT was performed but will be performed again as part of the national protocol. Continuation of GXT's at the Newark Center is an ancillary study requiring outside funding. Tests are being carried out annually in the 632 men attending the Newark Clinic utilizing a Marquette Series 3500 Exercise System recording on paper and magnetic tape and an Irex Continu Trace 101 recorder, with computer analysis of the tapes at the MRFIT ECG Center, Halifax, Nova Scotia. Data will be processed by the MRFIT Coordinating Center, where analyses will also be done. Analysis will be made of conversion rates of GXT's and changes in fitness levels. In addition to enhancing the power of the MRFIT these studies in this uniquely valuable population should demonstrate the ability to make the GXT a more accurate predictor of future coronary events and potential use of the test as an endpoint in clinical trials. These studies should indicate the utility of STI's as an adjunct to GXT and elucidate the effect of other lifestyle changes on exercise habits. Analysis of data from GXT's will examine correlations with other parameters. Data analyzed to date fail to reveal an association between GXT fitness measures and high density lipoprotein cholesterol levels.
SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Heart Lung & Blood Inst. $53,275

3.0804,

POST-TRANSFUSION HEPATITIS IN NEWBORN CHILDREN

C.E. Stevens, New York Blood Center of Greater N.Y. Community Blood Coun., Laboratory of Epidemiology, *310 E. 67th St., New York, New York* 10021 (R01 HL 22838-03)

This project is designed to assess the incidence and etiology of post-transfusion hepatitis in newborn infants. Infants transfused during the newborn period and non-transfused control infants are followed for six months after entry into the study. Monthly blood specimens are tested for alanine aminotransferase level and appropriate sera are tested for serologic markers of hepatitis A, B, cytomegalovirus (CMV) and Epstein-Barr virus (EBV). Thus far eight of 160 transfused infants (5.0%) and none of 29 controls who have completed six months follow-up have developed hepatitis. All cases were asymptomatic and there was no serologic evidence of HAV, HBV, or CMV infection (EBV serology is not yet complete).
SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Heart Lung & Blood Inst. $69,782

3.0805,

EARLY RISK PREDICTORS FOR CHRONIC PULMONARY DISEASE

I.B. Tager, Harvard University, Boston Campus, Peter Bent Brigham Hospital, *721 Huntington Ave., Boston, Massachusetts* 02115 (R01 HL 22528-04)

The present proposal is the continuation of the annual follow-up of a cohort of children age 5-9 years and their family members. The objective of the study is to identify factors for obstructive airways disease which operate early in life.

No strikingly new data have been generated since the previous summary. Efforts have been focused on solving methodologic problems encountered in the analysis of rates of change in pulmonary function in children during puberty. Once these problems have been solved, analysis will focus on the epidemiologic characteristics of children at various levels of growth of lung function. These analyses will be based upon years of observation of the cohort.
SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Heart Lung & Blood Inst. $114,100

3.0806,

THE ETIOLOGY/PREVALENCE OF PERIPHERAL ARTERIAL DISEASE

M.H. Criqui, University of California, San Diego Campus, School of Medicine, Dept. of Community Medicine, *P.O. Box 109, La Jolla, California* 92093 (R01 HL 22255-02S2)

The objective of this study is to determine the prevalence of peripheral arterial disease (PAD) in a defined population by non-invasive techniques, to investigate the etiology of peripheral arterial disease by evaluating the association of certain cardiovascular disease risk factors with PAD, and to evaluate the degree of correlation between PAD and coronary heart disease (CHD) on a polulation basis in order to determine whether non-invasive tests of PAD can be used as a marker for CHD.

PAD is measured using four tests: (1) Flow velocity by Doppler ultrasound, (2) Segmental blood pressure, (3) Post-occlusive reactive hyperemia, and (4) Pulse reappearance time. Factors being investigated with regard to PAD include blood pressure, lipids, lipoproteins including the cholesterol/triglyceride ratio in VLDL, fasting plasma glucose, glycosylated hemoglobin, apoprotein E, a medical history, diet, medications, alcohol use, and cigarette smoking. Information on subsequent cause-specific mortality in this population will be obtained.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Heart Lung & Blood Inst. $5,365

3.0807,

HEMODYNAMIC EFFECTS OF DIETARY SODIUM IN MAN

J.M. Sullivan, University of Tennessee, Center for the Health Sciences, School of Medicine, Dept. of Medicine, *62 S. Dunlap St., Memphis, Tennessee* 38103 (R01 HL 21523-03)

Compelling evidence links dietary sodium intake with the prevalence of hypertension in several human population groups around the world. Epidemiologic studies of man and selective inbreeding studies in rats suggest that most population groups contain individuals who are either salt-sensitive, salt-resistant, or who lie somewhere in between. Limited, short-term human studies suggest that the hemodynamic basis of these differences lies in sodium's property of decreasing vascular resistance in normal subjects while increasing resistance in hypertensive subjects. Additional studies are needed to verify this important point and to determine its long-term significance. Non-invasive methods of estimating changes in total peripheral vascular resistance in response to dietary sodium manipulation using echocardiography and venous occlusion plethysmography will be tested as a means of identifying salt-sensitive individuals in the population who might benefit from preventive dietary measures. These methods have the advantage of avoiding the anxiety-provoked sympathetic nervous system stimulation associated with the placement of right heart catheter or intra-aeterial cannulae. The relative effect of dietary potassium on peripheral vascular resistance will also be studied. The groups to be studied will include normal subjects, normotensive subjects with a family history of hypertension, subjects with labile essential hypertension and subjects with mild, fixed essential hypertension. The relationships of dietary sodium and potassium with urinary prostaglandin excretion in the various groups of patients will also be explored.

BIBLIOGRAPHIC REFERENCES: Sullivan, JM, Schoeneberger AA, Ratts TE, Palmer ET, Samaha JK, Mance C and Muirhead EE: Short-term therapy of severe hypertension: Hemodynamic correlates of the antihypertensive response in man. Archives of Internal Medicine 139:1233-1239, 1979. Sullivan JM, Ratts TE, Schoeneberger AA, Samaha JK and Palmer ET: The effect of diet on echocardiographic left ventricular dimensions in normal man. American Journal of Clinical Nutrition 32:2410-2415, 1979.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Heart Lung & Blood Inst. $68,369

3.0808,

NATURAL HISTORY OF ASTHMA-METHACHOLINE TOLERANCE TEST

R.G. Townley, Creighton University, School of Medicine, Dept. of Medicine, *629 N. 27th St., Omaha, Nebraska* 68131 (R01 HL 21494-02)

We are interested in the factors responsible for the exquisite bronchial sensitivity of patients with bronchial asthma to certain mediators. This is a continuation of a population, genetic family study of certain host factors in bronchial asthma. This study deals with factors that are involved in determining the natural history of bronchial asthma in the general population. One of the major questions in this study is whether the bronchial sensitivity of asthmatic individuals to methacholine occurs at an early age even before clinical manifestation of the disease occurs. We intend to use the methacholine inhalation challenge test as a means of defining asthma and possibly using this as a marker for elucidation of its genetic characteristics. Another major part of this study is to determine whether asthma is acquired, genetically transmitted, and/or the result of interaction of environmental and host factors.

We intend to study the natural history of asthma and methacholine sensitivity in patients who currently have asthma, former asthmatics, their atopic and non-atopic siblings, concordant and discordant twin pairs and in persons in asthmatic families with alpha-1-antitrypsin phenotypes MS, MZ and MM. We will study the genetic characteristics of predisposition to asthma, in the above high risk groups as well as low risk groups such as non-atopic families. Parameters to be assessed include methacholine tolerance, allergy history and skin tests, serum IgE, protease inhibitor (Pi) types, and Histocompatability antigens.

BIBLIOGRAPHIC REFERENCES: Townley, R.G., Bewtra, A.K., Nair, N.M., Brodkey, F.D., Wah, G.D. and Burke, K.M.: Methacholine Inhalation Challenge Study. J. Allergy Clin. Immunol. 64(6): 569, 1980. Rosenthal, R.R., Chai, H, Mathison, D., Specter, S.L., Townley, R.G.: Indication for Inhalation Challenge. J. Allergy and Clin. Immunol. 64(6): 603, 1980.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Heart Lung & Blood Inst. $65,869

3.0809,

CHARACTERIZATION OF PEDIGREES PRONE AND RESISTANT TO CHD

R.R. Williams, Utah Higher Education System, University of Utah, School of Medicine, Dept. of Internal Medicine, *1400 E. 2nd S., Salt Lake City, Utah* 84112 (R01 HL 21088-04)

Genetic predisposition and resistance to early coronary heart disease (CHD) will be studied in a large sample of population-based pedigrees in Utah (100 with premature CHD, 40 with longevity, and 40 control pedigrees). CHD incidence and risk factor data will be sought for living members of 180 descending pedigrees, estimated to contain approximately 9000 persons. An estimated 2800 hospital charts will also be abstracted for deaths and persons with nonfatal CHD. Five thousand persons including children in 100 of these pedigrees will be screened twice in five years. Data collection will include blood cholesterol, triglycerides, HDL, and glucose, height, weight, skinfolds, and blood pressure; socioeconomic status, smoking, illnesses, medications, and hospitalizations; physician's history and physical exam, detailed family history and dietary evaluation. For adults age 18 plus, leisure and occupational activity questionnaires, ECGs, bench test estimates of functional aerobic capacity, and psychological tests (including Type A-B personality) will be collected.

Analyses will (1) determine the proportion of all premature coronary disease in a general population found in high risk pedigrees (and longevity in low risk pedigrees); (2) classify prone and resistant pedigrees by syndromes involving CHD risk factors, and determine the frequency of pedigrees by types; (3) assess gene-environment interaction, and (4) identify genetic mechanisms using pedigree diagramming, descriptive genetic indices, and maximum likelihood model testing. Results will elucidate underlying mechanisms of disease causation and provide important information for use in programs of CHD detection treatment and prevention.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Heart Lung & Blood Inst. $120,275

3.0810,

GLYCEMIA, OTHER TRAITS AND CV DEATH IN 40,000 PERSONS

J. Stamler, Northwestern University, Chicago Campus, School of Medicine, Dept. of Community Health & Preventive Medicine, *303 E. Chicago Ave., Chicago, Illinois* 60611 (R01 HL 21010-04)

A second generation prospective epidemiologic study on atherosclerotic cardiovascular disease, particularly coronary heart disease, aims particularly to elucidate the role of glucose intolerance as an independent risk factor for macrovascular disease. It also has the goal of clarifying the role of other traits (e.g., hyperuricemia, obesity, rapid resting heart rate, pure systolic hypertension, ECG abnormalities) as risk factors, independent of the major risk factors (hypercholesterolemia, hypertension, cigarette smoking) demonstrated by the 'first generation' U.S. longitudinal epidemiologic studies. Almost 40,000 white and black men and women, chiefly 25-64 and identified in the Chicago Heart Association Project in Industry from 1967 to 1973 are to be followed for 10 years to determine the relationship of glucose tolerance (as well as clinically diagnosed diabetes, untreated and treated) and each of the other traits--with multiple other factors controlled--to rates of mortality from All Causes, Cardiovascular Diseases, Coronary Heart Disease, Sudden Coronary Death, Cerebrovascular Disease, and Cancers. For example, the contribution of glucose intolerace and clinical diabetes to risk of death, both cause-specific and all causes, is to be assessed with the following other baseline factors controlled in bivariate and multivariate analyses; age, serum cholesterol, blood pressure, cigarette smoking, relative weight, serum uric acid, heart rate ECG abnormalities, and such demographic variables as education and marital status for about 4,500 persons screened twice, the significance of two values and of changes in these variables for predicting risk is to be assessed. For 4,108 persons, the interplay between glucose tolerance and scores from the Jenkins Activity Survey (as well as other cited factors) in influencing risk of macrovascular disease death is to be evaluated. Analyses of the findings for this CHA cohort of 40,000 and its age-sex-race strata are proceeding in concert with corresponding analyses for the Chicago Peoples Gas Co. and Western Electric Co. studies. This endeavor is also part of an International Collaborative Group involving 15 prospective epidemiologic studies in Australia, Europe, Japan, and the U.S.A.

BIBLIOGRAPHIC REFERENCES: Stamler, J. Can an Effective Fat-Modified Diet be Safely Recommended after Weaning for Infants and Children in General: D. General Discussion. Lauer, R.M. and Shekelle, R.B., Eds., Childhood Prevention of Atherosclerosis and Hypertension, Raven Press, New York, pp. 407-410, 1980. Stamler, J. Overweight, Hypertension, Hypercholesterolemia and Coronary Heart Disease. Mancini, M., Lewis, B. and Contaldo, F., Eds., Medical Complications of Obesity, Academic Press, London, pp. 191-216, 1979.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Heart Lung & Blood Inst. $124,242

3.0811,

BLOOD GLUCOSE HGB A1C, AND DIABETIC VASCULAR DISEASE

K.H. Gabbay, Childrens Hospital Medical Center, Cell Biology Laboratory, *300 Longwood Ave., Boston, Massachusetts* 02115 (R01 HL 20539-04)

The association of diabetes mellitus with microvascular disease and accelerated macrovascular disease is a serious problem for the juvenile-onset diabetic patient. The contribution of poor diabetic control to microvascular and microvascular disease is not clear at the present time. A prospective evaluation of the role of diabetic blood glucose control in the development of these complications requires adequate and precise assessment of blood glucose levels over an extended time period. It is proposed that serial measurements of glycosylated hemoglobins will provide an accurate integrated index of blood glucose levels in the diabetic patient over an extended period of time. This hypothesis will be tested with a follow-up of 100 juvenile diabetic patients over a five year period. The association of such indices of blood glucose control will be correlated with the development and progression of microvascular disease. Quadriceps capillary basement membrane thickness obtained on muscle biopsies at the beginning of the study, and two and four years later, will be used to assess the progression of microvascular disease during the study period. Both indices of diabetic blood glucose control, and the progression of capillary basement membrane thickness will be correlated with the traditional risk factors for the development of macrovascular disease in this population. In addition, the profiles of risk factors for macrovascular disease in the diabetic patients will be compared to similar profiles in a non-diabetic sibling population to determine whether the usual risk factors are mediators of the accelerated atherogenesis seen in diabetes.

BIBLIOGRAPHIC REFERENCES: Bunn, H.F., Gabbay, K.H., and Gallop, P.M.: The glycosylation of hemoglobin: Relevance to Diabetes Mellitus. Science 200:21-27, April 1978. Sosenko, J., Spack, N., Breslow, J., Miettinen, O., and Gabbay, K.H.: Relationship of glycosylated hemoglobin with cholesterol and LDL-cholesterol in insulin-dependent diabetics. Diabetes 27, Suppl. 2, p. 505 A, 1978.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Heart Lung & Blood Inst. $355,849

3.0812,

PROSPECTIVE BUNDLE BRANCH BLOCK STUDY

M.M. Scheinman, University of California, San Francisco Campus, School of Medicine, Dept. of Medicine, *551 Parnassus Ave., San Francisco, California* 94122 (R01 HL 20238-05)

The objective of the proposed research is to correlate measurements of atrioventricular node (A-H) and infranodal (H-Q) conduction times and refractory periods with total mortality, incidence of sudden death

and progression to higher grades of AV block in patients with bundle branch block (BBB). His bundle recordings will be obtained in patients with bundle branch agreeing to enter this study in order to estimate AV nodal and infranodal conduction time. These patients will be followed either in the cardiac clinic at San Francisco General Hospital, University of California, San Francisco or by private referring physicians. Either the patient or referring physician is contacted at 3 month intervals and pertinent physical findings, symptoms and a 12-lead ECG are recorded. 24- hour continuous ECG monitor is obtained at least 3 times per year and more often when clinically indicated. In the event of death, a Public Health Nurse interviews the patient's family or friends, reviews the death certificate or results of the postmortem examination (where available) in order to determine the cause and suddenness of the demise. Documented episodes of 2 degrees and 3 degrees AV block will be compiled. Analyses of the data will hopefully allow us to define a subset of patients with BBB who are at increase risk for development of either sudden death/or high grade AV block and may have important implications with regard to prophylactic cardiac pacemaker implantation in patients with BBB.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Heart Lung & Blood Inst. $70,212

3.0813,

CORONARY RISK FACTORS IN CHILDREN

R.M. Lauer, University of Iowa, School of Medicine, Dept. of Pediatrics, *Jessup Hall, Iowa City, Iowa* 52240 (R01 HL 20124-04)

This study is concerned with coronary risk factors in school age children in Muscatine, Iowa. Measurements of heights, weights, triceps skin fold thickness, cholesterol and triglyceride levels, and blood pressure have been made on alternate years in an entire school district on alternate year since 1970. From these measurements studies of tracking (peer rank order consistency) of anthropometric measures, lipids and blood pressure have been described. Children whose blood pressure remain persistently in the upper quintile, mid quintile and lowest quintile of the distribution have been studied. These have been studied by echocardiography, and venous occlusive plethysmography. Children in the upper part of the distribution of blood pressure have higher cardiac outputs, and equal vascular resistance to those in the lower part of the distribution of blood pressure.

Those in the upper part of the distribution have significantly thicker interventricular septa and left ventricular posterior walls than those with lower pressures. Those with higher pressures also show an inability to maximally vasodilate their forearm vascular beds to the same degree as those with lower pressures. These observations indicated that children with higher blood pressures have thicker hearts and structurally different systemic vascular resistence beds.

BIBLIOGRAPHIC REFERENCES: Schieken RM, Clarke WR, Mahoney LT, and Lauer RM: Measurement Criteria for Group Echocardiographic Studies. Am J Epidemiology: 110 504, 1979. Lauer RM, Clarke WR: Tracking of Coronary Risk Factors in Children: The Muscatine Study. Atherosclerosis V. ed. Gotto AM, Smith LC, Allen B, publisher Springer Verlay, NY, April 1980.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Heart Lung & Blood Inst. $57,693

3.0814,

FACTORS IN BLOOD PRESSURE LEVELS OF CHILDREN

G.E. Fraser, Loma Linda University, School of Health, Dept. of Biostatistics & Epidemiology, *Loma Linda, California* 92354 (R01 HL 20005-05)

The proposed work for year 05 of the study will largely involve analysis and reporting of results. In addition, there will be some effort put towards completing the final 5% of the data collection.

Reports will include the relationship of blood pressure to psychosocial factors and physical fitness, and to nutritional factors and demographic factors. This information will be assessed for both the children who are the primary participants in this study, and also their parents.

The relationship between the blood pressures of the children and their parents will be explored. The psychosocial factors investigated include Type A/B, psychosocial family support factors, and psychological distress measures.

Finally the percentage of variance explained by all of these factors will be assessed.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Heart Lung & Blood Inst. $193,553

3.0815,

HIGH BLOOD PRESSURE IN THE YOUNG

J.M. Kotchen, University of Kentucky, School of Medicine, Dept. of Community Medicine, *Limestone & Euclid, Lexington, Kentucky* 40506 (R01 HL 19956-05)

This research involves a 7-10 year follow-up of identified populations of young adults to determine factors in adolescence associated with subsequent hypertension. We are following young mothers who, as adolescents, experienced hypertension during their first pregnancy and similar young mothers, normotensive during pregnancy. Recent follow-up studies at 3-6 years post partum indicate that women hypertensive during pregnancy and their children have higher blood pressure than controls; 14% of women hypertensive during pregnancy, but not control women, were found to have blood pressure greater than 140/90 on repeated measurements, and EKG studies showed evidence of increased left ventricular wall thickness. Group differences in renin-aldosterone responses to exercise were also found. We are following these women and their children to determine whether hypertension of pregnancy is associated with subsequent hypertension and the emergence of hypertensive cardiovascular disease in young mothers, and higher blood pressures in their children compared to controls.

We are also conducting a follow-up of young adults who participated in a blood pressure screening project during high school in 1973. A five year follow-up indicated that individuals in this population maintain their relative rank-order for blood pressure over time, and blood pressure measurements during adolescence are predictive of subsequent blood pressure. Relatively high blood pressures are associated with an increased prevalence of abnormal echocardiograms and exercise EKG studies. We are re-evaluating these individuals after 7-10 years to determine if relative blood pressure rank is maintained; to determine whether relatively high blood pressure in adolescence predisposes to hypertension and hypertension of pregnancy; to study aggregation of cardiovascular disease risk factors in young adults; to identify early evidence of cardiovascular disease. Sympathetic nervous system activity, the renin-aldosterone axis, and steroid responses to grades ACTH infusions are being studied in 'pre-hypertensive' young adults to identify mechanisms that may be involved in the pathogenesis of hypertension.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Heart Lung & Blood Inst. $113,714

3.0816,

A PROSPECTIVE STUDY - BLOOD PRESSURE IN NEWBORN TWINS

H. Gelband, University of Miami, School of Medicine, Dept. of Pediatrics, *1400 N.W. 10th Ave., Box 520875, Coral Gables, Florida* 33152 (R01 HL 19930-05)

The primary research objective is to determine the relative contributions of genetics and environment to blood pressure levels among a group of newborn twins. Blood pressure is measured on days 0, 1, 2, 3, 14 and 1, 3, 6, 9, and 12 months. Zygosity is determined through blood group analysis, placental assessment of chorionicity, and clinical assessment of the infants' physical appearance. Placentation is also analyzed for each twin pair with respect to intravascular communications. Additionally, parents and siblings of the twins are evaluated as to blood pressure, height and weight. The ultimate purpose of this research is to shed light on the determinants of blood pressure levels during infancy.

BIBLIOGRAPHIC REFERENCES: Levine, R.S., Hennekens, C.H., Lay, R., Gourley, J., and Gelband, H.: A twin method for estimating inter-observer variability of gestational age assessment. Southern Society for Pediatric Research, New Orleans, Jan. 18-20, 1979. Clin. Res. 26:826A, 1978. Levine, R.S., Gourley, J., Hennekens, C.H., Cassady, J., Golding, M., Lewis, L., Nirenberg, J., and Gelband, H.: Pre-natal influence on newborn blood pressure. Society for Pediatric Research, Atlanta, April 30-May 4, 1979.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Heart Lung & Blood Inst. $178,562

3.0817,

HIGH BLOOD PRESSURE IN THE YOUNG, PREVALENCE & PRECURSOR

P.E. Baer, Baylor College of Medicine, School of Medicine, Dept. of Psychiatry, *1200 Moursund Ave., Houston, Texas* 77025 (R01 HL 19929-05)

The overall goal for the entire project is to determine whether there are psychological mediating factors that contribute to the aggregation of high blood pressure within families. This goal involved the study of hypertensive and normotensive parents, and their children. It will be determined whether parent-child interactions and family behaviors of hypertensive parents are related to personality characteristics which are correlated with high blood pressure. Blood pressure level and reactivity will be studied in hypertensive and normotensive parents and their children.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Heart Lung & Blood Inst. $100,623

3.0818,

BLOOD PRESSURE OF CHILDREN AND YOUNG ADULTS

L.H. Kuller, University of Pittsburgh, Graduate School of Public Health, Dept. of Epidemiology, *4200 5th Ave., Pittsburgh, Pennsylvania* 15260 (R01 HL 19864-03S1)

The project consists of two studies. The first study is a prospective investigation of blood pressure and heart rate in newborn infants with follow-up determinations conducted at 6, 15, and 24 months of age. The primary aims of the study are to establish the normal values of these variables in infancy, and to identify any possible racial difference in blood pressure and heart rate at this early age. The second portion of the project is an ongoing historical prospective study of the relationship between obesity, body type, social characteristics and casual blood pressure during adolescence and subsequent blood pressure levels in a predominantly white, middle-class population originally studied from 1957-1963.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Heart Lung & Blood Inst. $15,057

3.0819,

BLOOD PRESSURE--PRECURSORS AND CONSEQUENCES

R.L. Watson, University of Mississippi, Medical Center, School of Medicine, Dept. of Preventive Medicine, *2500 N. State St., Jackson, Mississippi* 39216 (R01 HL 19858-05)

In this study we will reexamine selected samples of a cohort of women formed during 1965-1967, as well as children born to this cohort.

A portion of these women who had blood pressure measured during a school survey at the ages of 14 to 20 subsequently pregnant, and some developed preeclampsia. They delivered children now 6-11 years of age. Reexamination of the mothers and examination of the children is planned to determine if blood pressure of children of mothers in whom preeclampsia was diagnosed differs from those of mothers in whom no such diagnosis was made.

Urinary electrolytes, dietary histories, socioeconomic levels and other information, as well as repeat blood pressure determinations, were obtained in other subsamples of the school cohort. Reexamination is planned to determine the correlation of the previously obtained variables with present blood pressure status. In addition, siblings previously characterized will be reexamined to allow analysis of blood pressure aggregation in the face of the establishment of separate households and differing environmental patterns with time.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Heart Lung & Blood Inst. $99,660

3.0820,

PREVENTION OF PROSTHETIC VALVE ENDOCARDITIS

G.L. Archer, Virginia Commonwealth University, Medical College of Virginia, Dept. of Medicine, *1200 E. Broad St., Richmond, Virginia* 23298 (R01 HL 19818-05)

The proposed research will investigate methods for prevention of prosthetic valve endocarditis (PVE) caused by the bacterium, Staphylococcus epidermidis, the most common organism causing these infections. The study will involve three phases. In the first phase, the antibiotic susceptibility of isolates from patients with PVE will be determined, mechanisms of

antibiotic resistance investigated, and the antibiotic susceptibility characteristics of the organisms related to time of onset of infections following surgery and the antibiotic prophylaxis used in each patient during surgery. In the second phase, antibiotic prophylaxis will be studied using a rabbit model of endocarditis. The value of prophylaxis in preventing infections due to antibiotic-resistant S. epidermidis and in selecting out these resistant isolates will be evaluated. The final phase of the study will be to define the hospital epidemiology of S. epidermidis and the methods of transmission of this organism to patients. Specific markers for hospital-acquired S. epidermidis will be sought using new epidemiologic tools, particularly those which characterize patterns of extrachromosomal DNA.

BIBLIOGRAPHIC REFERENCES: Tenenbaum, M.J., and Archer, G.L. The value of teichoic acid antibodies in Staphylococcus aureus bacteremia: reassessment. Southern Med. J. 73:140-144, 1980. Archer, G.L., Tenenbaum, M.J., Antibiotic-resistant Staphylococcus epidermidis in patients undergoing cardiac surgery. Antimicrob. Agents Chemother. 17:269-272, 1980.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Heart Lung & Blood Inst. $43,643

3.0821,
RESPONSE OF THE LUNG TO INJURY

C. Franzblau, Boston University, School of Medicine, Dept. of Biochemistry, *80 E. Concord St., Boston, Massachusetts* 02215 (P01 HL 19717-04)

Pulmonary emphysema and interstitial pneumonia are two diffuse lung diseases which may be viewed as responses of the lung to injury. One of the identifying features of emphysema is the specific alteration of the elastic tissue network, whereas in interstitial pneumonia, widespread involvement of many of the elements of the pulmonary parenchyma occurs. Understanding the nature of these processes has been limited in early stages of disease. We propose to study animal models of emphysema and diffuse interstitial pneumonia in a concerted attempt to gain insights into the pathophysiological and patho-biochemical changes which takes place in these progressing lesions. Lung mechanics and gas exchange will be examined. Connective tissue biochemistry, prostaglandins, catecholamines and cyclic nucleotides will be evaluated, and the full range of ultrastructural techniques will be applied to the various lesions. Modified elastases will be synthesized to study in these animal models. Studies on pure cell systems from lung will provide additional insights. In parallel studies, an assessment of lung growth and development in normal and pneumonectomized animals will be carried out employing many of the same physiologic, biochemical and ultrastructural techniques. Radioautography at the light and electron microscopic level are an integral part of all animal studies. The possible role of cell mediated immunity in the pathogenesis of these diseases will be investigated. A laboratory devoted to clinical epidemiological studies will interrelate with several of the medical science disciplines represented in the program. It is anticipated that the results of all these studies will give rise to greater understanding of processes of normal lung growth and the nature of the injuries and their repair which results in the development of pulmonary emphysema and chronic interstitial pneumonia. New diagnostic and therapeutic techniques may well derive from these studies.

BIBLIOGRAPHIC REFERENCES: Stone, P.J., Calore, J.D., and Franzblau, C. Studies on the Elastin Degrading Activity of gamma 2-macroglobulin-Elastase Complexes. Federation Proceedings 38 #3, Part I, p. 834 (1979). Stone, P.J., Lucey, E.C., Calore, J.D., Powers, J.C., Snider, G.L. and Franzblau, C. The Moderation of Elastase-Induced Emphysema in Hamsters by Post-Treatment with a Choloromethyl Ketone Elastase Inhibitor. American Review of Respiratory Disease 119, 364 (1979).

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Heart Lung & Blood Inst. $945,682

3.0822,
PULMONARY SCOR - LUNG INJURY BY CHILDHOOD INFECTIONS

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An integrated, multidisciplinary research program is in progress which has as a general goal the identification and control of acute, intercurrent processes which may influence growth and development of the respiratory system with resultant long-term sequelae. Longitudinal studies of infants and children are establishing normal patterns of growth of lung function and the impact on this of acute respiratory infections with emphasis on the syndrome of bronchiolitis. This prospective clinical study is complemented by retrospective approaches of three types: 1) comprehensive evaluations of patients referred for recurrent or chronic progressive pulmonary diseases (including those with cystic fibrosis, sarcoidosis and anti-protease or immune deficiencies) to identify responsible defects in pulmonary defense mechanisms; 2) follow-up studies of children in the community documented to have had infections during the past decade with agents such as respiratory syncytial virus; and 3) assessment of the burden of pulmonary disability among North Carolina Children by development, testing and validation of pediatric questionnaires to facilitate case finding and early diagnosis. Relevant basic laboratory studies are being performed using experimental models of respiratory diseases (animals and cultures of specialized pulmonary cells infected with representative agents) to define the mechanisms of injury, repair and protection. This combination of clinical and basic research should lead to improve means of diagnosis, therapy and prevention of respiratory diseases and their complications or sequelae.

BIBLIOGRAPHIC REFERENCES: Henderson, F.W., Clyde, W.A., Jr., Collier, A.M. and Denny, F.W.: The etiologic and epidemiologic spectrum of bronchiolitis in pediatric practice, J. Peds. 95:183-190, 1979. Clyde, W.A., Jr.: Experimental Models for Study of Common Respiratory Viruses. Environmental Health Perspectives (in press), 1979.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Heart Lung & Blood Inst. $613,364

3.0823,
PULMONARY SCOR--CHRONIC DISEASES OF THE AIRWAYS

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The goals of this proposed SCOR program are: 1) to generate new knowledge relating to the physiology, pathology, pharmacology, and epidemiolmgy chronic diseases of airways; and 2) to apply this knowledge of to the study of new modalities of therapy and prevention. We seek the effective integration of laboratory and clinical research and its focus on airways disease. Project 1 examines one important reservoir from which clinically significant disease arises, and seeks to explore the progression and reversibility of airways disease. Projects 3, 4, and 5 grapple with major issues of etiology: genetic, physiologic, pharmacologic, and environmental interactions which may provide and accelerate the pathophysiological changes leading to debilitating airways disease. Project 6 examines one of the consequences of airways dysfunction which leads to disability and respiratory failure. With Project 7 we begin to consider interventions; other aspects of disability and approaches to therapy are explored in Projects 8 and 9. The core units (Projects 10 and 11) provide essential services for the described research. We believe these projects represent a significant interdisciplinary attack directed toward chronic diseases of airways.

BIBLIOGRAPHIC REFERENCES: Snedden, S.L., J.D. Brain, and J. Mead. Aerodynamics and aerosol deposition in dog lungs during steady expiratory flow. Physiologist 21:113, 1978. Sneddon, S.L., and j.D. Brain. Factors influencing aerosol deposition in small animals. Resp. Physiol. Submitted, 1979.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Heart Lung & Blood Inst. $420,463

3.0824,
SUDDEN DEATH IN YOUNG ATHLETES

B.J. Maron, U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Heart Lung & Blood Inst., Clinical Physiology Section, *9000 Rockville Pike, Bethesda, Maryland* 20205 (Z01 HL 01765-02 CB)

Sudden death occurring in competitive athletes is usually due to structural congenital cardiovascular disease. The most common cause of such deaths in this series was hypertrophic cardiomyopathy. While the suspicion of cardiovascular disease is often raised during life in such athletes, the coreect diagnosis is not often made clinically.

BIBLIOGRAPHIC REFERENCES: Maron, B.J., Roberts, W.C., McAllister, H.A., Rosing, D.R., Epstein, S.E.: sudden death in young athletes. Circulation 62:218-229, 1980.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Heart Lung & Blood Inst. funds n.a.

3.0825,
TWIN STUDY FOLLOW-UP EXAMINATION--CHD INCIDENCE

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No summary has been provided to the Smithsonian Science Information Exchange.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Heart Lung & Blood Inst. $138,505

3.0826,
TWIN STUDY FOLLOW-UP EXAMINATION

N.O. Borhani, University of California, Davis Campus, School of Medicine, Dept. of Community Health, *Davis, California* 95616

Determine the disease experience of the cohort over the ten year interval for analysis relative to baseline risk factor data. Validate the results of morbidity data obtained by previously mailed questionnaire. Ascertain a subgroup of MZ twins discordant for CHD incidence for analysis relative to differences in environmental factors. Estimate genetic variance for factors that were not collected in the initial examination, but may be related to the risk of CHD. Analyzedata that were collected in the initial examination for verification of results of estimates of genetic variance.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Heart Lung & Blood Inst. $67,017

3.0827,
TWIN STUDY FOLLOW-UP EXAMINATION

M.A. Chesney, S R I International, *333 Ravenswood Ave., Menlo Park, California* 94025

Determine the disease experience of the cohort over the ten year interval for analysis relative to baseline risk factor data. Validate the results of morbidity data obtained by previously mailed questionnaire. Ascertain a subgroup of MZ twins discordant for CHD incidence for analysis relative to differences in environmental factors. Estimate genetic variance for factors that were not collected in the initial examination, but may be related to the risk of CHD. Analyzedata that were collected in the initial examination for verification of results of estimates of genetic variance.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Heart Lung & Blood Inst. $76,502

3.0828,
FRAMINGHAM COHORT SURVEILLANCE AND OFFSPRING STUDY

T.R. Dawber, Boston University, School of Medicine, Dept. of Medicine, *80 E. Concord St., Boston, Massachusetts* 02215

Perform a morbidity and mortality surveillance of the Framingham Heart Study Cohort. Re-examine the offspring and theirspouses. Assist NHLBI staff with special testing of the offspring and their spouses. Participate in the process of data editing and data reduction.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Heart Lung & Blood Inst. $965,730

3.0829,
TWIN STUDY FOLLOW-UP EXAMINATION

J.C. Christian, Indiana University, Indiana University - Purdue University at Indianapolis, School of Medicine, Dept. of Medical Genetics, *1219 W. Michigan St., Indianapolis, Indiana* 46202

Determine the disease experience of the cohort over the ten year interval for analysis relative to baseline risk factor data. Validate the results of morbidity data obtained by previously mailed questionnaire. Ascertain a subgroup of MZ twins discordant for CHD incidence for analysis relative to differences in environmental factors. Estimate genetic variance for factors that were not collected in the initial examination, but may be related to the risk of CHD. Analyze data that were collected in the initial examination for verification of results of estimates of genetic variance.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Heart Lung & Blood Inst. $117,746

3.0830,

OCCUPATIONAL HEALTH FIELD STUDIES (WOODWORKERS)

J.E. Craighead, University of Vermont & State Agricultural College, School of Medicine, Dept. of Medicine, *85 S. Prospect St., Burlington, Vermont* 05401 (P60 HL 17292-060033)

This project is part of a broader program (HL 17292).

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Heart Lung & Blood Inst. funds n.a.

3.0831,

LONG-TERM RESPIRATORY EFFECTS OF HIGH LEVEL ACUTE CHLORINE GAS EXPOSURE (HUMAN)

R.N. Jones, Tulane University of Louisiana, School of Medicine, Dept. of Medicine, *1430 Tulane Ave., New Orleans, Louisiana* 70112 (P50 HL 15092-090015)

This project is part of a broader program (HL 15092).

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Heart Lung & Blood Inst. funds n.a.

3.0832,

GEOGRAPHIC PATHOLOGY OF ATHEROSCLEROSIS AND CORONARY HEART DISEASE (HUMAN)

R.E. Tracy, Louisiana State University, Medical Center, School of Medicine, Dept. of Pathology, *1542 Tulane Ave., New Orleans, Louisiana* 70112 (P01 HL 08974-160028)

This project is part of a broader program (HL 08974).

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Heart Lung & Blood Inst. funds n.a.

3.0833,

MILWAUKEE PATIENT STUDY - HYPERSENSITIVITY PNEUMONITIS

D.P. Schlueter, Medical College of Wisconsin, School of Medicine, Dept. of Medicine, *561 N. 15th St., Milwaukee, Wisconsin* 53233 (P50 HL 15389-090008)

This project is part of a broader program (HL 15389).

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Heart Lung & Blood Inst. funds n.a.

3.0834,

EPIDEMIOLOGY CORE RESOURCE

H. Weill, Tulane University of Louisiana, School of Medicine, Dept. of Medicine, *1430 Tulane Ave., New Orleans, Louisiana* 70112 (P50 HL 15092-090013)

This project is part of a broader program (HL 15092).

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Heart Lung & Blood Inst. funds n.a.

3.0835,

TWENTY-FOUR-HOUR BLOOD PRESSURE IN ADOLESCENTS

C. Ferencz, University of Maryland, Baltimore Professional Schools, School of Medicine, Dept. of Social & Preventive Medicine, *655 W. Baltimore St., Baltimore, Maryland* 21201 (R01 HL 25876-01A1)

The purpose of this research is to characterize in adolescents blood pressure variations which might be indicative of future hypertension, utilizing a non-invasive portable method of blood pressure determination in ambulatory, free-living adolescents representative of the State of Maryland population and dichotomized by a documented family history of hypertension. The findings of these two groups will also be compared to those of adolescents with primary and secondary hypertension.

This study will determine within-the-day fluctuations of blood pressure in adolescent members (12-18 years of age) of households chosen in a previous project as a probability sample of the Maryland population. The characteristics of the 24-hour blood pressure curves will be analyzed as the dependent variables in this descriptive epidemiologic study which will include variables of family data on hypertension, health and social status, and anthropometric, health, and life-style characteristics of the adolescents.

Comparison will be made of the findings in respondents free of a family history of hypertension and those with a family history of hypertension. A group of adolescents with primary and secondary hypertension, ascertained through medical sources, will be similarly studied. The results of this study will provide a sound epidemiologic basis for future in-depth exploration of alterations of blood pressure characteristics which may be indicative of future hypertension.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Heart Lung & Blood Inst. $146,465

3.0836,

DEATHS TO 1980 AMONG FINNS WITH 1956 LIPOPROTEIN DATA

A. Keys, University of Minnesota, Minneapolis Campus, School of Public Health, Lab of Physiological Hygiene, *1325 Mayo Memorial, Minneapolis, Minnesota* 55455 (R01 HL 25823-01)

In 1956 the responsible investigator, with M.J. Karvonen, conducted medical surveys in Finland which included measurement of cholesterol in the alpha and beta lipoproteins separated by paper electrophoresis. Sampling in east and west Finland provided data on 869 clinically healthy men then aged 20 to 60. Some findings were published in the Lancet July 26, 1958.

Finland has a very high mortality from coronary heart disease which we verified in the Seven Countries Study (started in 1959 in Finland). It is estimated that by 1980 about 380 of our men of 1956 will be dead, 140 from coronary heart disease. It is proposed to ascertain the deaths and their causes, using the excellent Finnish death, citizenship, and National Pension System records. Staff members of the Finnish Heart Association will cooperate.

Analysis of relationships of the 23-year mortality with 1956 characteristics should illuminate the significance of the known risk factors and the theory that high density lipoproteins protect against coronary heart disease. Alpha and high density lipoproteins are essentially identical.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Heart Lung & Blood Inst. $18,575

3.0837,

ASTHMA EPIDEMICS AND ENVIRONMENT - WHEN, WHERE AND WHY

I.F. Goldstein, Columbia University, School of Public Health, Dept. of Epidemiology, *600 W. 168th St., New York, New York* 10032 (R01 HL 25793-02)

The objective of this study of epidemic asthma is to develop models enabling the predictions in time and space of asthma epidemics by first: finding reliable and objective procedures for identifying such epidemics, second: to examine and interpret long-term trends in asthma, and third: to identify environmental factors including pollutants both man-made and biological and meteorological parameters associated with the epidemics.

The procedure will use data from municipal hospital emergency rooms in New Orleans and New York City, meteorological and demographic data, and such information as is available on industrial pollutants or natural allergens as seems relevant. Appropriate statistical techniques for time series analysis and cluster analysis have already been developed by the group, and additional techniques will be developed as needed.

BIBLIOGRAPHIC REFERENCES: I.F. Goldstein, Weather Patterns and Asthma Epidemics in New York City and New Orleans, USA. In press, International Journal of Biometeorology, 1980. I.F. Goldstein and J. Cuzick, Application of a Time-Space Clustering Methodology to the Assessment of Acute Environmental Effects on Respiratory Illnessses. In press, Reviews on Environmental Health, 1980.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Heart Lung & Blood Inst. $84,361

3.0838,

ANTECEDENTS OF THE TYPE A BEHAVIOR PATTERN

K.A. Matthews, University of Pittsburgh, School of Medicine, Dept. of Psychiatry, *3550 Terrace St., Pittsburgh, Pennsylvania* 15261 (R01 HL 25767-02)

The present work constitutes a beginning step in identifying the psychobiological origins of the Type A behavior pattern, an established risk factor for coronary heart disease. Overt behavioral manifestations of Type A are extremes of competitive achievement-striving, a sense of time urgency and impatience, and an aggressive hostility. Individuals thought to exhibit those behaviors are called Type As, whereas those who do not are called Type Bs. Based on evidence from longitudinal studies of personality development, it was decided that childhood and adolescence are likely to be the periods when the overt characteristics of Type A emerge and stabilize. In order to study the origins of Type in the developing individual, a way of measuring Type A behaviors was needed. A set of rating scales, called the MYTH, was designed to identify children who are rated by their classroom teachers as exhibiting competitive achievement-striving, impatience, and aggression-hostility. The MYTH is reliable across time and can predict children's impatience and aggression. The current research was designed to complete the basic psychometric studies on the MYTH. Studies are being conducted to: (a) obtain an estimate of the MYTH's reliability; (b) examine the MYTH's validity as a measure of children's achievement-striving; and (c) investigate the hemodynamic responses during a challenging task of fifth grade children who score high and low on the MYTH. The last investigation was included because Type A adults as young as 18 years old show elevations in systolic blood pressure while performing a challenging task and thus, the present study can test for Type A adult-child similarities in hemodynamic responses.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Heart Lung & Blood Inst. $37,158

3.0839,

ENVIRONMENTAL RISK FACTORS IN CONGENITAL HEART DISEASE

C. Ferencz, Johns Hopkins University, School of Hygiene & Public Health, Dept. of Epidemiology, *615 N. Wolfe St., Baltimore, Maryland* 21205 (R01 HL 25629-01A1)

The objective of this epidemiologic study is to identify new risk factors for cardiac abnormalities which may result from interactions of multiple teratogenic agents or enhancements of fetal damage by non-teratogenic substances.

Index cases will be 750 infants with severe congenital heart disease identified over a 3-year period through the Regional Pediatric Cardiology Services in Baltimore and Washington. Control infants will be chosen at random from the births occurring in area hospitals served by the Cardiology Centers. Information will be obtained by home interviews. A precoded questionnaire administered to the mother will record details of pre and post-conception exposures to drugs, smoking, alcohol and caffeine. Home environmental exposures caused by heating and cooking fuels, and maintenance activities (paints, insecticides) and crafts and hobbies (solvents, laquer) will be noted. Occupational histories of mother and father will be examined by industry, type of job, and potential teratogen.

Analyses by multiple logistic regression will seek to elucidate additive and interactive effects of the various exposures, after adjustment for confounding variables. Because the multifactorial origin of congenital malformations is widely accepted, a summation or enhancement of environmental insults in the pathogenesis of congenital heart disease is a reasonable possibility, worthy of investigation.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Heart Lung & Blood Inst. $40,225

3.0840,

COMMUNITY CONTROL OF HYPERTENSION IN MISSISSIPPI

D.A. Frate, Central Mississippi Inc., *Box 749, Winona, Mississippi* 38967 (R01 HL 25623-01)

This project centers on demonstrating the health and cost effectiveness of a hypertension control and education effort designed from a community-based perspective in a rural area in central Mississippi. The program involves: 1) the use of a local community organization as the grantee and focus of activities - Central Mississippi, Incorporated, 2) the involvement of local medical providers - Sidney A. Johnson, M.D., 3) the on-site scientific management of the Principal Investigator - Dennis A. Frate, Ph.D., 4) the use of local residents as the managers and educators, 5) the development of intervention strategies based on the social fabric of this area -extended family health counselors, 6) the use of computer based resources for training and education, 7) and the coordination of a scientific consortium skilled in health program design, clinical management, program evaluation and epidemiology.

This program will center on not merely the detection of hypertensives but on the management and education and the subsequent reduction in risk factors. A wide range of evaluation efforts are planned on the

closely randomized population and intervention groups to measure the overall health and cost effectiveness of this program. In addition to the control efforts, a carefully designed epidemiological investigation will be conducted into the genetic-environmental relationships in hypertension.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Heart Lung & Blood Inst. $411,633

3.0841,
PSYCHOSOCIAL FACTORS AND COURSE AFTER HEART ATTACKS

W.A. Greene, University of Rochester, School of Medicine & Dentistry, Dept. of Medicine/Psychiatry, *601 Elmwood Ave., P.O. Box 607, Rochester, New York* 14642 (R01 HL 25266-01A1)

The primary goal of this proposal is to test specific hypotheses that a number of prospectively obtained psychosocial variables, personal losses or disappointments, unpleasant affects and social resources predict later complications of coronary heart disease. In addition tests will be made of hypotheses pertaining to other possible course predictors, demographic and behavioral.

The population includes 978 patients entering the CCU over four years, 1973-1976, with myocardial infarction (75%) and coronary insufficiency (25%). Eighty percent are males and twenty percent are females. After initial data collection just prior to hospital discharge, patients are seen every 4 months for seven contacts and then every 8 months for four contacts, a total of 11 follow-ups during five years.

Initial hospital predischarge data include the following independent variables: 1) antecedent demographic, comorbidity, family health, and prodromal clinical symptoms, social change and home dissatisfactions, 2) diagnosis and severity of the index coronary event, 3) post-event affects dimensions and a 6-hour Holter ECG recording for arrhythmias. At each subsequent follow-up the same interval clinical status, social circumstances, concurrent affects and ECG recording are again obtained.

The main criterion variables are recurrence of acute infarction and/or sudden death. Biannual survival-mortality information will continue to be determined for a total of five years for each patient.

The data will be organized on the computer to allow for retrieval for analyses of interrelations of single and combinations of the above independent variables with criteria at a given point in time and with patterns of measure changing over time, to test initial hypotheses and to generate new prognostic indices.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Heart Lung & Blood Inst. $50,787

3.0842,
QUARTER CENTURY STUDY OF GLUCOSE INTOLERANCE

J.B. O'Sullivan, Boston University, School of Medicine, Dept. of Medicine, *80 E. Concord St., Boston, Massachusetts* 02215 (R01 HL 25149-02)

This is a prospective study of the health consequences of glucose intolerance. Two groups of subjects expected to have highly contrasting rates for cardiovascular disease on the basis of virtual obliteration of the female sex advantage with the development of diabetes mellitus will be studied. The subjects are a group of 685 women with a predefined abnormality of the three hour, 100 gram oral glucose tolerance test (OGTT) and 328 randomly selected negative (i.e., normal OGTT) controls. Initially tests were performed with the natural metabolic stress provided by pregnancy and abnormal tests reverted to normal following delivery. Annual testing followed for most of the intervening years in a longitudinal study that is showing a 17 to 22 year development of diabetes mellitus in less than 5 percent of the controls, and over 40 percent in those initially abnormal with the remainder revealing all grades of evolving diabetes. The unusual opportunity of investigating etiologic clues for cardiovascular complications provided by these contrasting groups that cover the whole spectrum of emerging diabetes will be enhanced by the racial mixture of the study with its 30 percent black component. Current uncertainties concerning the relationship between glucose intolerance and diabetes, on one hand, and its vascular complications, on the other, will be amenable for study.

Response variables will include blood pressures, graded exercise electrocardiograms, peripheral vascular disease by segmental blood pressures using Doppler ultrasonic flow detectors following exercise, peripheral pulse wave contours, pulse rate response to postural change, and a standardized history for angina pectoris, TIAs, intermittent claudication and myocardial infarction. Examination will document congestive heart failure, renal, cerebral and fundoscopic abnormalities. Blood studies will include OGTTs, cholesterol, triglyceride and HDL with detailed quality control procedures. Lipoprotein phenotyping and identification of secondary hyperlipoproteinemics will be included.

BIBLIOGRAPHIC REFERENCES: O'Sullivan; JB, Mahan, CM: Diabetes subsequent to the birth of a large baby: a sixteen year prospective study. J. Chron. Dis. 33(1):37, 1980. O'Sullivan, JB; Mahan, CM: Insulin treatment and high risk groups. Diabetes Care 3(3):482-485, May-June 1980.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Heart Lung & Blood Inst. $234,642

3.0843,
APOLIPOPROTEIN PATTERNS IN DIABETES

P.S. Anderson, University of Oklahoma, Health Sciences Center, College of Health, Dept. of Biostatistics & Epidemiology, *Box 26901, Oklahoma City, Oklahoma* 73190 (R01 HL 25124-02)

The major cause of death and morbidity in persons with diabetes mellitus is excessive atherosclerosis. The causes of enhanced rates of atherosclerosis and of medial sclerosis in diabetes are poorly understood. Several lines of evidence suggest strongly that abberations of blood lipoproteins have importance in this regard, but previous data in diabetics are conflicting and incomplete. Particularly lacking in diabetes is information on patterns and distributions of specific apolipoproteins and their relationships to the excessive rates of atherosclerosis. Another problem is that detailed studies of apolipoproteins in diabetics have seldom been attended by detailed data collection in these diabetics on the many concomitants of diabetes that may in themselves influence apolipoproteins and atherogenesis (e.g., obesity, antidiabetic therapy, excessive blood pressure, etc). Data have also been sparse on the relationship of apoprotein status to the vascular status of the diabetics under study.

Local circumstances are particularly propitious because of the availability of both highly-sophisticated competence for ascertaining the status of serum apolipoproteins in detail using recently developed methods, together with epidemiologic resources for determining in each diabetic subject an array of 150 data items that will help greatly in interpreting the blood lipid data. These will include both items potentially important in causing vascular morbidity (e.g., fatness, blood glucose level, etc) and data on manifestations of atherosclerosis (e.g., electrocardiography, foot blood pressure, etc). In a two-year study detailed analyses of blood lipoproteins, and apoproteins will be performed on 200 diabetics and 100 nondiabetics in each of whom comprehensive epidemiologic observations will be performed concerning their status with respect to both diabetes and vascular disease.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Heart Lung & Blood Inst. $92,167

3.0844,
27-30 YEAR FOLLOW-UP OF HIGH BLOOD PRESSURE IN CHILDREN

R. Wiittemore, Yale University, School of Medicine, Dept. of Pediatrics, *333 Cedar St., New Haven, Connecticut* 06510 (R01 HL 25115-02)

Approximately 1100 of a cardiac registry of 1700 school children seen 30 years ago were found to have no heart disease, yet careful history, medical examination, height, weight, blood pressure and electrocardiogram were recorded by the present investigator. The objective of this study is to ascertain the significance of these carefully recorded blood pressures taken in childhood with their blood pressure in adult life, 30 years later, and to try to determine potential precursors and risk factors in childhood which may help to identify the potential hypertensive adult.

Slightly over 400 of this population have been re-examined to date but no significant analyses have been performed with the exception that 11.8 percent of the adults examined thus far have high blood pressure at this time (mean age 41.2 years).

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Heart Lung & Blood Inst. $88,388

3.0845,
CONFERENCE-SODIUM IN CARDIOVASCULAR HYPERTENSION

M.J. Fregly, Monell Chemical Senses Center, *3500 Market St., Philadelphia, Pennsylvania* 19104 (R13 HL 25062-01A1)

The objectives of this conference are the following: (a) to bring together a group of investigators who have contributed consistently to areas related to the role of salt (NaCl) in health and disease; (b) to highlight important problems and critical directions for further study and development; (c) assess the physiological consequences of excessive dietary ingestion of salt; and (d) to publish the results of the symposium so that others either directly or peripherally interested in this subject area will have access to the information. The conference will be organized on a multidisciplinary basis so that a cross-fertilization of ideas and information in the broad area of salt intake in health and disease can occur. The information gained from the conference should be of importance to a broad range of individuals, including practitioners and scientists in medicine, epidemiologists, physiologists, psychologists, food technologists and behavioral scientists.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Heart Lung & Blood Inst. $14,228

3.0846,
NOISE AND THE EPIDEMIOLOGY OF HIGH BLOOD PRESSURE

L.H. Kuller, University of Pittsburgh, Graduate School of Public Health, Dept. of Epidemiology, *4200 5th Ave., Pittsburgh, Pennsylvania* 15260 (R01 HL 25005-01A1)

Urban noise levels have been increasing over time. High levels have been noted in the industrial setting. Several investigations have shown an increased prevalence of high blood pressure among men with prolonged and repeated exposure to industrial noise when compared to a control population.

The major criticisms cited aginst previous research have been: 1) the lack of documentation of intensity and duration of workers' exposure; 2) off-the-job noise exposure has generally not been controlled for; and 3) information on other factors which can affect differences between cases' and controls' blood pressure was not collected.

The primary objective of the present study is to determine whether noise-exposed individuals have an elevation in blood pressure independent of other known risk factors for high blood pressure such as obesity, alcohol intake, etc. The study population will consist of a sample of 250 male hourly workers from a noise-exposed group and 250 hourly workers from a control group. To be eligible for inclusion in the sample, an employee must be between 40 and 60 years old and must have worked at that particular plant for at least ten continuous years. The clinical exam will consist of height, weight, pulse and blood pressure and audiometric evaluation. A detailed questionnaire concerning present and past health status, present smoking habits and current alcohol consumption will be administered. Data on past military history, previous job exposure, hobbies and medication will be obtained. In addition, a battery of psychological tests will be administered to the participants in order to determine the relationship between noise, behavioral changes and blood pressure.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Heart Lung & Blood Inst. $111,049

3.0847,
NATURAL HISTORY OF CHRONIC AIRFLOW OBSTRUCTION

A.S. Buist, Oregon State Higher Education System, University of Oregon Health Sciences Center, School of Medicine, Dept. of Medicine/Physiology, *3181 S.W. Sam Jackson Park Rd., Portland, Oregon* 97201 (R01 HL 24918-02)

The proposed work is a continuation of longitudinal studies of three populations in order to (1) determine the predictive value of the single breath N2 test in identifying the individual who is going to progress to chronic airflow obstruction; (2) determine the contribution of various host and environmental factors to the development of chronic airflow obstruction; and (3) obtain further information about how lungs age and what factors affect aging.

The population groups are (1) smokers and non-smokers who were first tested at an emphysema screening center in 1971/72 and subsequently

tested in 1975 and 1977; (2) a random sample of a working population studied in 1974, 1976, and 1978; and (3) parents of 19 children with homozygous alpha1-antitrypsin deficiency studied annually from 1976 to 1978.

Our data base will include (1) information, obtained by questionnaire, relating to respiratory symptoms, smoking habits, chest illnesses, occupation, residence and family history of chest problems; (2) pulmonary function tests; spirometric tests before and after a bronchodilator and the single breath N2 test - a test of small airway function; and (3) trypsin inhibitory capacity and phenotyping for alpha1-antitrypsin deficiency. Subjects will be tested either annually or biennially giving a total follow-up time varying between 8 and 12 years.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Heart Lung & Blood Inst. $102,634

3.0848,

DIABETES AND CARDIOVASCULAR RISK IN MEXICAN AMERICANS

M.P. Stern, University of Texas, Health Science Center at San Antonio, Medical School, Dept. of Medicine, *7703 Floyd Curl Dr., San Antonio, Texas* 78284 (R01 HL 24799-02)

The purpose of this research is to study ethnic differences between Mexican Americans and Anglo Americans in prevalence of diabetes, obesity, hypertension, and cardiovascular risk factors, and to relate these differences to sociocultural and lifestyle factors. The specific hypothesis being tested is that 'diabetic pattern' risk factors (glucose intolerance, obesity, hypertriglyceridemia, and low alpha-lipoprotein levels) will decrease in frequency among Mexican Americans as they become acculturated to 'mainstream' U.S. culture. We plan to survey three different target populations in San Antonio: Mexican Americans living in a highly traditional ('barrio') census tract (90% Mexican American); Mexican Americans and Anglos living in a bicultural census tract (50% Mexican American and 50% Anglo); and Mexican Americans and Anglos living in a cluster of suburban census tracts (10% Mexican American and 90% Anglo). We postulate that Mexican Americans living in the 'barrio' will be significantly less acculturated than those living in the bicultural target areas, who in turn will be less acculturated than those living in the suburbs. We will measure level of acculturation, socioeconomic status (SES), and cardiovascular risk factors in all participants.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Heart Lung & Blood Inst. $232,126

3.0849,

PSYCHOSOCIAL STRESS IN CORONARY MORTALITY

W. Ruberman, Health Insurance Plan of Greater New York, Dept. of Research & Statistics, *625 Madison Ave., New York, New York* 10022 (R01 HL [illegible].786-02)

This research seeks to assess the role of psychosocial stress in relation to sudden cardiac death among men who have survived a recent myocardial infarction (MI). It has been designed as an ancillary study to The Beta-blocker Heart Attack Trial (BHAT), a large collaborative clinical trial of propranolol among patients with recent MI. Interviews are carried out with the male patients participating in the BHAT trial in 24 of the cooperating clinical centers. These questionnaires provide data to categorize patients by defined aspects of psychosocial stress that serve as variables whose contribution to mortality risk will be assessed. Baseline data covering personal, demographic and clinical characteristics and collected by the Coordinating Center at the University of Texas are to be made available to the ancillary study investigators, and analyses of the psychosocial data will be integrated with this information. The baseline data include the results of ECG monitoring for ventricular arrhythmia for one hour. The hypothesis underlying this effort holds that among MI survivors who manifest complex ventricular premature beats (early, runs, bigeminal or multiform beats) the risk of sudden death is elevated in the presence of relatively high levels of stress.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Heart Lung & Blood Inst. $94,036

3.0850,

PSYCHOSOCIAL FACTORS AND CHRONIC DISEASE

J.S. House, University of Michigan, Ann Arbor Campus, School of Public Health, Dept. of Epidemiology, *Ann Arbor, Michigan* 48104 (R01 HL 24545-02)

This project seeks to ascertain the relationship of psychosocial factors to chronic disease, risk factors, morbidity, and mortality through cross-sectional and prospective analyses of data from the Tecumseh Community Health Study. Interview and questionnaire data on psychosocial stress and satisfaction in work, family, and leisure activities will be related to medical examination and interview data collected at the same time (1967-1968) on chronic disease morbidity and risk factors and to mortality over the succeeding decade, through 1978. Controls will be introduced in major analyses for medical examination evidence of health status prior to 1967. Coronary heart disease, hypertension and chronic bronchitis will be focal concerns in cross-sectional analyses of morbidity and risk factors while cardiovascular diseases and cancer will be the major foci of prospective mortality analyses. The analyses will examine not only the direct relationship of work, family, and leisure stress and satisfaction to chronic disease, but also the extent to which these relationships are conditioned or modified, by a variety of individual and social factors (e.g., age, sex, work motivation and involvement, personal habits such as exercise, social support and integration). The relative and joint effects on chronic disease of work and nonwork sources of stress and satisfaction will be assessed.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Heart Lung & Blood Inst. $97,519

3.0851,

EPIDEMIOLOGY OF ATHEROSCLEROSIS

B.A. Kottke, Mayo Foundation, *200 1st St. S.W., Rochester, Minnesota* 55901 (R01 HL 24489-02)

Herein is described a genetic epidemiological study of the role of variation in lipoprotein phenotypes and lipid fractions in determining certain forms of atherosclerotic disease. This study will be based on 4,565 individuals in three different sets of pedigrees collected as part of the Rochester SCOR program in atherosclerosis (1971-1977). Pedigrees will be analyzed to provide insight into appropriate intervention strategies. In particular, we shall: l) determine the contribution of genetic and environmental variability to lipid variability within and among families; 2) test for heterogeneity of the genetic and environmental contributions to lipid variability among sets of families identified by probands with different lipid levels, quantitative lipoprotein phenotypes or atherosclerotic disease; 3) search for evidence of segregation at one or more loci with major effects on the lipid phenotype; 4) assess the relative risks of atherosclerotic disease in the adult relatives of different types of probands; and 5) relate sources (shared environment, shared polygenes and/or shared major loci) of familial aggregation of lipid phenotype to the risk of atherosclerotic disease.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Heart Lung & Blood Inst. $68,036

3.0852,

CHD INCIDENCE, MORTALITY, RISK FACTOR RELATIONSHIPS

L.T. Kurland, Mayo Foundation, *200 1st St. S.W., Rochester, Minnesota* 55901 (R01 HL 24326-01S1)

Medical care for the population of Olmsted County, Minnesota, is almost entirely provided by the Mayo Clinic and the Olmsted Medical Group and their affiliated hospitals. The records of these institutions and other outside sources have been assembled into a single diagnostic retrieval system and provide a unique resource for population-based epidemiologic studies of serious chronic disease.

Under the Rochester Epidemiologic Program Project (GM 14231), we are now completing a Coronary Heart Disease (CHD) study which will establish the local incidence rates for first manifestations of CHD under the subgroups angina pectoris (AP), myocardial infarction (MI), and sudden unexpected death (SUD) over the period 1950-1975. In that study we have 100% follow-up for five years nd 99.6% follow-up to 1/1/76, a 60% autopsy rate in the AP and MI groups, and 86% in the SUD group. Preliminary date indicate only minor changes in CHD incidence, improved survivorship in AP, and during the last ten years a dramatic decrease in the MI case fatality. In order to obtain a better estimate of the contribution of changing incidence and survivorship to the decreasing mortality rate, we must expand the study from those MIs which are first diagnoses of CHD to all MIs occurring in the local residents. In addition, we propose to extend the coverage from the city of Rochester (current population 55,000) to all of Olmsted County (90,000). Finally, we propose to carry the entire study forward through 1982. Also, all local deaths are being uniformly re-coded to the ICDA 8th revision for the period 1960-1967; this should also be extended to cover 1950-82.

Olmsted County, Minnesota, is an ideal community for the studies proposed, since the medical recodes are of uniform high quality, cover the population of the county with excellent case ascertainment, and are already assembled and retrievable by diagnosis.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Heart Lung & Blood Inst. $8,389

3.0853,

LIFE STYLE AND CHRONIC DISEASE IN COLLEGE ALUMNI

R.S. Paffenbarger, Stanford University, School of Medicine, Dept. of Family Community & Preventive Medicine, *300 Pasteur Dr., Stanford, California* 94305 (R01 HL 24133-02)

This epidemiologic study extends observations on 30,000 living former students from Harvard and 13,000 from the University of Pennsylvania to identify patterns of physical activity conducive to the avoidance or delay of hypertensive-arteriosclerotic diseases in middle life. Prospective observations utilize both historical and ongoing perspectives to: l. Identify the type, frequency, duration, and intensity of activities that predispose to reduced risk of first heart attack, stroke, and other cardiovascular diseases primary prevention. 2. Examine changes in physical activity patterns and other key aspects of life style for their relationships to heart attack risk. Patterns of exertion favoring coronary well-being will be studied in successive age group ranging 45-80 years. 3. Test competing hypotheses of benefit, (a) protection vs. selection and (b) average vs. peak levels of energy output. 4. Assess patterns of physical activity associated with prevention of heart attack recurrence and with survival (secondary prevention). 5. Examine sociopsychological and other risk factors for confounding and interacting with physical exercise in relation to heart attack risk; and 6. search for associations between life style and other specific chronic diseases, fatal and nonfatal.

Two-page mail questionnaires are used to log physical activity patterns, social habits, and health status of college alumni. Responses supplement data already compiled from college physical examination and other records (1916-1950) investigative and followup mail questionnaires (1962 or 1966, 1972, 1977 or 1978), and official death certificates (1916-date).

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Heart Lung & Blood Inst. $214,921

3.0854,

RISK FACTORS FOR MYOCARDIAL INFARCTION IN WOMEN

C.H. Hennekens, Harvard University, Boston Campus, Peter Bent Brigham Hospital, *721 Huntington Ave., Boston, Massachusetts* 02115 (R01 HL 24074-01A1)

This investigation is designed to utilize data from an existing cohort of 120,000 women, aged 30 to 55 in 1976, to study risk factors for myocardial infarction in women. Exposures to oral contraceptives, postmenopausal estrogens and cigarette smoking have been documented, as have menopausal status, a past history of hypertension, diabetes, angina pectoris and hypercholesterolemia, and family history of myocardial infarction. Retrospective data have been collected for the period prior to 1976, and prospective data, including dietary practices, are being collected biennially through 1982. Information is gathered by mail questionnaires, with further documentation of events by review of hospital records.

Simple, stratified and multivariate analyses will all be employed to elucidate the separate relationships of the risk factors with myocardial infarction in women, in both retrospective and prospective data. Interactive effects will be emphasized in both data sets.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Heart Lung & Blood Inst. $49,014

3.0855,

SYSTOLIC HYPERTENSION IN THE ELDERLY

L.H. Kuller, University of Pittsburgh, Graduate School of Public Health, Dept. of Epidemiology, *4200 5th Ave., Pittsburgh, Pennsylvania* 15260 (R01 HL 23924-01A1)

This grant is a request to participate in a multi-center randomized, double blinded clinical trial to determine whether blood pressure lowering therapy reduces the rate of mortality and morbidity from stroke; and secondarily the occurrence of specific nonfatal morbid events, total mortality and cardiovascular mortality in men and women age 60 and older with predominantly systolic hypertension. The basic objectives of this center are: to complete a preliminary study of approximately 30-40 men and women followed for one year to determine the ability to recruit participants, efficacy of reducing systolic hypertension without untoward side effects and maintenance of the population for at least one year. Presuming that this aspect of the protocol will be successfully completed, then the second goal will be to screen and randomize into the trial 400 men and women, train a staff, assist with protocol development and then follow the protocol carefully through the time period of this clinical trial.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Heart Lung & Blood Inst. $263,610

3.0856,

SYSTOLIC HYPERTENSION IN THE ELDERLY

H.M. Perry, Washington University, School of Medicine, Dept. of Medicine, *660 S. Euclid Ave., St. Louis, Missouri* 63110 (R01 HL 23917-01A1)

Despite a large body of evidence that systolic hypertension is at least as great a predictor of morbidity and mortality as is diastolic and despite the awareness that systolic hypertension becomes the most common form of blood pressure elevation with age, prospective clinical trials involving lowering of systolic blood pressure by treatment with antihypertensive drugs are very few indeed. These trials and cross-sectional observations that are reported are frequently conflicting. This proposal describes a prospective multicenter clinical trial, involving 11 possible participating clinical centers, a coordinating center, and laboratory and electrocardiographic subcenters, aimed at enrolling 4,200 elderly individuals with primarily systolic hypertension in a five year, prospective, randomized, controlled, double-blind trial of antihypertensive agents (or placebos). The primary objective is to observe each qualifying volunteer for five years, to see whether active treatment of systolic hypertension decreases the incidence of stroke significantly. Secondary end points to be compared are the effect on cardiovascular mortality, incidence of nonfatal myocardial infarcts, the effect of treatment on incidence of cognitive impairment and psychiatric morbidity, and the effect of treatment on incidence of renal failure and congestive heart failure. A pilot phase is included to demonstrate feasibility and to protest all procedures.

Potential participants will be identified by mass blood pressure screening efforts in groups in which there is a large proportion aged 60 and over. Those qualified by screening will be evaluated and, if qualified and willing to give informed consent, randomized and titrated on medication (active or placebo, depending on randomization allocation). Each will then be followed for five full years on maintenance therapy. Evaluation, randomization, titration and maintenance will take place in the clinical facility of each clinical center. It is estimated that 72,000 individuals age 60 and over will have to be screened at each center to get qualified volunteers for randomization. Intake period is estimated at 18 months.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Heart Lung & Blood Inst. $270,063

3.0857,

SYSTOLIC HYPERTENSION IN THE ELDERLY

M.R. Greenlick, Kaiser Foundation Research Inst., Health Services Research Center, *4900 Sunset Blvd., Los Angeles, California* 90027 (R01 HL 23916-01A1)

Despite a large body of evidence that systolic hypertension is at least as great a predictor of morbidity and mortality as is diastolic, and despite the awareness that systolic hypertension becomes the most common form of blood pressure elevation with age, prospective clinical trials involving lowering of systolic blood pressure by treatment with antihypertensive drugs are very few indeed. Those trials and cross-sectional observations that are reported are frequently conflicting. This proposal describes a prospective multicenter clinical trial, involving 11 possible participating clinical centers, a coordinating center, and laboratory and electrocardiograph subcenters, aimed at enrolling 4200 elderly individuals with primarily systolic hypertension in a five year, prospective randomized placebo controlled double blind trial of antihypertensive agents (or placebos). The primary objective is to observe each qualifying volunteer for five years to see whether active treatment of systolic hypertension decreases the incidence of stroke significantly. Secondary end points to be compared are the effect on cardiovascular mortality, incidence of nonfatal myocardial infarcts, the effect of treatment on incidence of cognitive impairment and psychiatric morbidity, and the effect of treatment on incidence of renal failure and congestive heart failure. A pilot phase is included to demonstrate feasibility and to pretest all procedures.

Potential participants will be identified by organized blood pressure screening efforts in groups in which there is a large proportion aged 60 and over. Those qualified by screening will be evaluated and, if qualified and willing to give informed consent, randomized and titrated on medication (active or placebo, depending on randomization allocation). Each will then be followed for five full years on maintenance. Evaluation, randomization, titration and maintenance will take place in the clinical facility of each clinical center. It is estimated that 12,000 individuals age 60 and over will have to be screened at each center to get 400 qualified volunteers for randomization. Intake period is estimated at 18 months.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Heart Lung & Blood Inst. $208,941

3.0858,

SYSTOLIC HYPERTENSION IN THE ELDERLY

H.W. Schnaper, University of Alabama in Birmingham, Center for Aging, *Townhouse Annex, University Station, Birmingham, Alabama* 35294 (R01 HL 23914-01A1)

Despite a large body of evidence that systolic hypertension is at least as great a predictor of morbidity and mortality as is diastolic, and despite the awareness that systolic hypertension becomes the most common form of blood pressure elevation with age, prospective clinical trials involving lowering of systolic blood pressure by treatment with antihypertensive drugs are very few indeed. Those trials and cross-sectional observations that are reported are frequently conflicting. This proposal describes a prospective multicenter clinical trial, involving 11 possible participating clinical centers, a coordinating center, and laboratory and electrocardiograph subcenters, aimed at enrolling 4200 elderly individuals with primarily systolic hypertension in a five year, prospective, randomized, placebo controlled double blind trial of antihypertensive agents (or placebos). The primary objective is to observe each qualifying volunteer for five years to see whether active treatment of systolic hypertension decreases the incidence of stroke significantly. Secondary end points to be compared are the effect on cardiovascular mortality, incidence of nonfatal myocardial infarcts, the effect of treatment on incidence of cognitive impairment and psychiatric morbidity, and the effect of treatment on incidence of renal failure and congestive heart failure. A pilot phase is included to demonstrate feasibility and to pretest all procedures.

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SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Heart Lung & Blood Inst. $226,639

3.0859,

SYSTOLIC HYPERTENSION IN THE ELDERLY

J.A. Schoenberger, Rush University, School of Medicine, Dept. of Preventive Medicine, *1725 W. Harrison St., Chicago, Illinois* 60612 (R01 HL 23913-01A1)

Despite a large body of evidence that systolic hypertension is at least as great a predictor of morbidity and mortality as is diastolic, and despite the awareness that systolic hypertension becomes the most common form of blood pressure elevation with age, prospective clinical trials involving lowering of systolic blood pressure treatment with antihypertensive drugs are very few indeed. Those trials and cross-sectional observations that are reported are frequently conflicting. This proposal describes a prospective multicenter clinical trial, involving 11 possible participating clinical centers, a coordinating center, and laboratory and electrocardiograph subcenters, aimed at enrolling 4200 elderly individuals with primarily systolic hypertension in a five year, prospective, randomized, placebo controlled double blind trial of antihypertensive agents (or placebos). The primary objective is to observe each qualifying volunteer for five years to see whether active treatment of systolic hypertension decreases the incidence of stroke significantly. Secondary end points to be compared are the effect on cardiovascular mortality, incidence of nonfatal myocardial infarcts, the effect of treatment on incidence of cognitive impairment and psychiatric morbidity, and the effect of treatment on incidence of renal failure and congestive heart failure. A pilot phase is included to demonstrate feasibility and to pretest all procedures.

Potential participants will be identified by organized blood pressure screening efforts in groups in which there is a large proportion aged 60 and over. Those qualified by screening will be evaluated and, if qualified and willing to give informed consent, randomized and titrated on medication (active or placebo, depending on randomization allocation). Each will then be followed for five full years on maintenance. Evaluation, randomization, titration and maintenance will take place in the clinical facility of each clinical center. It is estimated that 12,000 individuals age 60 and over will have to be screened at each center to get 400 qualified volunteers for randomization. Intake period is estimated at 18 months.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Heart Lung & Blood Inst. $285,271

3.0860,

COMMUNITY SURVEILLANCE OF CARDIOVASCULAR DISEASE

H.W. Blackburn, University of Minnesota, Minneapolis Campus, School of Public Health, Laboratory of Physiological Hygiene, *1325 Mayo Memorial, Minneapolis, Minnesota* 55455 (R01 HL 23727-02)

The Minnesota Morbidity and Mortality Surveillance Program has set up mechanisms in its first year of operation to accomplish the following objectives: (a) To continue to monitor Minnesota mortality rates by cause and to begin morbidity measurement to assess the changing burden of cardiovascular disease in the community. (b) To estimate the extent to which changes in mortality rates are related or due to changes in morbidity incidence and/or case fatality rates. (c) To estimate the extent to which changes in mortality rate might be explained by changes in levels of risk factors and their associated behaviors. These mechanisms include the acquisition and analysis of death tapes for the State of Minnesota, the acquisition and analysis of hospital discharge tapes for the 7-county surveillance area with validation of a 10% sample of discharge diagnoses by medical records, the survey of a representative sample of 2000 subjects annually from the 7-county area. Surveillance will be continued through 1984. Data will be analyzed to attain the above listed objectives.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Heart Lung & Blood Inst. $605,001

3.0861,

PAWTUCKET HEART HEALTH PROGRAM

R.A. Carleton, Memorial Hospital, Section of Medicine, *Prospect & Pond Sts., Pawtucket, Rhode Island* 02860 (R01 HL 23629-01A1)

Many atherosclerosis risk factors relate closely to individual behavior. Individual behavior reflects personal choices for behavior as modified by a complex set of factors both in the immediate environment and in the cultural environment of the person. This proposal is for a research program with an intervention and a comparison city. The intervention city will have an opportunity for citizens to participate actively through a penetrating community organizatıcn effort based upon the normative systems model. This community activation effort for health culture change will be aided by media and by research development of new strategies for individual behavior change. It will work with and through all major groups and organizations within the community including schools, government, labor, industry, churches, etc.

The effectiveness of the process itself will be evaluated carefully. Short-term, mid-term, and long-term evaluation will include measuring outcomes of individual program components, survey for changes in physiologic variables such as serum cholesterol, and ongoing surveillance of morbidity and mortality in the intervention and comparison cities.

The overall objective is to produce a significant reduction in morbidity and mortality from coronary heart disease and stroke. Equally importantly, the program aims to induce a cultural change process which will persist long after funding for research and development has ceased.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Heart Lung & Blood Inst. $869,891

3.0862,

LIFE CHANGE STRESS AND SOMATIZATION IN HYPERTENSION

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Essential hypertension has been recognized as a major health problem in the United States, with particular impact on blacks, the poor and on women. The present study addresses the role that stressful life change events, subjective appraisal and somatic response patterns play in essential hypertension. The study specifically addresses the following objectives: (1) to determine whether stressful life change events are positively related to and account for a significant proportion of variation in blood pressure; (2) whether subjective appraisal of stress affects blood pressure singly or in interaction with the objective measure of stressful events; (3) to determine whether variations in blood pressure are positively correlated with distinct patterns of somatic response patterns especially a cardio-respiratory response tendency, and finally; (4) whether personal and familial history of cardiovascular difficulties and other socio-demographic factors such as sex, age and race contribute to explaining variation in blood pressure.

The study is designed as a survey study with a random sample of 300 adults, ages 21-65. These subjects will be paid volunteers who will undergo a 1 hour private interview in their homes during which time four blood pressure readings will be taken and a composite questionnaire with scales measuring the predictor variables will be administered. The degree of relationship between the predictor variables (i.e., correlations) and the extent to which they contribute singly or in consort to the proportion of explained variation in blood pressure (i.e., multiple regression analysis) will be ascertained.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Heart Lung & Blood Inst. $49,104

3.0863,

CHILDHOOD HYPERTENSION - RENIN, URATE, EPIDEMIOLOGY

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This study aims to develop the concept of renin profiling in children and adolescents primarily with hypertension. Results obtained in hypertensive children are currently being compared to values developed in normal volunteers. The renin response to acute volume contraction and three days of a low salt diet is currently under investigation. Simultaneously the incidence of hyperuricemia and its mechanism are being evaluated. To date, uric acid metabolism has been evaluated in approximately 50 hypertensive children. Thirty to forty percent have had uric acid abnormalities. Also, it has been shown that the presence of hyperuricemia alters the renal response to the oral administration of a diuretic. The data developed in some of these children are also being added to data already available in these children who have participated in one of the National Heart, Lung & Blood Institute's studies entitled 'Antecedents of Adolescent Hypertension.'

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Heart Lung & Blood Inst. $58,720

3.0864,

GENETICS OF HYPERTENSION AND ASSOCIATED VARIABLES

R.M. Siervogel, Wright State University, School of Medicine, Dept. of Pediatrics, *Colonel Glenn Hwy., Dayton, Ohio* 45431 (R01 HL 23194-04)

High blood pressure, including essential hypertension, is a major risk factor of stroke, congestive heart failure, coronary heart disease and other cardiovascular diseases. The identification and study of childhood precursors of hypertension which could lead to methods effective in the prevention of adult hypertension is a major goal of this study. Considerable evidence suggests that heredity plays a large and important role in determining blood pressure, particularly as it relates to essential hypertension. In the proposed study, the mode of inheritance of genes involved with blood pressure regulation and associated variables will be investigated with an aim to providing information relevant to the genetic epidemiology of hypertension. Particular attention will be paid to a search for major genes by using recently developed statistical methods designed for segregation and linkage analysis of quantitative traits in large pedigrees.

Five large (75-350 members) families have been ascertained, each through a proband with essential hypertension; four of these families are White and one is Black. Most members participated in an extensive data collection protocol involving variables of an anthropometric, biochemical, genetic, medical, physiological, psychological and sociological nature. Among the measured variables are: subcutaneous fat thicknesses; plasma lipid, lipoprotein and renin levels; urinary kallikrein and aldosterone levels; genetic markers; physical examination and clinical laboratory findings; systolic time intervals in response to numerous stresses; personality assessments; and socioeconomic status.

The identification of genetic effects including major gene influences may help define important epidemiologic factors that: 1) relate to increased risk of hypertension; 2) account for differences in blood pressure among various subgroups of the population; 3) can identify children that have high risk for developing hypertension; 4) can identify homogeneous groups for further study of disease etiology.

BIBLIOGRAPHIC REFERENCES: R.M. Siervogel, A.F. Roche and E.M. Roche. The identification of developmental zones using digital distribution of fingerprint patterns and ridge counts. In: Dermatoglyphics--50 Years Later, edited by W. Wertelecki, and C.C. Plato. Alan R. Liss Pub., N.Y. pp. 135-148, 1980. A.F. Roche, R.M. Siervogel and E.M. Roche. Digital dermatoglyphics in a White population from Southwestern Ohio. In: Dermatoglyphics--50 Years Later, edited by W. Wertelecki, and C.C. Plato. Alan R. Liss Pub., N.Y., pp. 389-410, 1980.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Heart Lung & Blood Inst. $150,330

3.0865,

PSYCHOSOCIAL STRESS AND SUDDEN CORONARY DEATH

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This research seeks to study a large differential in risk of sudden coronary death that has been found among men of relatively low and high educational levels. The setting is a prospective study of men with coronary heart disease among a population of 120,000 men aged 35-74, insured for medical care in New York City (Health Insurance Plan of Greater New York --HIP). Among a cohort of 1,739 men with prior myocardial infarction (MI), those demonstrating complex ventricular premature beats (VPB) in one hour of ECG monitoring show a cumulative probability of sudden coronary death, over a 5-year period, that is more than twice that experienced by the men free of such VPB. Further, among the men demonstrating complex VPB (early, runs, bigeminal or multiform VPB) in one hour, the least educated men are apparently at more than twice the risk for sudden coronary death shown by those with more than eight years of schooling.

The finding with respect to education is not explained by associations with a large number of other variables. This study will examine whether low education reflects a relatively high level of life-situation factors which, given the presence of complex VPB, may trigger the lethal arrhythmia mechanism. Information to characterize the MI patients is being obtained through a telephone interview of spouses of all patients -- both living and dead -- in the original HIP study of VPB and sudden death. Analyses of the interview data will be directed to classification of broad levels of psychosocial stress. Such categories will then be examined as one or more prognostic variables in assessing risk of sudden coronary death controlling for all other important factors. The existence of an extensive body of prognostic information about the large cohort of post-MI men provides an important resource in the analysis of the new psychosocial data.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Heart Lung & Blood Inst. $21,935

3.0866,

MULTICENTER POSTCORONARY RISK STRATIFICATION PROGRAM

A.J. Moss, University of Rochester, School of Medicine & Dentistry, Dept. of Preventive Medicine & Community Health, *601 Elmwood Ave., P.O. Box 607, Rochester, New York* 14642 (R01 HL 22982-03)

The proposed research is a multicenter prospective study to develop and validate widely applicable criteria for stratifying risk of cardiac death in the year following acute myocardial infarction. A homogeneous population (acute myocardial infarction) derived from a heterogeneous group of hospitals (university and community) widely dispersed in geography (New York, St. Louis, Rochester) will be studied to permit generalization of the results to the whole population at risk. Three special studies have been included in the clinical evaluation of the postinfarction population prior to hospital discharge: radionuclide ejection fractions for quantitative evaluation of left ventricular function, 24-hour Holter ECG tape recordings for the precise quantitation of the degree of electrical instability, and limited activity tests to assess overall cardiovascular function and the presence of activity-related myocardia ischemia.

Approximately 1000 patients who survive the early hospital phase of an acute myocardial infarction will be entered during a 24-month enrollment period. Routine clinical evaluation and special studies will be performed prior to hospital discharge. All patients will be followed for a minimum of one year with clinical follow-up evaluation at 3, 6 and 12 months. A standard Bruce-protocol exercise will be obtained at the three month follow-up visit. The main thrust of the data analysis are: 1) to identify functional risk variables which can be widely applied to risk stratification in postinfarction patients; 2) to elucidate pathophysiologic mechanisms responsible for survival and cardiac death by uncovering interactions and associations among the risk indicators; 3) to critically evaluate existing clinical concepts involving postinfarction patients by testing a priori hypotheses on this prospective population; 4) to characterize current patterns of therapy in postinfarction patients to improve background information for the design of future therapeutic intervention trials, and 5) to classify mortality events carefully as to chronology, cause and preventability.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Heart Lung & Blood Inst. $316,234

3.0867,

EPIDEMIOLOGICAL STUDY OF ATHEROSCLEROSIS IN EVANS COUNTY

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Continue the surveillance of morbidity and mortality, including all clinical cardiovascular and cerebrovascular events; i.e., transitory ischemia, CVA, myocardial infarction along with the collection of pathological specimens and other necropsy data where possible, of all cohort study groups in the Evans County Studies; i.e., a) 1200 participants in NHLI lipoprotein phenotyping study; b) 1,000 black-white neonatal blood pressure study participants; c) 600 stepped vs. regular care participants in the NHLI-HDFP study; d) approximately 1,800 participants of the original 1960 Evans County Study cohort; e) 1,000 oral contraceptive users vs. 1,000 age, race matched non-oral contraceptive users; f) 650 Blacks and Whites typed of G6PD deficiency A, A (-) and B. Correlate the above parameters under study with morbidity and mortality; i.e. a) spectrum of Alpha-beta lipoprotein fractions with morbidity and mortality; b) blood pressure levels during the first year of life as a predictor of subsequent hypertension; c) compare Evans County neonatal black-white blood pressure levels with comparable groups in other geographical areas; i.e. genetic vs. environmental? d) determine differences, if any, in the 5 year survival of stepped care vs. regular hypertensive care in the NLHI Evans County Hyper-

tension Detection and Follow-up Program; e) determine if kallikrein levels, heparin neutralizing activity or estrogen levels are related to morbidity and mortality in black-white oral contraceptive users vs. non-oral contraceptive users. Continue to utilize the already defined as well as new biracial pedigree cohorts for genetic models to study the possible inheritance of hypertension and hyperlipidemias. Maintain the study as a population laboratory for the Dept. of Epidemiology, School of Public Health, Univ. of North Carolina; Duke University; Medical Univ. of S.C. and other collaborative institutions in which to explore the association between the observed CHD and hypertension in the Evans County study population and new untested specific epidemiological correlates. Continue to assemble and maintain all data collected or to be collected including the frozen sera and food collection and make available for maximum utilization by qualified individuals and institutions for teaching and research. To evaluate the capacit (Text Truncated - Exceeds Capacity)

BIBLIOGRAPHIC REFERENCES: Szeklik, A., Dischinger, P., Kueppers, F., Tyroler, H.A., Hames, C.G., Cassel, J.C. and Creagan, S. Blood Fibrinolytic Activity, Social Class and Habitual Physical Activity - II. A Study of Black and White Men in Southern Georgia. J. Chron. Dis., Vol. 33, pp 291-299,1980. Heiss, G., Tyroler, H.A., Gunnells, J.C., McGuffin, W.L. and Hames, C.G. Dopamine B-Hydroxylase in a Biracial Community: Demographic Cardiovascular and Familial Factors. J. Chron. Dis., Vol. 33, pp. 301-310, 1980.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Heart Lung & Blood Inst. $48,627

3.0868,

CONGENITAL HEART DISEASE RESEARCH PROGRAM

M. Lev, Hektoen Inst. for Medical Research, Congenital Heart Disease Research & Training Center, *627 S. Wood St., Chicago, Illinois* 60612 (R01 HL 07605-18)

We will continue our studies of sudden death occurring a long time after surgery by studies of the conduction system. We will continue our studies of unexpected sudden death in otherwise clinically healthy young people by similar conduction system studies. We will continue our studies of congenital heart block by conduction system studies and of WPW by serial section studies of both AV rims and the conduction system. We will study the conduction system and its nerve supply in atrial arrhythmias. We will study the pathology of the summit of the ventricular septum in the aged and relate this to electrocardiographic and conduction system studies. We will continue to describe and study the congenitally abnormal hearts of the Chicago area. We will codify all our congenital hearts seen in the last 20 years and synthesize them into a book. We will initiate the study of the histology of the coronary arteries in congenital heart disease. We will study the relative incidence of various types of congenital heart disease in our material in the last twenty years.

BIBLIOGRAPHIC REFERENCES: Bharati, S, Lev, M.: The course of the conduction system in dextrocardia. Circulation 57(1):163-171, Jan. 1978. Bharati, S, Ciraulo, D.A., Billrich, M., Rosen, K.M., and Lev, M.: Inexcitable right ventricle and bilateral bundle branch block in Uhl's disease. Circulation 57(3):636-644, March 1978.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Heart Lung & Blood Inst. $85,125

3.0869,

NATURAL AND EXPERIMENTAL ATHEROSCLEROSIS

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The ultimate objective of this research is to determine the etiology and pathogenesis of atherosclerosis and its sequelae. This objective is approached by combining morphologic, experimental, epidemiologic, chemical, immunochemical, cytologic and biometric methods. The possible etiologic relationships of certain environmental factors and disease states to arterial lesions, coronary heart disease and sudden death are being studied using a community pathology approach. This study of a 100 percent sample of deceased men, 24-44 years of age, from the biracial community of New Orleans includes a detailed examination of the heart, coronary arteries, and the postmortem characteristics of the 80 percent of deaths which are autopsied. An explanation for an apparent anomalous difference in coronary heart disease in young Negro and Caucasian men is being sought. Experimental studies in nonhuman primates are being used to study the mechanisms of development and regression of diet-induced arterial lesions. Factors causing variability in rate of development or regression of diet-induced atherosclerotic lesions are being studied. Cholesterol and lipoprotein metabolism is also being investigated in primate animals to obtain an understanding of the mechanisms responsible for the large differences in serum cholesterol or lipoprotein concentrations among animals. Archived coronary arteries, aortas, and associated clinical data obtained from 24,000 autopsies from 19 geographic and racial groups are being used to obtain a better understanding of the natural history of human atherosclerosis and its geographic distribution.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Heart Lung & Blood Inst. $617,324

3.0870,

RESEARCH AND RESOURCE BLOOD PROGRAM

A. Kellner, New York Blood Center of Greater N.Y. Community Blood Coun., *310 E. 67th St., New York, New York* 10021 (P01 HL 09011-17)

The objectives of this Program Project Grant are illustrated broadly by its title: 'A Research and Resource Program in Blood' and more precisely by the titles of each project which have been arranged in five study groups, each an area of research which is of concern in the Blood Banking Sciences and which affect directly or indirectly, the problems of blood transfusion.

I. Studies in Genetics and Immunology: 1. Genetic Markers in Human Blood and Gene Mapping. 2. Theoretical Population Genetics. 3. A Multifaceted Program for the Study of Chromosome Change in Human Diseases. II. Studies in Hepatitis: 4. Characterization of Hepatitis B Antigen Particles. 5. The Epidemiology of Viral Hepatitis Types A, and Non-A, Non-B in Normal Populations. 6. The Prevention of B and Non B Viral Hepatitis. 7. Characterization of Hepatitis Viruses and Development of Screening Tests. III. Plasma Proteins: Structure, Biosynthesis and Secretion: 8. Biosynthesis of Fibrinogen. 9. The Regulation of Synthesis and Transport of Diverse Proteins in Liver. IV. Regulatory Mechanisms in Nucleic Acid Metabolism: 10. Control of RNA Synthesis in Nucleated Cells.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Heart Lung & Blood Inst. $2,328,221

3.0871,

PULMONARY SCOR - AIRWAYS OBSTRUCTIVE DISEASES

B. Burrows, University of Arizona, School of Medicine, Dept. of Internal Medicine, *1501 N. Campbell Ave., Tucson, Arizona* 85721 (P50 HL 14136-09)

The work proposed is directed toward meeting the objectives of the Arizona SCOR, i.e., to elucidate the pathogeneses, pathophysiology, natural histories and factors contributing to the development of airway obstructive diseases (AOD) in order to prevent, detect, and/or treat AOD. To accomplish this, eight closely related projects, supported by Core units, comprise a multidisciplinary program involving and combining epidemiological, clinical, pathophysiological, experimental, and radiological approaches to the AOD problem. The prospective longitudinal epidemiological survey of the 4,000 members of 1,650 Tucson households will continue to study the role of smoking, environmental, host, and genetic factors, including atopy, asthma, and history of bronchiolitis or other childhood respiratory illness, in contributing to the risk of developing chronic bronchitis, emphysema, or other chronic obstructive pulmonary disease (COPD), and provide further opportunity to evaluate methods for early detection of subclinical COPD. Air versus helium oxygen flow-volume curves and chest radiographs will be evaluated in this context. In subpopulations, there are specific studies of the role of air pollutants, aeroallergens, atopy and IgE levels, airway reactivity, or alpha -1- antitrypsin Pi MZ phenotype in the development of AOD. Pediatric lung function tests are being developed and will be utilized to study childhood airways diseases and their long-term consequences. Experimental studies are being employed to relate structure to function in animals, in excised lung preparations, and human autopsy material, combining physiological measurements with simultaneous roentgenographic image magnification and subsequent morphometry. Refinements of high resolution radiologic imaging will continue.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Heart Lung & Blood Inst. $1,039,419

3.0872,

JOHNS HOPKINS LUNG CENTER SUPPORT - CHRONIC DISEASES OF AIRWAYS

H.A. Menkes, Johns Hopkins University, School of Medicine, Dept. of Medicine & Environmental Health Sciences, *725 N. Wolfe St., Baltimore, Maryland* 21205 (P50 HL 14153-09)

In the development of chronic obstructive pulmonary disease (COPD) there is a transition period when the individual is asymptomatic and the physician is unaware of the disorder. The present SCOR program includes a collaborative multidisciplinary approach to the study of obstructive lung disease especially during its earliest stages. In the first section of the program epidemiologic and physiologic approaches are applied to investigate the etiology, risk factors, and the natural history of airways obstruction. In the second section, immunologic and physiologic approaches are used to study acute reactions of the airways and their relation to chronic disease. In the third section, pathologic and physiclogic approaches are applied to evaluate chronic reactions in the development of airways obstruction. Our goal is to characterize the individual at risk for COPD. With that knowledge, it may be possible to introduce effective modes of intervention.

BIBLIOGRAPHIC REFERENCES: Inners, C., Terry, P., Traystman, R., and Menkes, H.: Lung volume and resistance to collateral ventilation in man. J. Appl. Physiol. Resp. Environ. Exercise Physiol. 46(1):67, 1979. Menkes, H., Traystman, R., and Terry, P.: Collateral ventilation. Federation Proc. 38:22-26, 1979.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Heart Lung & Blood Inst. $1,145,743

3.0873,

A/S SCOR - LIPIDS, ATHEROSCLEROSIS AND THROMBOSIS

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This is a multidisciplinary research project having a goal of elucidating basic biochemical and pathological mechanisms responsible for arteriosclerotic cardiovascular disease. It is made up of six research projects and three Core laboratories. Project 1 deals with the effect of membrane lipid modification on cell function as well as the regulation of cholesterol and fatty acid biosynthesis in leukocytes. Project 2 deals with the development and regression of atherosclerosis in a primate model. Project 3 deals with the function of human endothelial cells and the interaction between endotheiial cells and platelets. Project 4 deals with plasma clotting factors, particularly factor VIII, thrombin, heparin cofactor and the binding of thrombin to cultured endothelial cells. Another aspect of this project deals with the properties of endothelial cells derived from mouse brain blood vessels. Project 5 is a clinical epidemiological project on coronary risk factors in school children. Project 6 concerns the role of lysosomal enzymes in atherosclerosis, with particular attention given to cholesteryl ester hydrolase. These projects are supported by Core laboratories.

BIBLIOGRAPHIC REFERENCES: Spector, A.A., Kiser, R.A., Denning, G.M., Koh, S.-W.M., and DeBault, L.E.: Modification of the fatty acid composition of cultured human fibroblasts. Journal of Lipid Research 20:536-547 (1979). Burns, C.P., Welshman, I.R., Edmond, J., and Spector, A.A.: Evidence for rate limiting steps in sterol synthesis beyond 3-hydroxy-3-methaglutaral coenzyme A reductase in human leukocytes. Biochim. Biophys. Acta 572:345-351 (1979).

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Heart Lung & Blood Inst. $1,110,352

3.0874,

IMMUNE & FIBROTIC RESPONSES TO OCCUPATIONAL ENVIRONMENT

H. Weill, Tulane University of Louisiana, School of Medicine, Dept. of Medicine, *1430 Tulane Ave., New Orleans, Louisiana* 70112 (P50 HL 15092-09)

The Biometry Core of the SCOR Center provides data processing and analysis services for its projects, offers statistical consulting services to its investigators, seeks to develop the necessary statistical methodology necessary to answer the complex questions arising from the Center's epidemiologic studies, and directs the ongoing longitudinal study of lung function in a working population not exposed to known toxic inhalants.

This supplement application seeks funds not requested in the original application for a computer programmer. In addition, funds are requested to purchase computer hardware for in-house use.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Heart Lung & Blood Inst. $663,867

3.0875,

A/S SCOR--EARLY NATURAL HISTORY OF ARTERIOSCLEROSIS

G.S. Berenson, Louisiana State University, Medical Center, School of Medicine, Dept. of Medicine, *1542 Tulane Ave., New Orleans, Louisiana* 70112 (P50 HL 15103-09)

The SCOR-A program concerns the Early Natural History of Atherosclerosis and Essential Hypertension and includes both clinical and experimental research. The clinical research is studying 5,000 children in a well defined biracial population for cardiovascular risk factor variables, to determine the distribution and prevalence, interrelationship, and time-course changes of the risk factors. Serum lipids and lipoproteins, blood pressure, selected anthropometric measurements, and other variables - tobacco usage and fasting blood glucose and insulin - are under study. The epidemiologic design provides cross-sectional and longitudinal observations since changes over time are critical aspects of the program in an effort to predict future hypertension and hyperlipoproteinemia and the occurrence of multi-risk factors. 'Tracking' of the risk factor data is noted and indicates the merit of studying cardiovascular risk at an early age. Special sub-studies related to hypertension and hyperlipoproteinemia show racial differences which have implications for underlying biological mechanisms contributing to levels of risk factors.

The experimental research includes nutrition studies on non-human primates to develop models of hypertension and hyperlipoproteinemia. high sucrose intake has resulted in an exaggeration of the effect of exogenous cholesterol on serum lipoproteins and on a salt induced hypertension. The chemistry of the arterial wall is also being studied to explore the role of proteoglycans in atherosclerosis and the biological properties of these macromolecules.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Heart Lung & Blood Inst. $1,210,551

3.0876,

VERMONT LUNG CENTER

J.E. Craighead, University of Vermont & State Agricultural College, School of Medicine, Dept. of Medicine, *85 S. Prospect St., Burlington, Vermont* 05401 (P60 HL 17292-05)

The Vermont Lung Center has as its major objectives: 1. The integration into a cohesive operational system of existing lung programs in research, education, clinical demonstration, and regional disease management, including dissemination of information and technical assistance, health statistics and prevention and control. 2. Interdisciplinary study, prevention and control of pneumoconiosis. 3. Research in the pathology and management of acute pulmonary trauma, in basic methodology of computer-assisted instruction in pulmonary physiology in the pathology, pathogenesis, biochemistry, immunology, and cell physiology of diffuse interstitial lung disease (Vermont SCOR). 4. Clinical demonstration and rapid application of new research findings in lung disease using the Problem Oriented Medical Information System (PROMIS). 5. Regional management of specified lung disease problems utilizing an inter-hospital computer network. 6. Graduate and post-graduate education using audio-visual aids and regional interactive television. 7. Public education and information geared to lung disease problems specified by the regional Lung Disease Management Committee. 8. Provision of a broadly based, multi-disciplinary Training Environment for undergraduate, graduate and post-graduate scientists, physicians, nurses, and allied health professionals in the various facets of research, clinical practice, teaching and continuing education in the biology of the lung, disease of the lung, and health care management of categorical problems related to the lung.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Heart Lung & Blood Inst. $1,233,333

3.0877,

THE IMPACT OF STRESS ON CORONARY HEART DISEASE

M.J. Horowitz, University of California, San Francisco Campus, Langley Porter Neuropsychiatric Inst., *401 Parnassus Ave., San Francisco, California* 94122 (R01 HL 17580-06)

The objective of this study is to determine whether groups of men aged 35-57 exposed to higher-than-usual frequencies of potentially stressful life events tend to have higher death rates, higher rates of coronary heart disease, and higher blood pressure levels and smoking rates, than a comparable contrast group with less exposure to stressful life events. In addition, the study aims to determine whether stressful life events are imposed in an individual as a result of being identified as high risk for coronary heart disease. That is, does the process of being informed of one's risk and, as a consequence, being asked to take preventive measures such as changing diet and smoking behaviors, losing weight, and taking medication for hypertension, operate as a specific stress factor and influence mortality?

BIBLIOGRAPHIC REFERENCES: Horowitz M, Hulley S, Alvarez W, Reynolds A, Benfari R, Blair S, Borhani N, Simon N: Life events, risk factors, and coronary disease. Psychosomatics 20, 586-592, 1979.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Heart Lung & Blood Inst. $51,102

3.0878,

ISCHEMIC HEART DISEASE SPECIALIZED CENTER OF RESEARCH

R.A. Rosati, Duke University, School of Medicine, Dept. of Medicine, *Box 3711, Durham, North Carolina* 27710 (P50 HL 17670-06)

The Duke University Medical Center Ischemic Heart Disease Specialized Center of Research, a multidisciplinary, interdepartmental clinical and fundamental research program, is directed at the reduction of death and disability from ischemic heart disease. The program involves scientists and physicians in the departments of Community and Family Medicine, Medicine, Pathology, Pharmacology, Physiology, Radiology, and Surgery. The clinical component encompasses research into each of the major manifestations of ischemic heart disease: acute myocardial infarction, angina pectoris, congestive heart failure, ischemic heart disease in the absence of significant coronary artery disease, refractory arrhythmias, and sudden death. The fundamental component encompasses research into the pathophysiology of the ischemic process and its effects on the pharmacologic action of therpeutic agents. The total effort is targeted at translating the results of research concerning the pathophysiology, diagnostic and prognostic evaluation, medical and surgical therapy, and rehabilitation and secondary prevention of ischemic heart disease into the clinical arena to reduce death and disability from IHD.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Heart Lung & Blood Inst. $1,423,479

3.0879,

HYPERTENSION CENTER - SCOR

J.H. Laragh, Cornell University, Medical Center, Cornell Medical College, Dept. of Medicine, *1300 York Ave., New York, New York* 10021 (P50 HL 18323-06)

Continued support is requested for a hypertension research program based on identifying and typing heterogeneity among hypertensive patients using endocrine profiles related to electrolyte metabolism. These profiles are applied to analysis of associated clinical and physiologic characteristics for understanding causal mechanisms and for development of new and more specific treatments. Recent developments make it possible to subclassify the 'essential' hypertension population on the basis of definable abnormalities in the renin-angiotensin-aldosterone system, separating patients first in terms of abnormalities in renin secretion and then subdividing them according to variations gleaned from detailed metabolic ward studies to out-patients for more detailed in-patients. The out-patient center in turn is a source of characterized patients for more detailed in-patient study. Using hormonal profiling, longitudinal analysis has suggested differences in mechanisms, clinical course and prognosis in patients with essential hypertension. These suggestions will be pursued prospectively with larger numbers. Also, our experience indicates that in exposing hormonal deviations among the endocrine subgroups derived from the initial renin-sodium index it is then possible to develop new simpler treatments directed specifically against the hormonal deviation, or the lesion to which it points. Within the renin subgroups, clearer definition of heterogeneity will be accomplished by in-depth association of endocrine profiles with physiological, hemodynamic and pharmacologic characteristics. Attention will be given to volume/vasoconstrictor and related mechanisms in those subgroups refractory to treatment. The program will be expanded to pediatric patients and industrial populations and to include nephric and anephric patients with end-stage kidney disease. Clinical studies will be supported by new biochemical studies of renin system components, and of autonomic and other steroid hormones. Parallel studies in animal models and of other relevant human disorders will serve to validate the clinical findings. Computer systems will be used for data collection and analysis and also to test our model of hormonal and circulatory behavior which is used as a conceptual focus.

BIBLIOGRAPHIC REFERENCES: Laragh, J.H., R.L. Letcher, T.G. Pickering. Renin profiling for modern diagnosis and treatment of hypertension. J.A.M.A. 241:151-156, 1979. Case, D.B., J.M. Wallace, J.H. Laragh. Comparison between saralasin and converting enzyme inhibitor in hypertensive disease. Kidney International 15: Suppl. 9, S-107, 1979.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Heart Lung & Blood Inst. $1,309,137

3.0880,

CARDIOVASCULAR FOLLOW-UP OF HYPERTENSIVE ADOLESCENTS

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The natural history of the pubescent child with blood pressures at or above the upper limits of normal has not been well defined. The purpose of this study is fourfold: 1) to determine the prevalence of hypertensive cardiovascular changes during adolescence; 2) to determine if the normal rise in blood pressures seen during puberty is related to sexual development; 3) to determine if the increased prevalence of hypertension in blacks becomes evident in adolescence; 4) to determine if exercise stress testing identifies those who are prone to develop hypertension. All eighth-grade children in the Dallas Independent School District currently have blood pressures recorded by school nurses. Eight hundred adolescents will be grouped according to stage of sexual development. Children having systolic or diastolic blood pressures in the upper 5th percentile will be recalled for repeat blood pressure determinations. Those with all three determinations the first year in the upper 5th percentile (and an equal number of controls) will have echo and vectorcardiograms to determine left ventricular hypertrophy, and some will have exercise stress tests to evaluate cardiac performance, i.e., echocardiographic determination of ejection fraction, pre-ejection period, ejection time and circumferential fiber shortening velocity. Blood pressures will be recorded semi-annually, and echocardiographic and vectorcardiographic studies annually. All patients in the initial follow-up group and the control students will be followed throughout the five-year period. All students will be rescreened bi-annually when in the tenth and twelfth grades. Blood pressure response to exercise stress testing and the echocardiographic and vectorcardiographic findings will provide data to determine the prevalence of hypertensive myocardial changes in adolescent children.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Heart Lung & Blood Inst. $128,871

3.0881,

THE DETERMINANTS OF RISK OF SUDDEN DEATH

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We have completed 1019 5 year prospective observations of men aged 40-65 with repeated (1-7 times) comprehensive medical histories and examinations; reviews of activities, medications, smoking, drinking, and time budgets; blood lipids, glucose tolerance, serum uric acid and biochemical and hematological profiles; chest x-rays; twelve lead ECS; and 24 hour recordings of ECG; plus investigations of all illnesses and deaths (total 140) that occurred. 'Arrhythmic deaths' manifested by the sudden cessation of the heart beat at a time when the pumping action of the heart was preserved were 56% of all deaths and 92% of deaths that were primarily attributable to heart disease in the random samples. 69% of the acute illnesses that terminated in arrhythmic death lasted less than one hour. 72% of arrhythmic deaths occurred outside the hospital.

One or more disorders of the myocardium were definitely or very probably present prior to 92% of the arrhythmic deaths. Major chronic disorders of heart rate, rhythm or conduction were present at the last examination shortly prior to 85% of the arrhythmic deaths. Significant increases in the clinical evidence of myocardial disease occurred acutely or sub-acutely during a period of hours, days or weeks prior to the occurrence of 50% of the arrhythmic deaths; and in addition 24% of the autopsied arrhythmic deaths occurred in the presences of a 'silent' acute myocardial infarction or coronary occlusion. At least 65% of the arrhythmic deaths occurred to men who were awake at the time. From a study of tape recordings, four mechanisms have been identified as precipitating potentially fatal arrhythmias in subjects who subsequently died under circumstances in which such mechanisms may well have been operating.

We are preparing to analyse prospectively 12 major categories of variables as risk factors for the occurrence of sudden arrhythmic death and new events of non-fatal heart disease.

BIBLIOGRAPHIC REFERENCES: Kosten, T., J. Kluger and L.E. Hinkle, Jr. Pathogenic Mechanisms of Unespected Sudden Cardiac Death. Psychosomatic Medicine 40:89, 1978.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Heart Lung & Blood Inst. $186,270

3.0882,

GENETIC EPIDEMIOLOGY OF PRECURSORS OF HYPERTENSION

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This collaborative longitudinal study is designed to identify factors which cause increase in blood pressure, lipid levels, obesity, and other risk factors in cardiovascular disease in a migrant Polynesian population. The proposed research aims to elucidate the role played by genetic and familial factors in mediating the response of the migrants to their new environment.

The Tokelau Island Migrant Study is an epidemiologically based investigation of the changes in the physical and socio-cultural environment that are associated with increased risk of cardiovascular disease, as Tokelauans migrate from their traditional atolls to New Zealand. Starting in 1968 with a survey of the premigrant population, the study has accumulated information on the non-migrants and migrants with further surveys being planned for 1980/81.

This application is concerned with the genetic component underlying the response to the 'h-risk' environment by increased blood pressure, lipid levels, glucose levels and obesity in adults and the precursors of the changes in children. Our previous research has demonstrates that genetic factors are important in the familial aggregation of blood pressure, lipids, serum glucose for both children and adults in the premigrant, non-migrant, and migrant populations. By developing response scores for the 75/77 and 80/81 surveys, standardized by identified concomitant variables, we aim to identify the genetic attributes of 'response' using likelihood analysis of pedigree data. We will also estimate the contribution of sociological factors to the common familial environment and will investigate the familial and genetic contribution to tracking of blood pressure scores over the 10-year period. Finally, we aim to identify high risk families and evaluate the predictive value of risk-discriminant functions derived from the 75/77 data by testing against the 80/81 data.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Heart Lung & Blood Inst. $108,228

3.0883,

EPIDEMIOLOGY OF HORMONES AND LIPOPROTEINS

L.H. Kuller, University of Pittsburgh, Graduate School of Public Health, Dept. of Epidemiology, *4200 5th Ave., Pittsburgh, Pennsylvania* 15260 (R01 HL 26757-01)

In our previous study we have demonstrated the direct relationship between the level of free and bound testosterone in plasma and HDLc. The association persisted after adjustment for age, cigarette smoking, alcohol consumption and obesity. Physical activity did not appear to be related to HDLc in this population because of the relatively sedentary status. We propose to re-evaluate the same participants two years later and again determine the relationship between hormones, the risk factors, and lipoprotein cholesterol. Measurement of both testosterone and estrogen will be done. A replication of our previous findings are necessary prior to doing more detailed lipoprotein and hormone studies. The men participating in this study are part of the Multiple Risk Factor Intervention Trial (MRFIT) cohort, and will be re-examined at their sixth annual examination. The cost of the study will be modest since most of the information is collected as part of the MRFIT study.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Heart Lung & Blood Inst. $62,657

3.0884,

THYROID AND PARATHYROID HORMONES IN HYPERTENSION

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Past evidence derived both from reports in the literature and from the Investigators' observations have shown that hypothyroidism and hyperparathyroidism may be associated with hypertension in man, which usually disappears with correction of the thyroid or parathyroid disorder. Since the incidences of these endocrine causes of hypertension are not known, these will be defined by screening patients with hypertension prospectively over 5 years for demonstrable hypothyroidism and hyperparathyroidism. The mechanism of each type of hypertension will be defined by metabolic studies aimed at determining whether the hypertension is of the high-, normal- or low-renin type, whether it is angiotensin-dependent (reversed by saralasin), whether it is mediated by hyperaldosteronism (associated with hyperaldosteronism unsuppressible with standardized saline infusions and is overcome by spironolactone therapy), whether it is mediated by catecholamine excess (associated with elevated plasma catecholamines and overcome by phentolamine), whether it is hypervolemic and volume dependent (associated with expanded plasma volume and reversed by venesection) and whether it is associated with abnormalities in blood bradykinin level or in urinary prostaglandin E2 excretion.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Heart Lung & Blood Inst. $77,876

3.0885,

TYPE A BEHAVIOR AND OCCUPATIONAL ROLES OF WOMEN

P.L. Pirie, University of Minnesota, Minneapolis Campus, School of Public Health, Laboratory of Physiological Hygiene, *1325 Mayo Memorial, Minneapolis, Minnesota* 55455 (R01 HL 26684-01)

Evidence has been produced linking the coronary-prone behavior pattern with the later development of coronary heart disease in men and women. The coronary prone behavior pattern is often described in terms of work related characteristics, and research has shown increased coronary prone behavior among males in certain occupations.

However, coronary heart disease is a major cause of death among women as well. Furthermore, women's occupational roles have changed in the past decade. Many women are now exposed to the same occupational demands and challenges faced by men. In light of this development, it has become important to explore the coronary prone behavior pattern in women. The proposed research will take advantage of an ongoing survey of adult urban residents to assess the relationship between coronary prone behavior and characteristics of women's occupational roles. Occupational variables of interest include employment status, prestige of occupation, and whether the occupation is traditionally filled by males or females.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Heart Lung & Blood Inst. $16,238

3.0886,

PATHOLOGY OF CARDIOMYOPATHIES - A PROSPECTIVE STUDY

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The objectives of this proposal are to determine if chronic myocarditis and intramyocardial coronary artery disease are specific disease entities and to determine whether a relationship exists between these disease states and congestive cardiomyopathy. We will define the pathology and natural history of chronic myocarditis and intramyocardial coronary artery disease with the aid of endomyocardial biopsy. Endomyocardial biopsy is part of the routine diagnostic procedure for patients with cardiac disease of undetermined etiology. Patients with chronic myocarditis will be diagnosed histologically and then included in a clinical study in process in the hospital. These patients will be rebiopsied at 1 month, 7 month and yearly intervals after diagnosis under the clinical study protocol. Patients with chronic myocarditis will be treated with steroids on a randomized basis. No patient will be biopsied solely for purposes of this proposal. We will do detailed histologic, ultrastructural and viral studies on each biopsy. We will determine whether the inflammatory process in chronic myocarditis is ongoing and results in cardiac fibrosis? If it is related to viruses and if it can be arrested by steroid therapy? Patients with intramyocardial coronary artery disease will be identified histologically. These patients will be evaluated and followed in depth but no specific treatment will be instituted. We will do detailed structural studies on the initial biopsy and any subsequent biopsy done for clinical indications. No patient will be biopsied solely for purposes of the proposal. We will characterize the vascular lesions and determine if a specific vascular lesion is associated with the clinical development of so-called ischemic or diabetic cardiomyopathy. These studies will provide new insights into the pathology and natural history of chronic myocarditis and small vessel disease and determine if these entities are related to the development of cardiomyopathy.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Heart Lung & Blood Inst. $82,897

3.0887,

BLOOD PRESSURE AND LUNG FUNCTION IN ADULT TWIN FAMILIES

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The proposed study involves the establishment of a large cohort of fertile adult twins ascertained through their offspring by a survey of collaborating school systems. The 300 twin pairs - 100 monozygotic (MZ) females, 50 MZ males, 100 dizygotic (DZ) females and 50 DZ males - their spouses and offspring will be included in studies of blood pressure and pulmonary function. Specifically, the study is designed to assess some of the environmental and genetic components of variance of these physiological measures, both of which are importantly related to chronic diseases in aging populations. Families of adult twins contain all of the necessary genetic and environmental relationships to accomplish this goal. An iterative weighted least squares analysis is used to identify relevant sources of genetic (additive, dominance, etc.), environmental (within-sibships, among sibships, etc.), and maternal effects, if they exist. Further intensive study and manipulation of these identifiable sources of environmental variation may lead to the eventual anticipation or prevention of the disease state.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Heart Lung & Blood Inst. $94,192

3.0888,

PHYSICAL ACTIVITY AND PRIMARY CARDIAC ARREST

D.R. Peterson, University of Washington, School of Public Health & Community Medicine, Dept. of Epidemiology, *4000 15th Ave. N.E., Seattle, Washington* 98105 (R01 HL 26208-01)

The primary purpose of the proposed study is to demonstrate the relationship between leisure-time physical activity and primary cardiac arrest (PCA) in an ambulatory population without previous clinical cardiovascular disease. The research will address a question of particular interest to clinicians, cardiovascular epidemiologists, public health policymakers, and the general public: Is vigorous leisure-time activity protective of primary cardiac arrest? Collection and analysis of case-control data from Seattle and suburban King County, Washington will be used to explore this association.

Primary cardiac arrest, as recently defined by the Joint International Society and Federation of Cardiology/World Health Organization Task Force on Standardization of Clinical Nomenclature is 'sudden event, presumably due to electric instability of the heart, where evidence which allows other diagnosis is lacking. If no resuscitation is applied or if resuscitation is unsuccessful, primary cardiac arrest is referred to as sudden death. Evidence of previous ischemic heart disease may or may not be present. If death occured in the absence of witnesses, the diagnosis is presumptive.'

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Heart Lung & Blood Inst. $16,765

3.0889,

EVALUATION OF OCCURRENCE OF INFLUENZA & VACCINE EFFICACY

A.S. Monto, University of Michigan, Ann Arbor Campus, School of Public Health, Dept. of Epidemiology, *Ann Arbor, Michigan* 48104

Specimens for virus isolation will be collected in the community of Tecumseh to identify the appearance of influenza virus in this well-defined population. To study past history of seeding or the occurrence of influenza viruses other than the prevalent strain in the community, the collected sera will be tested against antigens of various type A influenza viruses. To determine current and future patterns of infection, approximately 1000 individuals resident in Tecumseh will be recruited for prospective study. The aim here will be to follow a significant number of individuals of all ages to determine the effect of vaccination, the fall off in antibody level induced over time, the seeding of influenza viruses into the community, and the distribution of infection according to antibody status.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Allergy & Infectious Diseases $273,393

3.0890,

CLINICAL EPIDEMIOLOGY AND PATHOGENESIS OF GONORRHEA (HUMAN, RABBITS)

K.K. Holmes, University of Washington, School of Medicine, Dept. of Medicine, *A-300 Health Sciences Ctr., SC-64, Seattle, Washington* 98195 (P01 AI 12192-060001)

This project is part of a broader program (AI 12192).

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Allergy & Infectious Diseases funds n.a.

3.0891,

EPIDEMIOLOGY AND ECOLOGY OF ARBOVIRUS DISEASES (HUMAN)

C.G. Hayes, University of Maryland, Baltimore Professional Schools, School of Medicine, Institute of International Medicine, *655 W. Baltimore St., Baltimore, Maryland* 21201 (P01 AI 16289-010005)

This project is part oi a broader program (AI 16289).

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Allergy & Infectious Diseases funds n.a.

3.0892,

FILARIASIS IN COLOMBIA (HUMAN, RODENTS)

W.J. Kozek, Tulane University of Louisiana, School of Public Health & Tropical Medicine, Dept. of Tropical Medicine, *6823 St. Charles Ave., New Orleans, Louisiana* 70118 (P01 AI 16315-010001)

This project is part of a broader program (AI 16315).

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3.0893,

TESTING RESPIRATORY VIRUS, BACTERIAL VACCINES IN INFANTS

P.F. Wright, Vanderbilt University, School of Medicine, Dept. of Pediatrics, *21st Ave. S. & Garland, Nashville, Tennessee* 37232

Provide a center for conducting early trials of virus and bacterial respiratory disease vaccines in human pediatric populations. Additionally, limited epidemiology studies of respiratory disease will be undertaken.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Allergy & Infectious Diseases $448,102

3.0894,

SEROEPIDEMIOLOGIC STUDY OF CYTOMEGALOVIRUS INFECTION

R. Rubin, Massachusetts General Hospital, *32 Fruit St., Boston, Massachusetts* 02114

No summary has been provided to the Smithsonian Science Information Exchange.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Allergy & Infectious Diseases $71,851

3.0895,

EPIDEMIOLOGY OF ROCKY MOUNTAIN SPOTTED FEVER

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Overall objectives are to more clearly define and provide an accurate assessment of the incidence of the disease (and various factors responsible for increases in incidence of the RMSF) and of the factors involved in transmission.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Allergy & Infectious Diseases $109,280

3.0896,

EPIDEMIOLOGY OF ROCKY MOUNTAIN SPOTTED FEVER

H.R. Fischman, Johns Hopkins University, School of Hygiene & Public Health, Dept. of Epidemiology, *615 N. Wolfe St., Baltimore, Maryland* 21205

Study the epidemiology of RMSF in Maryland to describe the medical handling, course, and outcome of cases in man, to identify risk factors responsible for transmission to man, and to more clearly understand the nature of the rickettsia involved in human infection.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Allergy & Infectious Diseases funds n.a.

3.0897,

THE CLINICAL EPIDEMIOLOGY OF IMMUNOLOGIC DISEASE (HUMAN)

J.F. Fries, Stanford University, School of Medicine, Dept. of Medicine, *300 Pasteur Dr., Stanford, California* 94305 (P01 AI 11313-080010)

This project is part of a broader program (AI 11313).

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Allergy & Infectious Diseases funds n.a.

3.0898,

ESTABLISH AN INFECTIOUS ENTERIC DISEASE STUDY CENTER

A.S. Monto, University of Michigan, Ann Arbor Campus, School of Public Health, Dept. of Epidemiology, *Ann Arbor, Michigan* 48104

An infectious Enteritic Diseases Study Center will be established at the University of Michigan. Incidence and etiology of disease will be determined in normal families and in hospitalized cases. The families will be randomly selected from the population of Tecumseh, Michigan. Efforts will be made to identify bacterial, viral, and parasitic agents associated with these illnesses. Serologic techniques will be used to determine infection rates on a uniform basis in the entire study population. New methods will be developed for recognition of infectious agents and for studying mechanisms of pathogenesis. The ultimate aim will be control through therapy and prophylaxis.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Allergy & Infectious Diseases $95,000

3.0899,

ST LOUIS ENCEPHALITIS VIRUS IN TROPICAL ECOSYSTEMS

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This project has been designed to elucidate the mechanisms by which St. Louis Encephalitis (SLE) virus cycles in tropical ecosystems, and to compare the biological characteristics of SLE strains representing different survival mechanisms of the virus in Panama and in the U.S.A., so as to assess possibilities of periodic introduction of the virus into the U.S.A. from the neotropics with the occurrence of urban epidemics and vice versa. A close monitoring for SLE activity will be maintained at three or more distinct tropical ecosystems where the virus previously was isolated. Dynamics of transmission will be studied by virus isolation from mosquitoes with determination of vectorial capacity of mosquitoes, including transovarial transmission and host preference. Viremia patterns of suspected vertebrates will also be studied. Characterization of SLE strains will be done at Yale University.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Allergy & Infectious Diseases $298,420

3.0900,

PATHOGENICITY OF VISCERAL LARVA MIGRANS IN CHILDREN

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The Visceral Larva Migrans Project is a comprehensive investigation which will determine for the first time the prevalence and pathogenicity of this condition in children. The host and environmental factors which influence the acquisition of the infection and the expression of clinical disease will also be defined.

Screening of 8,000 sera from the Lead Poisoning Control Program by the Enzyme-linked Immuno-Sorbent Assay for antibodies to the second larval stage of Toxocara canis, the canine roundworm, will produce an estimated 3.5 percent positivity rate. These 280 positive children and 280 matched controls are then given detailed home questionnaires and clinic examinations. The questionnaire elicits demographic data, information on the subject's play habits and play areas, pet ownership and other animal contact, medical history and parental assessment of how the child functions. An objective appraisal of the interior and exterior home environment is also made. At the clinic sessions, a pediatric physical examination, an ophthalmologic examination, a developmental screening and further blood testing are performed blind on every subject. Referrals are made for all children with positive findings.

This comprehensive investigation will not only be the definitive study of Visceral Larva Migrans of children in an urban environment but also reveal valuable insights on pica-related conditions, urban zoonotic conditions, and chronic manifestations of infectious diseases.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Allergy & Infectious Diseases $156,145

3.0901,
INTERNATIONAL RESEARCH IN INFECTIOUS DISEASES

T.C. Orihel, Tulane University of Louisiana, School of Public Health & Tropical Medicine, Dept. of Tropical Medicine, *6823 St. Charles Ave., New Orleans, Louisiana* 70118 (P01 AI 16315-01)

The primary objective of the proposed Tulane ICIDR is to develop research program in Colombia, South America, with headquarters in Cali, which will address major public health problems of the country, the neotropical region and the hemisphere, and which will be of interest and importance to the scientific community in other parts of the world. The research will be carried out as a collaborative effort between Colombian and American scientists on a broad interdisciplinary base and will focus primarily on parasitic diseases of man and, in certain instances, on related immunological problems. The major effort will be directed toward basic biological and epidemiological investigations of selected vector-borne, parasitic diseases of man including filariasis, leishmaniasis, trypanosomiasis and malarin. In connection with some of these activities, integrated studies on the vectors and vector-parasite relationships will be carried out. Parasitic diseases of the upper gastrointestinal tract namely, giardiasis and strongyloidiasis will be investigated with emphasis on the physiological environment in the gut which may favor the colonization by the parasites and produce symptomatic disease. Infectious diseases in pediatric populations of Colombia and the various factors which mediate the immune responses of children to infections represent other areas of special interest to the program. The Colombian Fund for Scientific Research (COLCIENCIAS) is the Colombian host and counterpart organization of the Tulane program. The program is open to Colombian scientists and institutions from throughout the country.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Allergy & Infectious Diseases $442,935

3.0902,
IMMUNOBIOLOGY AND EPIDEMIOLOGY OF LEPROSY

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This US-Thai collaborative program is designed to provide epidemilogic and immunologic information required for improved prevention or treatment of leprosy, and to provide better pharmacologic data for the use of common drugs in tropical areas of the world. The program is built upon the long-standing collaboration between the faculties of The University of Illinois College of Medicine and Chiang Mai University in northern Thailand. The Illinois core facility is the US center and includes laboratories for training Thai workers for work to be done in Thailand. The Chiang Mai core is the Thai laboratory and clinical facility. McKean Rehabilitation Institute, Chiang Mai, will provide access to 300 leprosy inpatients and 2000 outpatients through its associated villages and clinics. The component projects will investigate leprosy from epidemilogic, genetic, and immunologic viewpoints. M. leprae specific and nonspecific antibody, lymphocyte, and phagocytic cell responses will be characterized using techniques from the Universtity of Kentucky, and the University of Illinois. Studies of the role of immune complexes in leprosy and its complications including glomerulonephritis and erythema nodosum leprosum will be based at the University of New Mexico.

All component projects involve Thai co-investigators who, after training in the US, will implement the research in Thailand.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Allergy & Infectious Diseases $604,929

3.0903,
ENDEMIC SCHISTOSOMIASIS AND CHAGAS' DISEASE IN BRAZIL

T.H. Weller, Harvard University, Boston Campus, School of Public Health, Dept. of Tropical Public Health, *55 Shattuck St., Boston, Massachusetts* 02115 (P01 AI 16305-02)

This multidisciplinary program project research effort on Chagas' disease reflects collaborative work between Brazilian scientists and scientists from Harvard. Two core research units, one laboratory-based and one clinical, have been developed at the Federal University of Bahia, Salvador, Brazil, and a third core unit developed with FioCruz encompasses rural populations in Bahia where Chagas' disease is endemic. The Harvard component operates under the sponsorship of the Pan American Health Organization.

A major objective is the elucidation of the natural history of Chagas' disease in an area where the disease is hyperendemic. This is being done by combined clinico-parasitologic-immunologic-entomologic longitudinal studies, particularly in Castro Alves and Riacho de Santana. A second project focuses on cardiac arrhythmias in Chagas' disease as detected by ambulatory electrocardiographic monitoring.

Two projects focus on cellular and humoral immunoregulatory processes in Chagas' disease, one in man and the other in a murine model. The objective is to elucidate the determinants of progression or of non-progression of infection with Trypanosoma cruzi.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Allergy & Infectious Diseases $330,709

3.0904,
ARTHROPOD-BORNE DISEASES AND THEIR CONTROL

R.H. Baker, University of Maryland, Baltimore Professional Schools, School of Medicine, Inst. of International Medicine, *655 W. Baltimore St., Baltimore, Maryland* 21201 (P01 AI 16289-01)

We propose to continue our existing program of research on arthropods of medical importance in Pakistan. With core support in Baltimore and Lahore (Pakistan Medical Research Center) and in collaboration with Pakistani and third country scientists, eight interrelated projects are proposed: 1) Mosquito and disease ecology and genetic control. 2) Genetic studies to control Anopheles culicifacies. 3) Genetic control of Anopheles stephensi. 4) Genetic studies to control arbovirus vectors. 5) Epidemiology and ecology of human arbovirus diseases. 6) Studies on imported filariasis in Pakistan. 7) Clinical and epidemiologic studies on malaria and viral fevers. 8) Systematics, biology and vector potential of ticks.

Particular emphasis is placed on developing new biological methods to control those arthropod species that transmit human pathogens. Genetic manipulation of vector mosquito species has been developed to the stage where field release trials of lab-reared populations, carrying deleterious genes, are currently in progress. Addtionally, field studies of mosquito predators and pathogens as control agents are continuing. A clinical component is being established that will relate these control projects directly to malarial and viral diseases. In a like manner a tick project is propsed, in order to define the role of ticks in the transmission of viral, rickettsial and protozoal agents.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Allergy & Infectious Diseases $326,212

3.0905,
SCHISTOSOME SUSCEPTIBILITY STUDY ON BRAZILIAN SNAILS

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Governmental mass relocations of unemployed Brazilian families from coastal foci endemic for schistosomiasis to agricultural colonies in the interior of Northeast Brazil are occurring at a rapid rate. Many of these agricultural colonies are in close association with irrigation projects which are made up of many small water ways which serve as ideal habitats for potential vector snails. The potential vector snail in this area is Biophalaria straminea and it has recently been shown to be susceptible to Schistosoma mansoni. Therefore, B. straminea may be an important vector for the spread of schistosomiasis in these areas due to its distribution and its association with high levels of infection.

The objectives of this project are to: (1) investigate under laboratory conditions the susceptibility of various geographical isolates of B. straminea from the newly developed agricultural colonies; (2) examine the infectivity of cercariae produced by B. straminea under laboratory conditions; (3) examine field collected B. straminea in and near newly developed agricultural colonies for naturally-acquired infections of S. mansoni; (4) verify the identity of B. straminea and/or other snails collected in or near the agricultural developmental colonies; and, (5) delineate geographical areas of occurrence of B. straminea and/or other snails which possess the ability to serve as a vector for S. mansoni.

The research deals with snail biology and intermediate host-parasite relationships and is vital to the formulation of control strategies. The economic benefit brought by irrigation practices can be hindered by the great loss due to the disease unless effective control measures are taken.

BIBLIOGRAPHIC REFERENCES: Rodrick, G.E., A.L. Vincent and W.A. Sodeman, Jr. 1980. Hydrolytic enzyme activities of Physa gyrina. Comp. Biochem. Physiol., 65B:177-180. Sodeman, W.A., Jr., G.E. Rodrick and A.L. Vincent. 1980. Lampyridae larva: A natural predator of schistosome vector snails in Liberia. Am. J. Trop. Med. Hyg., 29(2):319.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Allergy & Infectious Diseases $25,827

3.0906,
BASIC AND APPLIED RESEARCH iN PROTOZOAN DISEASES

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Diseases caused by the Leishmania-Trypanosoma complex are of major importance in the Wester Hemisphere. The diseases exhibit marked variation in clinical manifestations yet, taxonomically, biochemically and immunologically, they maintain many similarities which may provide clues to pathogenesis. Control of these diseases will result from careful evaluation of pathogenic mechanisms, antimicrobial therapy, disease patterns, and methods of accurate diagnosis. This program project brings together basic science and clinical investigators from Cornell University Medical College and The Rockefeller University and respected Brazilian investigators from the University of Bahia and the University of Brasilia. The central focus of this collaborative effort is the integration of basic and applied clinical research. The major research areas include: 1) basic parasitology, immunobiology and pharmacology of Chagas' disease and leishmaniasis; 2) clinical disease patterns, epidemiology and genetics these disease; and 3) application of immunologic techniques for understanding pathogenesis and for reliable diagnosis. Central to this grant is the attempt to coordinate the activities of investigators from different disciplines to allow exchange of limited resources, to bring these investigators in contact with young researchers abroad, and to advance our understanding of important human diseases.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Allergy & Infectious Diseases $793,235

3.0907,
EPIDEMIOLOGY OF CHLAMYDIA TRACHOMATIS INFECTIONS

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This project is designed to increase knowledge of the epidemiology of human Chlamydia trachomatis infections. The etiological role of these organisms in trachoma, non gonorrheal urethritis (of the male), inclusion conjunctivitis of the newborn, and pneumonitis of infancy has been established and much has been learned about the epidemiology of C. trachomatis infections of the eye, the genital tract, and newborns in both trachoma endemic and nonendemic areas of the world. Evidence regarding the disease significance of C. trachomatis infections of the female genital tract (cervicitis, salpingitis, peritonitis and perihepatitis) has been accumulating and studies of these infections are proposed. Although no etiological significance has yet been demonstrated, the organisms have been isolated from the middle ear, pharynx and the rectum. We have serologic epidemiological data from U.S. population groups strongly suggesting that these organisms cause more frequent infection than can be accounted for by known eye and genital tract disease. Our serological data suggests that C. trachomatis is etiologically associated with pneumonia of children after infancy and in adults. A series of studies of the role of C. trachomatis in pneumonia and acute lower respiratory disease are proposed. In addition we plan to utilize our unique specific serological test (micro immunofluorescence) for both serum and local secretions in

preliminary studies of various disease syndromes potentially associated with C. trachomatis (acute respiratory disease, chronic obstructive pulmonary diseases, sinusitis, otitis, ideopathic inflammation of the bowel) to identify targets for some specific etiological and epidemiological studies. Patients with compromised pulmonary (e.g. cystic fibrosis) or immunological systems will be studied to determine the potential role of C. trachomatis in their disease process. Also, couples with infertility problems will be similarly investigated.

BIBLIOGRAPHIC REFERENCES: Clements C, Dhir SP, Grayston JT, Wang SP: Long-term follow-up study of a trachoma vaccine trial in villages of Northern India. Am J Ophthalmol 87: 350-353, 1979. Wang SP, Kuo CC, Grayston JT: Formalinized Chlamydia trachomatis organisms as antigen in the micro-immunofluorescence test. J. Clin Microbiol 10: 259-261, 1979.

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3.0908,

NEONATAL CHLAMYDIA INFECTION - INCIDENCE AND TREATMENT

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Chlamydia trachomotis, an intracellular parasite, is the etiologic agent of trachoma, non-gonococcal urethritis and inclusion conjunctivits. It can also infect the cervix of women and during pregnancy, the organism may be acquired by the infant during passage through the birth canal at delivery. The infant may subsequently develop inclusion conjunctivitis or pneumonia. We intend to investigate in this proposal, the risks and consequences of perinatal chlamydial infection and to explore various means of intervention and treatment.

These objectives will be accomplished by means of prospective incidence studies, prophylaxis and treatment trials: 1) We shall study the efficacy of prenatal treatment of pregnant women with chlamydial infection, with erythromycin on the eradication of the infection and the prevention of subsequent chlamydial infection in the infant. 2) Evaluate erythromycin ointment as an alternative neonatal ocular prophylaxis for the prevention of neonatal chlamydial infection. 3) Evaluate oral erythromycin versus topical sulfonamide for the treatment of neonatal chlamydial conjunctivitis. 4) Determine the incidence of pneumonia due to C trachomatis in infants under one year of age and evaluate the comparative efficacy of treatment with oral erythromycin or ampicillin. 5) Determine if C. trachomatis plays a role in middle ear disease in children, and finally 6) Investigate the prevalence of chlamydial infection in the families of infected infants.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Allergy & Infectious Diseases $114,735

3.0909,

CHARACTERIZATION AND DETECTION OF VIRUSES AND ANTIBODIES

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The broad objective of the proposed research are characterization and detection of certain viral antigens and antibodies, and application of the findings to studies on the etiology and pathogenesis of human diseases. The three major areas of activity are: 1. Identification of the various antigenic components of varicella-zoster virus and determining which are shared by related human and simian herpesviruses; studying antibody response to the various components in primary and secondary infections; developing monospecific reagents for improved serodiagnosis of infection. 2. Application of sensitive and specific radioimmunoassay (RIA) and enzyme immunoassay (EIA) methods for detection of group B coxsackievirus antigens in an animal model and in human infections, application of these methods to studies on the pathogenesis of infection and on the ability of group B coxsackieviruses to establish latent or persistent infections in the animal or human host. 3. Development, evaluation and comparison of RIA and EIA methods for direct detection of viral antigens or antibodies in certain body fluids, excretions, secretions and peripheral blood leucocytes, using animal models and then extending the findings to human clinical materials. To use these methods for studies on the pathogenesis and epidemiology of certain viral infections.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Allergy & Infectious Diseases $110,261

3.0910,

PSYCHOSOCIAL AND BIOCHEMICAL RISKS FOR MONONUCLEOSIS

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Psychosocial factors in the development of clinical illness have been extensively documented. It is probable that at least one mode of action of these factors is through modifying host-resistance as an outcome of central nervous system physiology, including hypothalamic neuroendocrine pathways. Since the disposition and metabolism of hypothalamic monoamines, especially dopamine, is reported to be intimately related to several hypothalamic releasing hormones, blood platelet monoamine oxidase (MAO) activity, as a genetically stable marker, is postulated to be a simple screening procedure for hypothalamic dopaminergic physiology. Perhaps psychosocial factors and platelet MAO activity can be ultimately synthesized in a multivariate equation, predicting risk for clinical symptoms of infectious mononucleosis (IM). Such risk for physical illness, when considering preliminary platelet MAO data alone, appears to be antithetically related to risk for certain psychiatric illnesses.

Following two successive years of preliminary, prospective studies of IM in college age students, a fully-prospective epidemiologic design has now been generated to include a variety of psychosocial instruments in addition to prospective evaluations of platelet MAO activity. Preliminary evidence to date identifies clinical IM as dependent upon brain and behavior. The existence of a fluorescent method for Epstein-Barr virus (EBV) antibody screening, utilized prospectively, is the principal serological basis upon which clinical IM and inapparent EBV infections are discriminated. Through such means of prospective discrimination, the psychosocial and biochemical risk factors are evaluated and synthesized within the broad interactive fields of modern medicine and psychiatry.

BIBLIOGRAPHIC REFERENCES: Shaskan, E.G. and Lovett, E.J. Effects of haloperidol, a dopaime receptor antagonist, on a delayed type hypersensitivity reaction to 1-chloro, -2,4-dinitrobenzene in mice. Research Communications in Psychology, Psychiatry and Behavior, 5(3):241-254, 1980.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Allergy & Infectious Diseases $66,289

3.0911,

PNEUMOCOCCAL VACCINE IN THE INSTITUTIONALIZED ELDERLY

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To evaluate the current pneumococcal vaccine in the institutionalized elderly by observing vaccine-associated reactions and subsequent incidence and etiology of pneumonias in pneumonia-associated mortality.

A total 1,340 patients, already admitted to 3 different long-term care institutions, received the pneumococcal vaccine. Vaccine-associated reactions overall occurred in 177 (13.2%) of the patients. Acute systemic reactions were noted in 2 (.14%), discomfort in 108 (8.1%), erythema in 70 (15.4%), induration in 32 (2.4%) and fever in 28 (2.1%). Vaccine-associated reactions were significantly more frequent in males than females. Males demonstrated a progressively increasing number of infections from less than 50 years of age (13.0%) to a peak of 60-69 years of age (25.5%). Thereafter, the frequency of reactions decreased in those 70 years of age and older. The same trend was noted for women, although the frequency of reaction was lower. Review of the results for the first 5 months of the surveillance program for pneumonias indicated that radiographically confirmed pneumonias occurred frequently (9-21% of the vaccinated and non-vaccinated population, depending on the institution) but S. pneumoniae was isolated much less frequently than expected (17-30%), and was considered the primary agent in only about 1/3 of the cases. Most of the S. pneumoniae isolates were types or groups not represented in the vaccine, especially in vaccinees. Two cases of pneumonia (both Type 9 and from the same institution), however, did occur in vaccinees who had chronic bronchitis as a predisposing illness.

BIBLIOGRAPHIC REFERENCES: Bentley DW. Pathogenesis of bacterial pneumonia in the elderly: the effects of normal aging processes. IN Geriatric Education. (Ed) Steele, Knight, D.C. Heath Co., Lexington, MA, 1981, in press.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Allergy & Infectious Diseases $66,186

3.0912,

EPIDEMIOLOGY OF THE GROUP B STREPTOCOCCUS

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Pregnant women and newborn infants will be followed to detect and measure group B streptococci, an important cause of newborn infections. The purpose is to understand the epidemiology and carriage of this bacterium, particularly with reference to the gastrointestinal tract. Healthy adult volunteers will be studied to locate the sites of streptococcal carriage in the gastrointestinal tract. Patients and their contacts will be studied in a venereal disease clinic to evaluate the importance of sexual transmission in streptococcal spread.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Allergy & Infectious Diseases $76,467

3.0913,

CONTROL OF HOSPITAL-ACQUIRED URINARY TRACT INFECTIONS

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Our overall objective is to develop and evaluate methods for the prevention and control of hospital-acquired urinary tract infections associated with the use of indwelling bladder catheters. We have established continuing daily bacteriologic monitoring of urinary drainage systems by catheter care team and have developed methods for incorporating our bacteriologic and epidemiologic data into patients' computerized hospital records. We propose to evaluate our monitoring system as a technic to assist in patient care, medical audit, and long-term epidemiologic study. We are conducting systematic studies of methods which may help prevent catheter-associated infections. These methods include the use of silicone catheters and daily meatal care with various disinfectants. We have identified meatal colonization with gram-negative bacilli as a major risk factor for later bacteriuria, and we are studying epidemiologic determinants of meatal colonization as well as technics to block retrograde extra-lumenal spread of bacteria into the urinary bladder.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Allergy & Infectious Diseases $45,498

3.0914,

NATURAL HISTORY OF THE ORGANISM OF LEGIONNAIRES' DISEASE

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In the next year we anticipate that our major efforts will be to continue to characterize properties of Legionella pneumophila as listed above, to delineate pathology of Legionnaires' disease using light, immunofluorescence and electron microscopy in guinea pigs by three routes of innoculation (nasal, intraperitoneal and oral) and in humans, to examine some aspects of pathogenesis of Legionnaires' disease, to continue to study the incidence of Legionnaires'disease in several populations of ill persons..

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Allergy & Infectious Diseases $82,375

3.0915,

INTERDISCIPLINARY RESEARCH CENTER IN IMMUNOLOGIC DISEASE

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The interdisciplinary research center in Immunologic diseases has two major goals. The first is educational and the second the undertaking of fundamental immunologic research on clinically relevant problems related to the pathogenesis of allergic diseases.

Through the educational program, the center attempts to improve diagnosis and care of patients with allergic diseases by updating the core of fundamental immunologic knowledge of practicing physicians within the geographic region served by the center. The educational programs include a course of lectures given by the center members in the community hospitals, which covers topics and concepts in basic Immunology followed by lectures which deal with the diagnosis and treatment, and pathogenesis of specific allergic and immunologic diseases.

The research involves three areas. Each concerns understanding pathophysiologic or pathogenetic mechanisms underlying a particular allergic and/or immunologic disease. Further, because certain aspects of these projects require fundamental physiochemical and biochemical techniques and expertise, two of the three projects involve co-operative, collaborative research between scientists in the departments of Medicine, Pediatrics, Biochemistry and Chemistry.

The projects involve (1) a prospective study of the effects of respiratory syncytial viral infection in infancy on the development of chronic respiratory disease or asthma in later life; (2) a comparative study of the alpha and beta adrenergic receptor number and function on leukocytes in normal and asthmatic individuals; and (3) studies which involve determination of the characteristics of the human autoimmune response and separately, of human monoclonal IgG cryoglobulins.

BIBLIOGRAPHIC REFERENCES: Packman, C.H., Rosenfeld, S.I., Jenkins, D.E., and Leddy, J.P. Complement lysis of human erythrocytes. II. A unique interaction of human C8 and C9 with paroxysmal nocturnal hemoglobinuria erythrocytes. J. Immun. 124:2818, 1980. Nelson, L.A., Rosenfeld, S.I., and J.P. Leddy. Platelet-stimulating immune complexes: studies on the role of fibrinogen (abstract). Clin. Research 28(2):332A, 1980.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Allergy & Infectious Diseases $301,657

3.0916,

INTERDISCIPLINARY RESEARCH IN IMMUNOLOGIC DISEASES

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The Center for Interdisciplinary Research in Immunologic Diseases (CIRID) grant supports four projects each of which involves a collaborative effort between basic laboratory scientists and clinicians. The first project involves the development of a temperature-sensitive mutant of Haemophilus influenza and to evaluate its potential for use as a safe and effective vaccine. The second project deals with the characterization of the Langerhans cell and its role in normal immunologic function as well as in dermatologic disease. The third project in the CIRIDs program concerns the role of prostaglandins in asthama. The purpose of this project is to study prostaglandin metabolism by alveolar macrophages and peripheral blood leukocytes and to relate differences in metabolism to sex and to the presence of an asthmatic condition. The fourth project in the program is a community outreach approach to understanding the various factors that interact in allergic disease in the Washington Metropolitan area. This outreach involves two different approaches. The first is an epidemiologic survey to determine the incidence and significance of allergic disease in the Metropolitan area based upon existing local and national health statistics as well as direct contact with health care facilities. The second approach involves an educational intervention program which emphasizes self-management techniques for asthmatics and their parents.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Allergy & Infectious Diseases $199,163

3.0917,

NORTH CAROLINA PROGRAM ON SEXUALLY TRANSMITTED DISEASE

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This is a multidisciplinary program project, with research activities in the areas of gonorrhea and syphilis. Emphasis is on both basic microbiology and immunology, and applied problems such as organism identification and clinical epidemiology.

Four integrated projects focus on the gonococcus, including basic genetics, biochemistry and antigenicity of the cell surface; virulence and host immune response; and importance of cell-wall deficient forms in human disease. Two integrated projects examine the basic physiology, pathogenicity, and immunology of T. pallidum.

BIBLIOGRAPHIC REFERENCES: Sox, T.E., W. Mohammed, and P.F. Sparling: Transformation-derived plasmids in Neisseria gonorrhoeae with altered structure and function. J. Bacteriol. 138: 510-518, 1979. Daly, J.A., J.K. Spitznagel, P.F. Sparling, and T.J. Lee: Differential bactericidal effect of extracts from human polymorphonuclear leukocyte granules on gonococcal mutants with altered cell envelope. In current Chemotherapy and Infectious Disease, Vol. II, J.D. Nelson and C. Grassi (Eds.). American Society for Microbiology, Washington, D.C., 1980, pp. 1249-1250/

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Allergy & Infectious Diseases $517,388

3.0918,

NOSOCOMIAL INFECTION IN SURGICAL PATIENTS

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We are studying the pathogenesis, epidemiology, and economic impact of postoperative infections. We have designed a quantitative method for sampling low levels of bacterial contaminations of wound surfaces using a micropore filter mounted on a nutritive agar media. We are evaluating the clinical application of this technique in an animal model prior to human use.

Our clinical studies have delineated risk factors which predispose to the development of postoperative pneumonias and have identified possible ways to reduce the likeiihood of their occurrence. We have shown that some practices (i.e., bacterial anesthesia filters) which were introduced to prevent pneumonias are ineffective and add great cost to our health care budget unnecessarily. We have studied patterns of use and abuse of prophylactic antibiotics in surgery in 21 Utah hospitals. We found that prophylaxis was often prescribed too early, too late or too long and that prophylaxis was not indicated on approximately 80% of the days on which it was prescribed. Other clinical studies are attempting to define the infectious consequences of misused prophylactic antibiotics as well as the direct costs associated with specific postoperative infections.

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3.0919,

CLINICAL EPIDEMIOLOGY-PATHOGENESIS OF GENITAL HERPES

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Genital Herpes Simplex Virus (HSV) infection is a disease of major public health importance. Its frequent recurrence rate, its complications of meningitis, and radiculitis, and its association with neonatal morbidity and cervical cancer make studies of the natural history, immunology and therapy of HSV of broad interest. We propose to study the natural history, immunology and therapy of HSV of broad interest. We propose to study the natural history of genital HSV infection, to determine whether the disease changes in character or rate of recurrence over time. We will systematically obtain clinical epidemiologic information and perform virus isolation on all cases, and will obtain detailed virologic and immunologic data on selected cases to define host factors and type or strain specific viral factors which may influence the clinical manifestations, severity and risk of latency and of recurrence. Because we have determined that genital HSV-1 infections recur less often than genital HSV-2 infections, we will compare cellular, humoral and local immune responses of primary HSV-2 vs. primary HSV-1 infection to determine whether differences in immune response to these types are related to differences in the recurrence rates of genital disease. We will prospectively follow exposed sexual partners to define the risk of transmitting genital HSV and define the role asymptomatic shedding of virus plays in this process. Restriction enzyme analysis of HSV strains will also be employed to assess the contribution of exogenous reinfection to recurrent disease. The effect of pregnancy on the severity and recurrence rate of genital HSV disease and the natural history of pharyngeal and rectal HSV will also be studied. Pilot studies to define the prevalence and incidence of disease in specific populations will be undertaken.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Allergy & Infectious Diseases $147,930

3.0920,

EPIDEMIOLOGY OF INFECTION WITH ATYPICAL MYCOBACTERIA

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Persons infected by Mycobacterium intracellulare, as demonstrated by positive skin test to the antigen, are concentrated in the southeastern coastal area of the United States. This geographical distribution is unlike that of persons exposed to M. tuberculosis and provides a hypothesis to the possible source of infection with M. intracellulare and other atypical Mycobacteria. Our research proposed to continue testing the hypothesis that the source of the infection is Mycobacteria residing in either the estuaries or fresh water of the southeastern United States or animals (birds especially) that are associated with these habitats. These Mycobacteria are concentrated at the surface of bubbles formed during wave action and rain or spread in dusts. The experimental approach involves sampling air as well as surface and subsurface waters and soils in various areas of the southeastern United States, at and off the coast of Virginia, South Carolina, Maryland, etc. Initial studies by the principal investigators have already demonstrated the effectiveness of this approach. The concentration of Mycobacteria, their frequency of isolation, and identification of each isolate will be part of this study. The data concentration and frequency of isolation, and identification of each isolate will be part of this study. The data of concentration and frequency of isolation will be compared to samples from areas where the incidence of infection with M. intracellulare is lower (upstate New York and New England). In addition, the physiological ecology of these organisms is being investigated to determine the basis for the unique geographical distribution.

BIBLIOGRAPHIC REFERENCES: Falkinham, J.O., III, B.C. Parker, and H. Gruft. 1980. Epidemiology of infection by nontuberculous mycobacteria. I. Geographic distribution in the eastern United States. Am. Rev. Resp. Dis. 121:931-937. George, K.L., B.C. Parker, H. Gruft, and J.O. Falkinham, III. 1980. Epidemiology of infection by nontuberculous mycobacteria. II. Growth and survival in natural waters. Am. Rev. Resp. Dis. 122:89-94.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Allergy & Infectious Diseases $114,251

3.0921,

OCCUPATIONAL HYPERSENSITIVITY CHEST DISEASES

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Investigative pursuits will focus on environmental and occupational factors which may contribute to selected forms of hypersensitivity pulmonary disease. The overall projects are divided into three major sections. Section 1 focuses on mold sensitive environmental asthma (New Orleans Asthma) and is concerned with the development of biologic assays for detection of antibodies to fungal antigens and determination of the immune response of man to these antigens. Section 2 is concerned with studies of cottonseed and cotton dust induced airways disease. It

includes studies on the effect of cotton dust and seed products on lymphoid cells and cyclic AMP concentrations of cottonseed workers and attempts to identify active components in cottonseed products. Clinical activity of the antigens will also be established by provocation inhalation challenge testing. Section 3 is concerned with the effect of environmental tobacco smoke on atopic and non-atopic subjects and includes studies to analyze the possible immunogenicity and allergenicity of smoke products in man and the relationship between any putative smoke allergens and 'tobacco smoke' asthma. Isolation and analysis of immunogenic components of tobacco smoke, characterization of their physical and chemical properties and assays for detection of specific IgE antibody in the population-at-large against these products will also be studied.

BIBLIOGRAPHIC REFERENCES: Salvaggio, J.E. and R.M. Karr. Hypersensitivity Pneumonitis: State of the Art. Chest, 75 (Suppl.):270S-274S, 1979. Karr, R.M., S.B. Lehrer, B.T. Butcher, M.R. Wilson, V. Aniceiti and J.E. Salvaggio. Analysis of antigenic relationship among species of Aspergillus. J. Allergy Clin. Immunol., 63:213, 1979.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Allergy & Infectious Diseases $111,404

3.0922,
GENETICS OF IMMUNE RESPONSE IN MAN

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The overall aim of the project is to elucidate the genetic factors which determine (or influence) human immune responsiveness. This study is unique in that we are studying human immune response toward several ultra-pure pollen allergens in an epidemiologically defined population, as well as allergy patients and the consanguineous Amish population. We are studying both unrelated subjects and families.

An important aspect of the work is a longitudinal study of the variation in phenotypic expression of responsiveness within an individual. Only with this knowledge is it possible to investigate definitively the role of genetic factors, including hypothesized immune response (Ir) and immune suppression (Is) genes, in determining human immune responsiveness and allergy. Segregation and linkage analysis will be performed to test for the presence of major genes, especially in relation to total IgE and specific IgE and IgG antibody production. An important aspect of our work is the studies of the mechanisms of immune supression using in vitro culture techniques, and taking advantage of the availability of unique HLA haplotypes from the Amish population. This project is the first such rigorously designed investigation of the genetics of immune response in man, which serves as a model for studying human immune responsiveness toward complex antigens under conditions of naturally limiting low dosage exposure.

BIBLIOGRAPHIC REFERENCES: Santilli, J., Jr., Potsus, R.L., Bias, W.B., Schacter, B. and Marsh, D.G.: Relationship of histocompatibility antigens with atipic disease states and mold sensitivity. J. Allergy Clin. Immunol 61:166, 1978, (Abstract). Lowenstein, H. and Marsh, D.G.: Crossed Immuneolectrophoretic analysis of ragweed pollen allergens. J. Allergy Clin. Immunol. 61: 180, 1978, (Abstract).

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Allergy & Infectious Diseases $238,500

3.0923,
EPIDEMIOLOGY OF HEPATITIS B ANTIGEN AND VIRAL HEPATITIS

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It is proposed to continue and expand studies on the epidemiology of viral hepatitis being currently conducted in San Ramon-Palmares, two rural counties in Costa Rica where type A, type B and non-A/non-B hepatitis occur endemically in the absence of percutaneous mechanisms of transmission.

The pattern of occurrence and the mode of spread of type B hepatitis will be studied, with emphasis on the definition of mechanisms of transmission and the role that chronic carriers play in the dissemination of the disease. The natural history of hepatitis B antigens will be studied in relation to the pathogeneis of chronic liver disease. The infective potential of the acute case and the chronic HBsAg carrier will be evaluated serologically and epidemiologically.

Serologic and coprologic studies of the antigen and antibody of type A hepatitis will be done to define immunity patterns, shedding of the virus in the familial environment, spread of the infection in the community and factors leading to the occurrence of epidemics in this endemic area.

Clinical, epidemiological and etio-pathogenic studies on the non-parenteral form of non-A/non-B hepatitis prevailing in the area will be performed.

In addition, clinical studies will be continued on antibodies to single-stranded DNA as a diagnostic aid for the early detection of acute hepatitis and the assessment of the course of chronic hepatitis.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Allergy & Infectious Diseases $175,725

3.0924,
VENEREAL DISEASE RESEARCH PROGRAM PROJECT

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This program project has research components: I. Clinical Epidemiology and Pathogenesis of Gonococcal Infections: Methods include auxo-typing, outer membrane protein typing, and fluorescent antibody typing, phagocytosis of gonococci by human polymorphonuclear leukocytes, and use of antigen-specific opsonizing antibody and bactericidal antibody. II. Genetic Studies of Neisseria gonorrhoeae: The general purpose of the proposed research is to study the genetic organization of the gonococcus, Neisseria gonorrhoeae, as well as other microorganisms that cause significant sexually transmitted diseases. The thrust of our research is aimed at recognizing the nature of the determinants that contribute to bacterial virulence. By using classical genetic methods coupled with the newer techniques of recombinant DNA research we have been characterizing the pili genes of the gonococcus. We hope to better understand the precise role by which pili permit gonococci to attach to epithelial cells of susceptible tissues. In another vein, we have shown that a plasmid species is common to all strains of chlamydia. It is possible that this plasmid encodes for a polypeptide important in the pathogenesis of chlamydial disease. III. Nonogonoccal Urethritis and Related Infections: The etiology of chlamydia-negative nongonococcal urethritis, and the clinical spectrum and immunology of chlamydia trachomatis infectons are being studied. IV. Treatment and Pathogenesis of Hemophilus vaginalis Infection: The role of H. vaginalis and anaerobic bacteria in the etiology and pathogenesis of nonspecific vaginitis, and the optimal methods for therapy of this infection are being studied.

BIBLIOGRAPHIC REFERENCES: Elwell, L.P., Roberts, M. and Falkow, S. 1978. Common beta-lactamase specifying R plasmids isolated from the genera Haemophilus and Neisseria. In Microbiology 1978, D. Schlessinger (ed) American Society for Microbiol gy, Washington, D.C. pp 255-256. Roberts, M. and Falkow, S. 1978. Plasmid-mediated chromosomal gene transfer in Neisseria Gon rrhoeae. J. Bacteri l. 134:66-70.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Allergy & Infectious Diseases $442,081

3.0925,
HUMORAL, CELLULAR & GENETIC MECHANISMS IN AUTOIMMUNITY

H.O. McDevitt, Stanford University, School of Medicine, Dept. of Medicine, *300 Pasteur Dr., Stanford, California* 94305 (P01 AI 11313-08)

The objective of the research proposal is to study mechanisms of immunogenetics, autoimmunity and immunosuppression in order to translate experimental findings and concepts of basic and clinical immunology into knowledge which is useful for the diagnosis and treatment of human disease. New cell surface antigens coded for by the major histocompatibility complex (MHC) in man will be defined, and their association with specific rheumatic and autoimmune diseases will be studied. The immune response of HLA-B27 positive and negative individuals to purified antigens from strains of Shigella which do and do not cause Reiter's syndrome will be studied. Patterns of autoantibodies and clinical presentation will be investigated in the rheumatic diseases in order to further classify subtypes of disease. Finally, a new modality of immunosuppression, fractionated total lymphoid irradiation, will be studied for efficacy in the treatment of rheumatoid arthritis, autoimmune diseases of laboratory rodents, and rejection of allogeneic bone marrow transplants in dogs.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Allergy & Infectious Diseases $430,640

3.0926,
ECOLOGY AND CONTROL OF ARBOVIRUSES

W.C. Reeves, University of California, Berkeley Campus, School of Public Health, Dept. of Biomedical & Environmental Health Sciences, *Berkeley, California* 94720 (R22 AI 03028-22)

The overall objective of this project will continue to be to gain knowledge of the ecology of arboviruses sufficient to allow effective disease control programs. This will be accomplished by pursuit of seven immediate objectives. To determine the biological and physical traits of mosquito vectors that control their competence as vectors of arboviruses. To evaluate variations in the vector competence of geographically representative collections of field populations of primary vectors of arboviruses. To elucidate alternative methods by which arboviruses overwinter in a temperate area. To evaluate the feasibility of inserting genetically modified mosquito populations into the field to control the numbers and vector competence of natural populations. To extend the knowledge of the biology of disease vectors. To develop statistical models that express the variables that control vector populations and associated viral transmission cycles. To characterize new arboviruses and determine their relationship to human and equine disease.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Allergy & Infectious Diseases $346,104

3.0927,
SUPPORT FOR WORLD REFERENCE CENTER FOR ARBOVIRUSES

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The goal of this Center is to develop and improve techniques for identification of arboviruses and similar viruses through the world; to assist in the diagnosis of disease outbreaks; and to uncover prevalence of infection by these agents through seroepidemiological surveys. The proposed work for the term of this grant is: 1) Identification of from 50 to 70 viral strains, in addition to precise biochemical characterization of orbiviruses in the Changuinola and Palyam serogroups; 2) investigation of serological relationships between Rift Valley fever and the phlebotomus fever serogroup; 3) more precise analyses of the antigenic relationships in the Nairovirus supergroup, particularly by the reduction of fluorescent foci of infection test; 4) seroepidemiological survey for arbovirus activity in Sudan with special stress on the phlebotomus fever antigenic group; 5) an extensive seroepidemiological survey for the presence of antibodies against Lassa, Marburg, Ebola and Congo-Crimean hemorrhagic fever viruses in Senegal, Ghana, Liberia, Nigeria and Sudan will be initiated; this project will be funded in great part by other sources; 6) continued efforts will be made to improve early diagnosis of arbovirus disease, mainly through the use of IF and ELISA tests; 7) distribution of reagents to qualified laboratories.

BIBLIOGRAPHIC REFERENCES: Casals, J. Rapid diagnosis of Arboviral and related infections. In Arctic and Tropical Arboviruses, ed. E. Kurstak, Academic Press, Inc., New York, Chapter 20, pages 303-319, 1979. Casals, J., and Buckley, S.M., Lassa Fever, In Handbook of Zoonoses, J.H. Steele, ed., CRC Press Inc., in press, 1979.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Allergy & Infectious Diseases $66,930

3.0928,
HEPATITIS, HAA AND ANTI-HAA IN MOTHERS AND INFANTS

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The objectives of this study are the following: 1) To determine the efficacy of hepatitis B immune globulin

(HBIG) in altering the incidence of hepatitis B infection in infants born to (1) chronic HBsAg carrier mothers and to (2) mothers with acute hepatitis B during the third trimester of pregnancy and immediate two month post-partum period. 2) To investigate the value of viral markers of the type B hepatitis virus in determining the frequency of maternal-infant transmission in HBsAg positive carrier mothers and the effect of HBIG on the appearance of these viral markers in the infants. 3) To study the natural course of hepatitis B infection in children found to be HBsAg positive during the course of this research project. 4) To determine the incidence of HBsAg infection in family members of HBsAg carrier mothers and HBsAg positive infants. 5) To study acute A and acute non-A non-B hepatitis infection in pregnant females and its possible transmission of infection to their newborn infants.

BIBLIOGRAPHIC REFERENCES: Tong, M.J., McPeak, C.M., Thursby, M.W., Schweitzer, I.L., Henneman, C.E. and Ledger, W.J.: Failure of immune serum globulin to prevent hepatitis B virus infection in infants born to HBsAg positive mothers. Gastroenterology 76:535-539, 1979. Chan, K.K., Chlebowski, R.T., Tong, M.J., Chen, H.S., Gross, J.F. and Bateman, J.R.: Clinical pharmacokinetics of Adriamycin in hepatoma patients with cirrhosis. Cancer Res. 40:1263-1268, 1980.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Allergy & Infectious Diseases $34,195

3.0929,
EPIDEMIOLOGY OF ECHINOCOCCOSIS

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Hydatid disease is known to be endemic in several western states, and Utah has had more autochthonous cases than any other state in the contiguous United States. Even though the prevalence of the casuative parasite in natural hosts (mainly sheep and dogs) and in accidental hosts (humans) has decreased markedly since our program began, the problem remains one of significant public health importance and new surgical cases are reported each year. Since the disease is preventable, it is important to strive for an eventual program which would hopefully eliminate the parasite from this region.

A continued research effort is proposed to (1) identify any new endemic foci through continued monitoring of the parasite at field clinics for dogs, at abattoirs for sheep, and at public health clinics for asymptomatic cases in humans; (2) determine prevailing attitudes of residents living in endemic regions through house-to-house surveys in order to identify epidemiological determinants of the disease; (3) attempt to implement a preventive and control program through assistance of personnel from the Utah State Department of Health; (4) develop, distribute, and evaluate educational aids on hydatid disease for subcultures where customary animal husbandry practices suggest a potential for hydatid disease; (5) test additional echinococcocidal drugs against both larval and adult stages of the parasite and study the mechanisms of action of some of the compounds with various analytical electron microscopy techniqes; and (6) determine differences in susceptibility of definitive hosts to protoscolices recovered from different laboratory rodents.

BIBLIOGRAPHIC REFERENCES: Andersen, F. L., G. A. Conder, and W. P. Marsland: Efficacy of injectable and tablet formulations of praziquantel against immature Echinococcus granulosus. Am. J. Vet. Res. 29:700-701, 1979.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Allergy & Infectious Diseases $55,864

3.0930,
TRANSMISSION AND CONTROL OF CALIFORNIA-GROUP VIRUSES

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Research will be continued on a number of parameters that affect the transmission dynamics of La-Crosse (LAC) virus, both factors affecting vertical transmission of the virus through the egg of the vector mosquito, Aedes triseriatus, and factors affecting horizontal amplification through either vertebrated or venereal transmission by transovarially infected male mosquitos.

Relative to vertical transmission, the effect of transovarial virus infection on the net replacement rate of vector females is being determined by quantifying vector female longevity and fecundity and juvenile stage mortality. Relative to venereal transmission, several aspects of male biology and field sampling techniques are being studied. Relative to vertebrate amplification, several aspects of vector female behavior are under study with current focus identification of bloodmeal sources of more than 300 wild females that obtained their bloodmeals under natural conditions. Identification is by enzyme-linked immunosorbant assay.

BIBLIOGRAPHIC REFERENCES: DeFoliart, G.R., and M.A. Lisitza. 1980. Activity of Aedes triseriatus in open terrain. Mosq. News (in press). Jiron, L.F., J.R. Rosenkranz, K. Van Zee, and G.R. DeFoliart. 1981. Crepuscular biting activity by Aedes triseriatus. Submitted to Ann. Ent. Soc. Amer.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Allergy & Infectious Diseases $75,628

3.0931,
DYNAMICS OF STREP ANTIGENS, PHAGES, AND ANTIBODIES

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This study will attempt to pursue studies and analyses of the epidemiology, bacteriology, immunology and clinical aspects of Group A and non-group A infections. The significance of specific serological responses to infection, antigenic changes and resident prophages will be explored. The possible applications of these studies as preventive measures will be evaluated.

BIBLIOGRAPHIC REFERENCES: Benchetrit, L.C., Wannamaker, L.W. and Gray, E.D.: Immunological properties of hyaluronidases associated with temperate bacteriophages of group A streptococci. J. Exp. Med., 149:73-83, 1979.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Allergy & Infectious Diseases $7,275

3.0932,
THE EPIDEMIOLOGY OF HUMAN INFECTIONS OF SPECIAL INTEREST

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This project emphasizes epidemiologic investigations of infectious diseases of particular interest to the research program of this laboratory. Current investigations include studies of the etiologic relationship of various spotted fever-group serotypes to human illness, and improvement in laboratory methods for diagnosis of rickettsial infections, particularly Rocky Mountain spotted fever.

BIBLIOGRAPHIC REFERENCES: Philip, R.N., Paretsky, D., Weiss, E., and Wisseman, C.L., Jr.: Rickettsiology Conference. J. Infect. Dis. 141: 112-118, 1980. Phillip, R.N.: Scrub typhus. In Steele, J.H. (Ed.): CRC Handbook Series in Zoonoses. Boca Raton, Florida, CRC Press, Inc., 1980, vol. II, pp. 303-315.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Allergy & Infectious Diseases funds n.a.

3.0933,
THE ETIOLOGY OF ACUTE INFECTIOUS NON-BACTERIAL GASTROENTERITIS

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OBJECTIVES: (1) To search for viruses which play an etiological role in the syndrome of acute infectious non-bacterial gastroenteritis of infants, children, and adults; (2) to cultivate (in vitro) the viral agents of acute infectious nonbacterial gastroenteritis; (3) to study the biophysical, immunological and epidemiological characteristics of such agents; (4) to reproduce the syndrome experimentally for the purpose of a) studying the pathophysiological and immunological responses of the host, and b) assaying the infectivity of viruses such as human rotaviruses and the Norwalk and Norwalk-like agents; (5) to develop effective immunoprophylaxis for the viruses of acute, infectious, nonbacterial gastroenteritis; (6) to develop efficient and sensitive assays for a) detection of the viral and bacterial agents associated with gastroenteritis and b) antibodies to these pathogens.

BIBLIOGRAPHIC REFERENCES: Wyatt, R.G., James, W.D., Bohl, E.H., Theil, K.W., Saif, L.J., Kalica, A.R., Greenber, H.B., Kapikian, A.Z., and Chanock, R.M.: Human Rotavirus Type 2: In Vitro Cultivation. Science 207: 189-191, 1980. Sack, D.A., Gilman, R.H., Kapikian, A.Z., and Aziz, K.M.S.: Seroepidemiology of Rotavirus Diarhea in Rural Bangladesh. J. Clin. Microbiol. 11: 530-532, 1980.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Allergy & Infectious Diseases funds n.a.

3.0934,
STUDY OF RESPIRATORY VIRUSES AND MYCOPLASMAS IN VOLUNTEERS

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Three A/Alaska/77 ca recombinants of A/Ann Arbor/6/60 ca donor virus evaluated in man for level of attenuation. Each of the three were similarly and satifactorily attenuated despite having different genotypes. These observations suggest that M and NS genes of the ca donor virus are not major attenuating genes. A ts-1A2 'revertant' containing suppressor and other mutations leading to loss of ts phenotype was virulent in adult volunteers. This finding identified the ts genes of the ts-1A2 recombinants as genes responsible for attenuation. Recombinants possessing the two ts-1A2 ts genes may not be sufficiently stable genetically and loss of the ts property could have potential epidemiological significance.

BIBLIOGRAPHIC REFERENCES: Chanock, R.M., and Murphy, B.R.: Genetic approaches to control of influenza. Persp. Biol. Med. 22: S37-S48, 1979. Murphy, B.R., Chanock, R.M., Levine, M.M., Van Blerk, G.A., Berquist, E.J., Douglas, R.G., Betts, R.F., Couch, R.B., Cate, T.R. Jr.: Temperature-sensitive mutants of influenza A virus. XVII. Evaluation of the Vic/75:ts-1A2 temperature-sensitive recombinant virus in seronegative adult volunteers. Infect. Immun., 23: 249-252, 1979.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Allergy & Infectious Diseases funds n.a.

3.0935,
LABORATORY AND EPIDEMIOLOGIC STUDIES OF VIRAL HEPATITIS AGENTS

R.H. Purcell, U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Allergy & Infectious Diseases, Hepatitis Viruses Section, *9000 Rockville Pike, Bethesda, Maryland* 20205 (Z01 AI 00026-13 LID)

This project consists of continuing studies of the chemistry, structure, epidemiology, immunology and pathology of human and related hepatitis viruses. The goal of such studies is the control of human viral hepatitis by application of the most appropriate methods, including active and passive immunization, chemotherapy and interdiction of spread of the virus.

PROGRESS: Hepatitis A virus has been isolated directly from the stool of a patient into primary African green monkey kidney cell culture, a substrate suitable for vaccine development. The RNA genome of hepatitis A virus is being cloned in E.coli. Modifications in hepatitis B subunit vaccine have resulted in a highly immunogenic and safe preparation that produces a seroconversion in approximately 60% of vaccinees within two weeks of vaccination and in 95% following completion of the vaccination schedule. Non-A, non-B hepatitis agents have been identified. Evidence has been obtained for the existence of an epidemic form of non-A, non-B hepatitis in India. Attempts to transmit the virus to chimpanzees are currently in progress.

BIBLIOGRAPHIC REFERENCES: Mathiesen, L.R., Papaevangelou, G., Purcell. R.H., Grammatilopoulos, D., Contoyannis, P., Wong, D. Etiological characterization of HBsAg-negative hepatitis among adult patients in Athens, Greece. J. Clin. Microbiol. 11: 297-300, 1980. Mathiesen, L.R., Skinhoj, P., Nielsen, J.O., Purcell, R.H., Wong, D. and Ranek, L.: Hepatitis

type A, B, and Non-A, Non-B in fulminant hepatitis GUT. 21: 72-77, 1980.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Allergy & Infectious Diseases funds n.a.

3.0936,

BASIC STUDIES ON MYCOPLASMAS

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These efforts cover both basic and applied aspects of mycoplasmas and related wall-free prokaryotes, including their neurotoxins, enzymes and other biological factors involved in virulence, their immunological interrelationships, and their possible role in human disease or in diseases of uncertain etiology. Current projects of interest concern the characterization of a new group of pathogenic spiroplasmas and sero-epidemiological studies on the human exposure to these new microbial forms. Development of an effective culture medium for the recovery and propagation of these organisms from host tissues has also provided a more effective medium for recovery of Mycoplasma pneumoniae from human tissues and washings, and for propagation of other fastidious mycoplasmas.

BIBLIOGRAPHIC REFERENCES: Tully, J.G.: Biology of mycoplasmas. In McGarrity, G.J., Murphy, D.G., and Nichols, W.W. (Eds.): Mycoplasma Infections of Cell Cultures, New York, Plenum Press, 1978, pp. 1-34. Tully, J.G.: The acholeplasmas. In Barile, M.F. and Razin, S. (Eds.): The Mycoplasmas, Volume 1, Cell Biology, New York, Academic Press, 1978, in press.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Allergy & Infectious Diseases funds n.a.

3.0937,

SYSTEMATICS AND VECTOR RELATIONSHIPS OF CERTAIN PARASITIC ARTHROPODS

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The activities of this project currently comprise four main functions: 1) Identification of ticks received from various individuals and government agencies throughout the world. Only one other institution in the world is capable of performing this service. 2) Systematic study of certain groups of parasitic arthropods. The foremost tool in systematic studies, the scanning electron microscope, has greatly aided in elucidating taxonomic concepts in acarines actually or potentially involved in transmission of disease agents. 3) Retrieval and use of tick data in the Smithsonian data retrieval system. Installation of a mini-computer-word processor system at RML to communicate with NIAID and Smithsonian computers. 4) Colonization of medically important arthropod vectors, which are furnished to outside investigators.

BIBLIOGRAPHIC REFERENCES: Hoogstraal, H., Clifford, C.M., and Keirans, J.E.: The Ornithodoros (Alectorobius) capensis group (Acarina: Ixodoidea: Argasidae) of the Palearctic and Oriental region. O. (A.) conceps identity, bird and mammal hosts, virus infections, and distribution in Europe, Africa, and Asia. J. Parasitol. 65: 395-407, 1979.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Allergy & Infectious Diseases funds n.a.

3.0938,

NATURAL HISTORY OF TICK-BORNE RICKETTSIAL AGENTS AND THEIR PUBLIC HEALTH SIGNIFICANCE

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This project is concerned with studies of Rocky Mountain spotted fever and other tick-borne rickettsial diseases in the United States and other countries regarding ecology, identification, and characterization of the rickettsial agent(s) with their associated vectors. With collaboration of outside agencies (state health departments, public health laboratories, hospitals, physicians, etc.) source material for comparative studies on the various rickettsial types and information about the distribution of vector species associated with spotted fever in the United States is obtained. This project also considers the cellular and subcellular aspects of interaction between tick-borne agents, particularly rickettsiae, and their vectors.

BIBLIOGRAPHIC REFERENCES: Linnemann, C.C., Jr., Schaeffer, A.E., Burgdorfer, W., Hutchinson, L., and Philip, R.N.: Rocky Mountain spotted fever in Clermont County, Ohio. II. Distribution of population and infected ticks in an endemic area. Am. J. Epidemiol. 111: 31-36, 1980. Hayes, S.F., Burgdorfer, W., and Aeschlimann, A.: Sexual transmission of spotted fever group rickettsiae by infected male ticks. I. Detection of rickettsiae in immature spermatozoa of Ixodes ricinus. Infect. Immun. 27: 638-642, 1980.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Allergy & Infectious Diseases funds n.a.

3.0939,

AEDINE EGGS, TOXORHYNCHITES AND ARBOVIRUSES

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The program will focus on two partially overlapping themes in the hope of contributing to the eventual control of arthropod-borne viral infections. The themes will be, 1) dengue viruses; their epidemiology, their interaction with mosquitoes, and the diagnosis, pathogenesis, and prevention of disease they produce, and 2) the interaction between mosquito-borne viruses in general and all stages of the life cycle of their vectors, with emphasis on aedine species. Five scientific projects are proposd. The first is a study of the genetics of the competence of Aedes aegypti as a vector for the dengue viruses, with the long-range objective of developing virus-resistant strains of Ae. aegypti for liberation in the field. A second is a study of the factors which affect the transovarial transmission of dengue viruses by mosquitoes, with the objective of obtaining information which can be utilized to evaluate the importance of such transmission for survival of dengue viruses in nature under adverse environmental conditions. The third is a study of the suitability of various species of Toxorhynchites mosquitoes as hosts for the isolation and propagation of arboviruses, with the objective of developing one or more species as useful laboratory animals. The fourth has as its principal objective the search for field evidence of transovarial transmission of Japanese encephalitis virus in Asia. The fifth is a study of the relationship between factors which affect hatching of aedine mosquito eggs and the survival and replication of transovarially transmitted arboviruses.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Allergy & Infectious Diseases $49,611

3.0940,

TRANSOVARIAL TRANSMISSION OF ENCEPHALITIS VIRUSES

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The objective of the proposed research is to determine if transovarial transmission of Japanese encephalitis, St. Louis encephalitis, and related viruses by mosquitoes play a role in the survival of these viruses in nature during winter or other periods adverse for their mosquito hosts. It is hypothesized that the viruses survive such periods in eggs of Aedes mosquitoes, and that infection of Culex species (important in transmission of the viruses to man) takes place by feeding on vertebrates infected by Aedes. Field collections of large numbers of immature stages of aedine mosquitoes will be made in Korea, Taiwan, and Hong Kong in areas endemic for Japanese encephalitis virus. Insofar as possible, collections will be made in sites with abundant wild avian populations relatively unaltered by human activity. Pools of the immature mosquitoes will be assayed for the presence of Japanese encephalitis virus by the inoculation of Toxorhynchites amboinensis mosquitoes. The latter will be examined two weeks later by the fluorescent antibody technique. Attempts also will be made to isolate St. Louis encephalitis virus from progeny of various species of Aedes mosquitoes infected in the laboratory by collaborators in California.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Allergy & Infectious Diseases $81,765

3.0941,

THE ETIOLOGY OF ENTERITIS & PROCTITIS IN HOMOSEXUAL MEN

W.E. Stamm, University of Washington, School of Medicine, Dept. of Medicine, *A-300 Health Sciences Ctr., SC-64, Seattle, Washington* 98195 (R01 AI 17805-01)

Within the past five years, the importance of sexual transmission of enteric pathogens has been increasingly recognized in the sexually active male homosexual population. As a result, infectious proctitis-enteritis has become more common in homosexual men. However, fewer than 40% of the cases result from gonococcal infection and the etiology of the remaining cases and the question of mixed infection is still undefined. In this proposed study we plan the following: 1) Use specialized microbiologic techniques in a case control prospective study to ascertain the association of selected pathogens with the enteritis-proctitis syndrome in homosexual men. 2) Describe the histopathology and clinical features of proctitis and/or enteritis due to each pathogen. 3) Characterize the effectiveness of specific therapy in cases in which pathogens are identified and of tetracycline in cases in which no pathogen is identified. 4) Evaluate the epidemiology of proctitis and enteritis in homosexual men, and assess the modes and risk of transmission.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Allergy & Infectious Diseases $68,613

3.0942,

IMMUNOLOGIC ASPECTS OF LEGIONELLOSIS

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Legionnaires' disease is endemic in Columbus with more than 70 cases identified since the summer of 1977. We have studied humoral immunity in these patients with the indirect fluorescent antibody and found that antibody does not persist at high titers for a long period. We also have demonstrated that lymphocytes from Legionnaires' disease cases demonstrate sensitization to antigens of Legionella pneumophila in the lymphocyte transformation assay. This reactivity appears to persist for a longer period than the antibody titers. We have also demonstrated that many subjects without a history of Legionnaires' disease manifest low titer antibody levels and reactivity in lymphocyte tissue cultures to L. pneumophila although at a lower level than patients who had documented Legionnaires' disease. Prevalence of immunity to L. pneumophila is unknown. Attack rates in epidemics have been reported to be 1-5%. We propose to expand our initial studies to determine the natural history of sensitization to L. pneumophila. We hope to be able to define an age range when subjects become sensitized to L. pneumophila. We also will look at the microepidemiology of subjects exposed to the hospital environment and the home environment of patients who develop Legionnaires' disease. To facilitate diagnosis we will determine the sensitivity and specificity of the enzyme-linked immunoassay to detect antigens of L. pneumophila in body fluids of patients with Legionnaires' disease.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Allergy & Infectious Diseases $33,687

3.0943,

SEROEPIDEMIOLOGICAL STUDY OF LEGIONELLA INFECTIONS

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This project seeks to describe the epidemiology of infections due to Legionella pneumophila by a retrospective serologic analysis of paired sera from 4,000 pneumonia patients and compare the frequency of infection and antibody levels with that of basically healthy control groups. The objectives include determination of the community incidence of all four serotypes of Legionella pneumophila pneumonia, by age,

sex, calendar year and season, searching for possible clustering in time and place, describing symptomatology of the pneumonia and also searching for evidence of non-pneumonic infections in the community.

We will adopt the microimmunofluorescence test using formalinized organisms of all four serotypes in the serologic survey. Preliminary studies indicated that non-heated antigens caused fewer non-specific reactions than those heated. The test apears potentially more type-specific, simple, and efficient. Microagglutination or ELISA test will also be utilized. The study of pneumonia was carried out among some 150,000 members of a prepaid medical care group between 1963 and 1975 and the patients have already been thoroughly investigated for evidence of Mycoplasma pneumoniae. Chlamydia trachomatis, influenza A and B, parainfluenza, respiratory syncytial and adenovirus infections. Thus, there is an excellent opportunity to study the relationship of L. pneumophila infection to that of M. pneumoniae or Chlamydia, as well as other viral infections.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Allergy & Infectious Diseases $79,953

3.0944,

CF PATIENTS' DEFENSE MECHANISMS VS. PSEUDOMONAS

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The major cause of morbidity and mortality in Cystic Fibrosis (CF) patients is the progressive pulmonary infection caused by Pseudomonas aeruginosa. Although there is no accepted explanation for the susceptibility of CF patients to infection by this particular microorganism, a specific local defect in the immune system is suspected since systematic spread of infection does not occur. Considering the importance of alveolar macrophages for maintaining the sterility of the lower lung, the observation that CF sera couldn't promote the phagocytosis of P. aeruginosa by rabbit alveolar macrophages was particularly relevant. Unfortunately, little information is known concerning human macrophages. With this in mind, this application addresses three specific areas of investigation. First, the identification of human serum components responsible for preventing systemic spread of pseudomonas infections. Second, an examination of the opsonic activity of CF sera for phagocytosis of P. aeruginosa by human phagocytic cells, including polymorphonuclear leukocytes, peripheral monocytes and tissue macrophages. Third, the determination of the ability of Pseudomonas to activate complement. These studies will hopefully provide more information concerning the possibility of defect in the CF patient's humoral or cellular defense mechanisms which might predispose these patients to infection by Pseudomonas.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Allergy & Infectious Diseases $51,061

3.0945,

BIOTYPING & EPIDEMIOLOGICAL STUDIES OF CANDIDA ALBICANS

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The objectives of this proposal are to develop and evaluate a biotyping system for Candida albicans, to correlate virulence with biotype and to investigate the biotypes associated with colonization and infection of humans. Preliminary data show that natural variation in the assimilation of carbon and nitrogen compounds, surface antigens, and susceptibility to drugs can be utilized to develop a biotyping system. The following three tests may be used to form the basis of a typing system: assimilation of melezitose, susceptibility to 5-fluorocytosine, and serogrouping. Three to five additional tests suitable for inclusion in a typing system will be sought through biochemical and susceptibility studies of strains of C. albicans. Each test will be evaluated for reproducibility and stability of results both through analysis of laboratory strains and analysis of multiple isolates from individual patients. The physiological basis for divergent results and the mutation rate will also be studied. Pathogenicity of the biotypes will be assessed through virulence studies in mice, through analysis of proteolytic enzymes, and by correlation of biotypes with human disease. The epidemiological significance of the system will be evaluated by determining the reliability of the biotyping system, the biotypes colonizing healthy individuals, the biotypes associated with disease, and the ability of the biotyping system to assist in determining whether two strains come from the same or different sources. The clinical significance of the biotyping system will be assessed by correlation of the epidemiological and pathogenicity data. Development and evaluation of this typing system as proposed will lead to a better understanding of the pathogenicity of this microbe and better management of patients at risk of developing an infection with C. albicans.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Allergy & Infectious Diseases $51,155

3.0946,

EPIDEMIOLOGY & CONTROL OF HOSPITAL ACQUIRED INFECTIONS

G.A. Faich, State Dept. of Health, Dept. of Health, *75 Davis St., Room 302, Providence, Rhode Island* 02908 (R01 AI 16642-02)

The objectives of this application are to: 1. Reduce rates of nosocomial infections; 2. Define the magnitude of the problem of nosocomia infections in a representative sample of acute care hospitals using a standardized, prospective data collection system in each institution (descriptive epidemiology); 3. Identify both modifiable and non-modifiable risk factors for nosocomial infection (analytical epidemiology); 4. execute a controlled intervention trial based upon modifiable risk factors identified in the study to determine to what extent nosocomial infections are preventable in the context of 'usual' hospital infection control programs (experimental epidemiology); 5. measure the effectiveness (practicality, compliance) of specific interventions in reducing nosocomial infection rates.

METHODS: A standardized, prospective surveillance system has been established in 12 non-governmental acute care hospitals in Rhode Island. The baseline surveillance is carried out by inplace hospital infection control personnel on carefully selected random samples of patients in each hospital. At the conclusion of the baseline surveillance period, hospital specific interventions will be developed. During the period of intervention, rates of infection and compliance with the intervention will be monitored using the same surveillance system. Comparisons between hospitals, appropriately corrected for differences in types of patients and LOS distribution will be made to control for similar trends and to describe the overall effect of the interventions on the statewide rate of nosocomial infections.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Allergy & Infectious Diseases $172,622

3.0947,

CAUSES OF DIABETES AND OBESITY IN OKLAHOMA INDIANS

K.M. West, University of Oklahoma, Health Sciences Center, College of Health, Dept. of Biostatistics & Epidemiology, *Box 26901, Oklahoma City, Oklahoma* 73190 (R01 AM 21462-03)

In the etiology of diabetes the strength and character of the genetic influences have been poorly defined. Among the main reasons for this are the inadequacies of the data collected, particularly those concerning the present and previous fatness of both probands and family members. In a whole population of Indian adults in which diabetes and obesity are rife, a study is proposed in which data collection would be uniquely complete, including information on glucose tolerance and both present and previous adiposity on all available adults (about 3,200). This will include about 700 with fasting hyperglycemia and several hundred more with varying degrees of impairment of glucose tolerance. Propitious circumstances include the large families, the geographic proximity of family members, and a centralized record system that provides information (on weight and other data) extending over the past 40 years. This will allow a determination of the inter-relationships of obesity and heredity, including an assessment of the extent to which the familial aggregation of maturity-onset diabetes is secondary to the familial aggregation of obesity. Another aspect of the study will be comparison of familial patterns of insulin-independent diabetes of obese and insulin-dependent diabetes of the lean. In diabetes the extent to which there is familial concordance of susceptibility to retinopathy will be examined. Other observations will be designed to confirm that juvenile-onset diabetes is rare in Oklahoma Indians, and to explore possible causes of the paucity.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Arthritis Metabolism & Digestive Diseases $78,915

3.0948,

EPIDEMIOLOGICAL STUDY OF ANALGESIC USE AND RENAL DISEASE

T.G. Murray, University of Pennsylvania, School of Medicine, Dept. of Medicine, *36th & Hamilton Walk, Philadelphia, Pennsylvania* 19174 (R01 AM 20920-03)

This grant proposal is a request for a third year renewal of a study designed to investigate the relative risk of developing end-stage renal disease secondary to interstitial nephritis after the use of analgesics. This is a case control study involving a comparison of the proportion of 550 randomly selected dialysis patients (the case) and 1100 controls who were regular users of analgesics in the past.

The data collected for this study will be completed by the end of the second year, but the analysis of the data will not be completed. During the third year of the study, the data analysis will be carried out and the final reports will be written. In addition, three additional related questions will be investigated. Two of these questions can be answered by using the established data base. The first will determine the prevalence of various potential causes of renal failure in patients with end-stage renal disease currently treated in this country. The second will analyze the psychosocial variables which distinguish regular analgesic users from non-users. Finally, the relationship between the use of analgesics and the development of urinary tract carcinomas will be investigated utilizing one of the research tools developed as part of the analgesic nephropathy study -i.e. the interview. A pilot study of the case-control type will be carried out to determine the feasibility of carrying out a more detailed study.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Arthritis Metabolism & Digestive Diseases $109,606

3.0949,

EPIDEMIOLOGY OF DIABETES AMONG NEW IMMIGRANT YEMENITES

A.M. Cohen, Hebrew University of Jerusalem, Hadassah University Hospital, Diabetic Unit, *P.O. Box 499, Jerusalem, Israel* (R01 AM 20733-03)

We propose to extend our recent preliminary observations in 'new immigrant Yemenites' who had a low prevalence of diabetes (0.03%) in the years 1958-60 showing that in part of the families diabetes has become highly prevalent (9%) above the age of 30, while in other families no diabetes was detected. In families with diabetes, the diabetics consume significantly more mono and disaccharides than non-affected relatives of the same age and sex. Indicating the necessity for interaction between genetic and dietary factors for diabetes to be manifested, a result similar to our experimental observation where, by genetic selection, two strains of rats were inbred, one which after being fed a high fructose (1), glucose (2) or sucrose (3) diet develops diabetes, having common features with the human disease including vascular complications while the other strain fed the same diet remains normal. 700 more 'new immigrant Yemenites' and 300 non-Yemenites as controls will be re-examined. Diabetes will be detected by an oral glucose tolerance (g.t.) the genetic familial tree and dietary intake - carbohydrate, mono and disaccharides, fat, protein and fiber - of each individual will be studied.

We will also try to identify marker(s) of diabetes in the affected and non-affected families by the following tests: a) early phase of insulin release following i.v. g.t.; b) glucagon response; c) insulin receptors in blood granulocytes; d) blood lipids - beta lipoproteins, cholesterol, triglycerides and LDL; e) HLA antibodies and f) antipancreatic islet cells.

The proposed study in a group with almost no diabetes 20 years ago that has changed to a Western environment and in which there are today families with a high prevalence of diabetes and families without diabetes is a unique group to study the interaction of the genetic factor(s) and the different factors related to the manifestation of diabetes such as sex, obesity, age, physical activity, dietary intake, and the

different tests which may be used as indicators for the genetic susceptibility to diabetes.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Arthritis Metabolism & Digestive Diseases $54,389

3.0950,
GENETICS OF RHEUMATIC DISEASE IN ISOLATED POPULATIONS

W.B. Bias, Johns Hopkins University, School of Medicine, Dept. of Medicine, *725 N. Wolfe St., Baltimore, Maryland* 21205 (R01 AM 20656-02)

In the continuation of this project we propose to: carry out additional family studies in the Amish population where we have found high frequency of sacroiliitis and spondylitic disease which is less strongly associated with HLA-B27. Further delineete the HLA-D related products in the Chippewa Indians where rheumatoid arthritis occurs in minimum of 5 percent of the tribe. Continue in vitro studies of the relationships between infectious agents and the B27-associated diseases, now using more serologically specific organisms and lymphocytes from subjects known to have exposure to these agents. Continue to explore several genetically-related phenomena (T cell function, complement component deficiency and autoantibodies) and their relation to HLA-D in families with systemic lupus erythematosus, Sjorgrens syndrome and polymyositis.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Arthritis Metabolism & Digestive Diseases $82,080

3.0951,
SPECIALIZED CENTER OF RESEARCH IN UROLITHIASIS

L.H. Smith, Mayo Foundation, *200 1st St. S.W., Rochester, Minnesota* 55901 (P50 AM 20605-04)

The central research theme of the Mayo Clinic Specialized Center of Research (SCOR) in Urolithiasis is to examine the factors that promote and prevent crystal growth within the urinary tract in order to further understand the mechanisms that allow stone formation and to improve treatment to prevent this complication. The specific objectives of the Mayo Clinic SCOR in Urolithiasis are: 1) to examine sites of reabsorption and secretion of the major ion species within the nephron; 2) to better define the relative roles of supersaturation, inhibitor activity, matrix and epitaxy in animal models and patients with calcium urolithiasis; 3) to measure the effect of therapy on the multiple factors involved in crystal growth in the urine of patients actively forming stones in the urinary tract; 4) to identify abnormalities caused by stone producing stresses that result in urolithiasis in some patients as well as prestress abnormalities that may allow the formation of a stone within the urinary tract; and 5) to study in a systematic way the epidemiology and genetics of urolithiasis in a well defined population base.

BIBLIOGRAPHIC REFERENCES: Smith, L. H., Werness, P. G., Bergert, J. H. and Lee, K. E.: Inhibitors of calcium crystal growth in idiopathic calcium urolithiasis. Proceedings of the American Society of Nephrology, pg. 29A, 1978. Werness, P. G. and Smith, L. H.: Calcium oxalate dihydrate seeded crystal growth. Fed. Amer. Soc. Exp. Biol. 1979.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Arthritis Metabolism & Digestive Diseases $156,840

3.0952,
FAMILIAL AGGREGATION OF INFLAMMATORY BOWEL DISEASE

A.M. Lilienfeld, Johns Hopkins University, School of Hygiene & Public Health, Dept. of Epidemiology, *615 N. Wolfe St., Baltimore, Maryland* 21205 (R01 AM 20467-03)

This study is attempting to determine if family members (parents, siblings, offspring, and spouses) of newly hospitalized cases of ulcerative colitis and proctitis, regional enteritis, and Crohn's disease of the colon have greater prevalence of these diseases than family members of controls. Newly hospitalized cases are being ascertained through a case register in Baltimore and from local hospitals. Medical records of cases are being abstracted; and reviewed by a gastroenterologist. Cases and family members will be interviewed regarding previous illnesses; tobacco, alcohol, and dietary habits; and demographic characteristics. Information will be obtained concerning all family members, living and dead.

Hospital controls will be matched by sex, color, and age to each case. Hospital controls and their family members will be interviewed in the same manner as cases, and medical records will be obtained. Neighborhood controls will be matched to cases by sex, color, and age. These controls and their family members will be interviewed in the same manner as cases, and medical records will be obtained. Death certificates will be obtained for all cases and family members who have died.

Serum will be collected from cases, controls, and family members, and will be frozen at -70 degrees centigrade for future studies.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Arthritis Metabolism & Digestive Diseases $169,915

3.0953,
NATURAL HISTORY OF ARTHRITIS AND RHEUMATISM ON THE GILA RIVER INDIAN COMMUNITY

P.H. Bennett, U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Arthritis Metabolism & Digestive Diseases, Southwestern Field Studies Branch, *Phoenix, Arizona* 85016 (Z01 AM 69009-15 EFS)

The development and progression of various forms of arthritis is being investigated in an American Indian population. The patterns of joint disease will be examined to determine if distinctive patterns of degenerative joint disease can be recognized, and if so, their evolution and outcome will be followed. In addition, the prognostic significance of various factors related to rheumatoid arthritis and ankylosing spondylitis will be examined.

The study which includes clinical radiographic and serologic studies of joint disease is a part of a prospective study of the Gila River Indian Community in which studies of diabetes mellitus and other diseases are being undertaken.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Arthritis Metabolism & Digestive Diseases funds n.a.

3.0954,
DIABETES MELLITUS IN THE GILA RIVER INDIAN COMMUNITY

P.H. Bennett, U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Arthritis Metabolism & Digestive Diseases, Southwestern Field Studies Section, *Phoenix, Arizona* 85016 (Z01 AM 69000-15 EFS)

The natural history of the various manifestations and vascular complications of diabetes mellitus are being studied and evaluated in an Amerindian community. Various associated conditions and factors, including heredity, body weight, and blood pressure, that may have a bearing on the frequency and severity of diabetes and/or its complications are under investigation.

BIBLIOGRAPHIC REFERENCES: Knowler, W.C., Bennett, P.H., and Ballintine, E.J.: Increased incidence of retinopathy in diabetics with elevated blood pressure. A six-year followup study in Pima Indians. New Engl. J. Med. 302:645-650, 1980. Kuberski, T.T., and Bennett, P.H.: Diabetes mellitus as an emerging public health problem on Guam. Diabetes Care 3:235-241, 1980.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Arthritis Metabolism & Digestive Diseases funds n.a.

3.0955,
EPIDEMIOLOGY OF CANINE AND HUMAN SYSTEMIC LUPUS ERYTHEMATOSUS (SLE)

J.H. Klippel, U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Arthritis Metabolism & Digestive Diseases, Connective Tissue Disease Section, *9000 Rockville Pike, Bethesda, Maryland* 20205 (Z01 AM 41036-03 ARB)

This project will compare the incidence of clinical and serologic autoimmune abnormalities in members of households exposed to known cases of canine SLE or appropriately matched control dogs.

BIBLIOGRAPHIC REFERENCES: Reinertsen, J.L., Kaslow, R.A., Klippel, J.H., Hurvitz, A.I., Lewis, R.M., Rothfield, N.F., Zvaifler, N.J., Steinberg, A.D., Decker, J.L.: An epidemiologic study of households exposed to canine systemic lupus erythematosus. Arthritis Rheum 23:564-568, 1980.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Arthritis Metabolism & Digestive Diseases funds n.a.

3.0956,
VERY LOW DENSITY LIPOPROTEIN METABOLISM IN PIMA INDIANS

B.V. Howard, U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Arthritis Metabolism & Digestive Diseases, Phoenix Clinical Research Section, *Phoenix, Arizona* 85016 (Z01 AM 54023-03 DD)

Pima Indians have a high prevalence of obesity, diabetes mellitus and hyperinsulinemia, but they have low plasma cholesterol levels, reduced LDL synthesis, and greatly decreased incidence of cardiovascular disease. VLDL metabolism in Pima Indians will be investigated in order to further investigate lipoprotein metabolism in this population. Synthetic and catabolic rates for VLDL will be compared in groups having different insulin levels using tritiated glycerol as a precursor. VLDL metabolism will be studied in a group diabetics to determine the influence of hyperglycemia on VLDL metabolism in this population. Conversion of VLDL to LDL will be studied using 125I VLDL and 131I LDL simultaneously. Postheparin, muscle, and adipose tissue lipoprotein lipase levels will be measured. The results of this study should yield data on VLDL metabolism and its conversion to LDL in this population and explore the relation between these lipoproteins and cardiovascular disease.

BIBLIOGRAPHIC REFERENCES: Howard, B.V., Zech, L., Davis, M., Bennion, L.J., Savage, P.J., Nagulesparan, M., Bilheimer, D., Bennett, P.H., and Grundy, S.M.: Studies of Very Low Density Lipoprotein Triglyceride Metabolism in a Population with Low Plasma Lipids - Lack of Influence of Body Weight or Plasma insulin. J. Lipid Res., in press 1980.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Arthritis Metabolism & Digestive Diseases funds n.a.

3.0957,
COMPLICATIONS AND OUTCOME OF DIABETIC AND PREDIABETIC PREGNANCIES

P.H. Bennett, U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Arthritis Metabolism & Digestive Diseases, Southwestern Field Studies Section, *Phoenix, Arizona* 85016 (Z01 AM 69001-11 EFS)

To determine the effects of diabetes mellitus and prediabetes on the complications and outcome of pregnancy in women in the Gila River Indian Community.

The characteristics of all pregnancies among residents of the Gila River Indian Community will be determined. Each pregnant woman will have a modified glucose tolerance test during the third trimester and following delivery and will be retested at approximately two yearly intervals in conjunction with the prospective study of diabetes mellitus in the same community. The characteristics of the pregnancies in women who subsequently become diabetic will be compared to those among women who were diabetic at the time of pregnancy and those who remain nondiabetic.

BIBLIOGRAPHIC REFERENCES: Pettitt, D.J., Knowler, W.C., Baird, H.R., and Bennett, P.H.: Gestational diabetes: infant and maternal complications of pregnancy in relation to third-trimester glucose tolerance in Pima Indians. Diabetes Care 3:458-464, 1980.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Arthritis Metabolism & Digestive Diseases funds n.a.

3.0958,
HEMOGLOBIN A1 LEVELS IN DIABETES

S.L. Aronoff, U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Arthritis Metabolism & Digestive Diseases, Phoenix Clinical Research Section, *Phoenix, Arizona* 85016 (Z01 AM 54021-03 DD)

Glycosylated hemoglobin (HbA1) concentrations were measured in 600 Pima Indians, aged 15 to 91 years, who were participating in the epidemiological studies of diabetes in the Gila River Indian Reservation in Arizona. At the same time plasma glucose

levels, fasting and two-hours post-glucose load (75 g), were determined and the plasma glucose values were compared with HbA1 levels in the same population to assess the utility of HbA1 measurements in the diagnosis of diabetes. The distribution of glucose levels in Pimas has been described previously by a model of two overlapping Gaussian curves. Attempts were made to fit the same model to the HbA concentrations. For patients aged 25 years and over, the frequency of HbA1 levels were bimodally distributed and, like the glucose levels, satisfactorily fit the overtapping Gaussian distribution model. These observations indicate the presence of two subpopulations in the Pima Indians, one normal and one diabetic. HbA1 levels in the nondiabetic portion of the population were found to increase as a function of age in the Pimas, as expected. Levels of HbA1 were highly correlated with both fasting and two-hour post-load plasma glucose values, but did not discriminate better than the glucose data between diabetic and nondiabetic subjects.

BIBLIOGRAPHIC REFERENCES: Flock, E.V., Bennett, P.H., Savage, P.J., Webner, C.J., Howard, B.V., Rushforth, N.B., and Miller, M.: Bimodality of Glycosylated Hemoglobin Distribution in Pima Indians: Relationship to Fasting Hyperglycemia. Diabetes 28: 984-989, 1979. Bennett, P.H., Flock, E.V., and Rushforth, N.B.: Bimodality of Glycosylated Hemoglobin Distributions in the Pima Indians: Evidence that Nondiabetic Levels Increase with Age. Excerpta Medica: 10th Congress of the International Diabetes Federation. No. 481: 20, 1979.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Arthritis Metabolism & Digestive Diseases funds n.a.

3.0959,

DESCRIPTIVE EPIDEMIOLOGY OF GLOMERULONEPHRITIS AND OTHER URINARY DISORDERS

J.A. Cutler, U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Arthritis Metabolism & Digestive Diseases, Epidemiology & Field Studies Branch, *9000 Rockville Pike, Bethesda, Maryland* 20205 (Z01 AM 69012-02 EFS)

This project continues the study of the epidemiology of renal and urinary diseases using previously collected data from death certification and health surveys. In addition, new data collection from medical records was planned and initiated. Specific questions raised by earlier work regarding variation in disease prevalence and mortality were addressed.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Arthritis Metabolism & Digestive Diseases funds n.a.

3.0960,

STUDIES OF PATIENTS WHO ARE CHRONIC CARRIERS OF HEPATITIS B SURFACE ANTIGEN HBSAG

J.H. Hoofnagle, U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Arthritis Metabolism & Digestive Diseases, Liver Diseases Section, *9000 Rockville Pike, Bethesda, Maryland* 20205 (Z01 AM 53509-02 DDB)

Persons with HBsAg-positive chronic hepatitis are being enrolled in a prospective study of this disease. Thirty persons have been entered into this study, 22 of whom have been followed for at least I year (and 8 for 2 years . 20 patients have had liver biopsies. At the start all except one patient had elevated serum aminotransferase levels and all were HBsAg positive; 27 had HBeAg and 24 DNA-polymerase detectable in serum. On follow-up, one has lost HBsAg but 8 have lost HBeAg. These who seroconverted from HBeAg to anti-HBe have also had a spontaneous clinical remission with disappearance of all symptoms and a return of serum aminotransferase levels to normal. The remaining patients, who are persistently HBeAg-positive, have had stable levels of HBsAg, HBeAg and aminotranserases. In individuals with stable hepatitis B virus markers, trials of antiviral agents are being planned. Initially I0-I5 persons are being treated with adenine arabinoside monophosphate (Ara-AMP). Because there is a natural spontaneous rate of remission in this disease a controlled clinical trial will be planned in the event that Ara-AMP seems to be effective against the hepatitis B virus.

BIBLIOGRAPHIC REFERENCES: Hoofnagle, J.H., Waggoner, J.G.: Hepatitis A and B virus markers in immune serum globulin. Gastroenterology 78: 259-263, 1980. Hoofnagle, J.H.: Immunoprophylaxis of viral hepatitis. Ann. Intern. Med. 92: 870, 1980 (letter).

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Arthritis Metabolism & Digestive Diseases funds n.a.

3.0961,

DIABETES AND ARTHRITIS IN PIMA-MARICOPA INDIAN TRIBES

H.O. Hednck, Gila River Indian Community Council, *Box 97, Sacaton, Arizona* 85247

No summary has been provided to the Smithsonian Science Information Exchange.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Arthritis Metabolism & Digestive Diseases $71,860

3.0962,

EPIDEMIOLOGY AND GENETICS OF UROLITHIASIS (HUMAN)

D.M. Wilson, Mayo Foundation, *200 1st St. S.W., Rochester, Minnesota* 55901 (P50 AM 20605-040002)

This project is part of a broader program (AM 20605).

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Arthritis Metabolism & Digestive Diseases funds n.a.

3.0963,

LONG-TERM STUDY OF ASYMPTOMATIC AND FUTURE DIABETES

S.S. Fajans, University of Michigan, Ann Arbor Campus, Medical School. Dept. of Internal Medicine, *1335 E. Cathenne St., Ann Arbor, Michigan* 48104 (R01 AM 00888-26)

This is a continuing long-term project in which a large number of nondiabotic relatives of diabetic patients, as well as asymptomatic mildly diabetic patients are being studied periodically. We hope to learn more about the natural history of various types of diabetes mellitus from the points of view of: 1) genetics, 2) possible environmental factors, 3) carbohydrates intolerance, 4) insulin secretion, 5) other pancreatic hormone secretion, 6) occurrence of pancreatic islet cell antibodies, 7) HLA antigen types, 8) development of microangiopathy, 9) development of macroangiopathy, 10) development of neuropathy, 11) evaluation of factors which alter the expression of these manifestations.

BIBLIOGRAPHIC REFERENCES: Floyd, J.C., Jr., Vinik, A.I., Glaser, B., Fajans, S.S., and Pek, S.B.: Pancreatic Polypeptide. In: Diabetes 1979, Waldhausal, W.K., ed., Excerpta Medica, Amsterdam, (Int'l. Cong. Series #500), pp. 490-495, 1980. Berger, D., Floyd, J.C., Jr., Lampman, R.M., and Fajans, S.S.: The Effect of Adrenergic Receptor Blockade on the Exercise-Induced Rise in Pancreatic Polypeptide in Man. J. Clin. Endocrinol. & Metab., 50:33-39, 1980.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Arthritis Metabolism & Digestive Diseases $90,547

3.0964,

LONGITUDINAL STUDY OF A PRE-OSTEOPOROSIS POPULATION

R.P. Heaney, Creighton University, School of Medicine, Dept. of Medicine, *629 N. 27th St., Omaha, Nebraska* 68131 (R01 AM 07912-17)

This project consists of a 20-year prospective study of the population-at-risk for osteoporosis. Research subjects are 199 normal women, who were aged 35-45 at the start of the study six years ago. Observations are made once every five years and consist of comprehensive calcium kinetic, calcium metabolic and metabolic and physiolgical measurements, as well as radiogrammetric and photo densitometric measurement of bone mass. A total of 90 primary and derived variables is accumulated on each subject. The purposes of the project are: 1. To obtain comprehensive longitudinal data on calcium metabolism, bone metabolism, and related physiological functions in a group of untreated women from the perimenopausal period to the median onset time of osteoporotic symptoms; 2. Thereby to provide an exhaustive physiological profile both on women who develop symptomatic osteoporosis, and on those who do not, allowing characterization of the differences between them and of the factors influencing the differences; 3. Thereby to permit better identification of the osteoporosis-prone subset and to provide both a rational basis for prophylactic treatment and the identification of subjects who should be its target; 4. And finally, to characterize cross-sectional interrelationships between major physiological variables during this key era of osteoporosis development.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Arthritis Metabolism & Digestive Diseases $132,500

3.0965,

THE ROLE OF VIRUSES IN RENAL TRANSPLANT PATIENTS

H.H. Balfour, University of Minnesota, Minneapolis Campus, School of Medicine, Dept. of Laboratory Medicine & Pathology, *1305 Mayo, Minneapolis, Minnesota* 55455 (R01 AM 18883-05)

Preliminary retrospective studies at our institution have indicated an association between viral infections and acute febrile illness, transplant rejection and mortality. However, the following have not been answered satisfactorily: 1) What is the source of the patient's virus? 2) Do viruses cause clinically relevant illness? 3) How do viral infections relate to immune function and episodes of rejection? Our objective is to answer these questions by performing an intensive prospective epidemiologic viral study. The source of virus will be sought by examining serologic studies of donors, transplant staff, and age-matched blood donors. The relationship of viral shedding with clinical illness will be examined by prospective studies with frequent viral culturing and detailed clinical/observations. Specimens will also be examined by immunofluorescence and counterelectrophoresis for evidence of viral antigens. Nonspecific and specific humoral and cell-mediated tests will be done to investigate the relationship of viral infection to immune function, and these studies will be correlated with episodes of rejection. Routine tests will include quantitation of T and B cells, a battery of viral antibody titers, mitogen stimulation using PHA and Con A, and mixed lymphocyte culture. Tests for CMV-specific cell-mediated immunity have been developed and are being used prospectively as indicators or predictors of the presence and severity of CMV infections.

BIBLIOGRAPHIC REFERENCES: Howard, R.J. and Balfour, H.H., Jr.: Cell-mediated immunity to cytomegalovirus in mice and renal transplant recipients. Transplant Proc. 11:75-78, 1979. Peterson, L.R., Moore, B.M., Edelman, C.K., and Balfour, H.H., Jr.: Primary viral isolation by a 'satellite' laboratory. Arch. Pathol. Lab. Med. 104:9-10, 1980.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Arthritis Metabolism & Digestive Diseases $81,355

3.0966,

ESTROGEN EFFECTS ON BILIARY LIPIDS & BILE ACID KINETICS

F. Kern, University of Colorado, Health Sciences Center, School of Medicine, Dept. of Medicine, *4200 E. 9th Ave., Denver, Colorado* 80262 (R01 AM 19605-03S1)

The objectives of this proposal are to define the mechanisms of the secretion of lithogenic bile which underlie the increased incidence of cholesterol gallstones in women, especially during the child-bearing age and among those taking contraceptive steroids; to determine the effect of pregnancy, the norami ovulatory cycle and contraceptive steroids on biliary lipid composition, bile acid kinetics, cholesterol secretion and gallbladder function and to relate these effects to changes in naturally occurring female sex hormones; and to seek means of restoring biliary lipid composition to normal and reducing cholesterol cholelithiasis in the above group of patients.

Biliary lipid composition and secretion, bile acid kinetics and gallbladder function will be measured in pregnant women, women during the normal ovulatory cycle, women receiving contraceptive steroids and in appropriate control groups. Bile-rich duodenal fluid will be used. For the kinetic studies, bile acids will be labeled with either the stable isotope, 13C or the radioactive isotope, 14C, depending upon the study group. Appropriate serum female sex hormone concentrations will be determined at the time of study and will be correlated with changes in biliary lipids and bile acid kinetics, etc. The capecity of phenobarbital, salicylates and possibly other agents to modify the estrogen effects will be tested in animals.

BIBLIOGRAPHIC REFERENCES: Kern, F. Jr., Erfling, W., Simon, F.R., et al: Effect of estrogens on the

liver. Gastroenterology 75:512-522, 1978. Reyes, H. and Kern, F., Jr.: Effect of pregnancy on bile flow and biliary lipids in the hamster. Gastroenterology 76:144-150, 1979.
SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Arthritis Metabolism & Digestive Diseases $56,085

3.0967,
LYME ARTHRITIS - A NEW EPIDEMIC DISEASE
A.C. Steere, Yale University, School of Medicine, Dept. of Internal Medicine/Epidemiology & Public Health, *333 Cedar St., New Haven, Connecticut* 06510 (R01 AM 20358-04)
Lyme disease, a tick-transmitted, immune-mediated, epidemic disorder in children and adults, usually begins in summer with a characteristic skin lesion, erythema chronicum migrans, that may be followed weeks to months later by meningoencephalitis, peripheral neuritis, myocarditis, or by migratory, intermittent or chronic arthritis. We plan to define the natural history of this illness--its prognosis and treatment--etiology, vector, and pathogenesis. To accomplish these objectives, a network of primary physicians has been established to refer patients with recent onset of the illness. The natural history of the disease will be described from the serial examination of these patients. The possible pathogenetic role and interactions between circulating immune complexes, lymphocyte function, and immunogenetic determinants will be explored in selected patients. Epidemiologic field studies of patients, the implicated vector, I. dammini, and its animal hosts and environment will be done on 2 islands to determine the natural cycle of the disease. In an effort to identify the causative agent, ticks collected from the field will be identified by stage and species, pooled, and inoculated into monkeys, Peromyscus leucopus, and embryonated hens' eggs. Tick pools and their salivary glands will be reacted with convalescent sera by indirect immunofluorescence and by radioimmunoassay. If the agent can be identified, a serologic test for diagnosis will be developed, and attack rates will be determined within sample human and animal populations. The results would provide the basis for decisions about control measures.
BIBLIOGRAPHIC REFERENCES: Hardin, J.A., Walker, L.C., Steere, A.C., Trumble, T.C., Tung, K.S.K., Williams, R.C., Jr, Ruddy, S., and Malawista, S.E.: Circulating immune complexes in Lyme arthritis. Detection by the 125I-Clq binding, Clq solid phase, and Raji cell assays. J Clin Invest 63:468-477, 1979. Reik L., Steere A.C., Bartenhagen, N.H., Shope, R.E., and Malawista, S.E.: Neurologic abnormalities of Lyme disease. Medicine, July, 1979, in press.
SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Arthritis Metabolism & Digestive Diseases $227,007

3.0968,
RISK FACTORS FOR AGE RELATED HIP FRACTURES
L.J. Melton, Mayo Foundation, *200 1st St. S.W., Rochester, Minnesota* 55901 (R23 AM 28377-01)
The focus of this proposal is the quantification of clinically-evident risk factors for age-related proximal femur fractures as they occur in a community. The results of this study will provide the data needed to design an effective prevention program, by delineating the high-risk patient groups who could most profit from detailed assessment and subsequent prophylactic measures. These data are not presently available and, as a result, organized preventive efforts are essentially at a standstill.
The specific factors to be studied have been suggested by previously published research or identified in preliminary studies here. The epidemiologic case-control study proposed will help clarify which of the factors are significantly associated with hip fractures, which have the greatest potential impact on community hip fracture rates, which occur long enough before the fracture to permit effective intervention, and what proportion of the hip fracture population can be identified through these factors. The present proposal is also the key to future epidemiologic studies of age-related fractures in the community.
Rochester is an ideal setting for this type of research because most of the biases that bedevil case-control studies elsewhere can be obviated here. Medical care for the population of Olmsted County, Minnesota, is almost entirely provided by the Mayo Clinic and the Olmsted Medical Group and their affiliated hospitals. The records of these institutions and other providers have been assembled into a single diagnostic retrieval system and comprise a unique resource for population-based epidemiologic studies. Thus we can identify complete incidence cohorts of patients with hip fractures and can find matched controls who are representative of the general population. Exposure data are available from accurate and detailed contemporary medical records of long duration.
SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Arthritis Metabolism & Digestive Diseases $50,343

3.0969,
EPIDEMIOLOGY OF BONE LOSS, OSTEOPOROSIS AND FRACTURES
B.L. Riggs, Mayo Foundation, *200 1st St. S.W., Rochester, Minnesota* 55901 (R01 AM 27065-01)
Our objective is to make epidemiologic studies on age-related bone loss, osteoporosis and fractures in female residents of a circumscribed community (Rochester, Minn.). These studies have been made possible by our modification of the dual photon absorptiometry method to permit direct measurement of bone density of the spine and proximal femur (coef. variation is less than 3%) at actual fracture sites, rather than, as has been the case in the past, indirect estimates from measurements of the appendicular skeleton. We plan to apply this methodology to an age-stratified random sample of 300 females to estimate the distribution of bone density levels in the population and prospectively to 200 patients incurring nontraumatic hip or spine fractures. The number of these fractures occurring at each level of bone density will be related to the expected number of women with these levels of bone density in the community population in order to calculate the relative risk of spine or hip fractures at each bone density level. Also, 100 normal female subjects within 20 years postmenopausal will be followed for 4 years with serial measurements to determine rates of bone loss. All subjects having bone density measurements will be interviewed to assess pertinent social, medical, nutritional and behavioral data and will have hormonal and biochemical determinations on blood and urine samples. Serum hormonal determinations will include vitamin D metabolites, immunoreactive parathyroid hormone, immunoreactive calcitonin and sex steroids (including free estradiol and free testosterone). From these data, we will identify those selected variables which best discriminate between women with high and low levels of bone density, women with high and low rates of bone loss and women with and without fractures of the hip and spine. This will permit characterization of those postmenopausal women who are at the highest risk for excessive bone loss and for spine and hip fractures and, therefore, would be candidates for prophylactic therapy. Such information could be used to develop guidelines essential for cost-effective national health care programs to reduce the occurrence of age-related fractures.
SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Arthritis Metabolism & Digestive Diseases $118,332

3.0970,
ETIOLOGY OF CROHN'S DISEASE
K.M. Das, Yeshiva University, Bronx Campus, Albert Einstein School of Medicine, Dept. of Medicine, *1300 Morris Park Ave., Bronx, New York* 10461 (R01 AM 26403-02)
We wish to define the etiology of Crohn's disease, in particular, the role of the transmissible agent in causing this disease. The objectives are: (1) to use athymic mice (nu/nu) to study the putative transmissible agent, (2) to isolate and characterize the putative agent from human and nu/nu tissue.
Using nu/nu, our initial studies are unexpected and exciting. Crohn's disease lymph node homogenate from 9 different patients induced malignant lymphoma in nu/nu whereas control lymph node homogenated did not. Electron microscopic examination of the tumors and one lymph node homogenate from a patient with Crohn's disease showed presence of virus particles by thin sectioning and negative staining with phosphotungstic acid. Two lymphomas ae being cultured in vitro and both of them are B cell lymphoma.
We intend to extend these observations using a large number of nu/nu to examine the reproducibility, specificity, effect of dosage of the materials injected, and to culture the lymphomas both in vivo and in vitro. We will also study antigenic recognition in the lymphoma and other internal organs of the nu/nu (e.g., liver, spleen, intestine) using immunofluorescent techniques and appropriately absorbed sera from patients with Crohn's disease and control subjects. Similar recognition will be investigated in established lymphoid cell lines from nu/nu lymphomas. Replication of the virus will be examined using cocultivation techniques with established cell lines (e.g., WI-38 and lymphoid cells). Both human and animal tissue will be examined by electron microscopy for detection of specific virus by conventional methods and negative staining. Further characterization of the virus will be performed by plaque, enzymatic and radiolabelling assays.
SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Arthritis Metabolism & Digestive Diseases $96,302

3.0971,
EPIDEMIOLOGY OF DIABETES IN TECUMSEH, MICHIGAN
L.D. Ostrander, University of Michigan, Ann Arbor Campus, School of Public Health, Dept. of Internal Medicine, *Ann Arbor, Michigan* 48104 (R01 AM 26331-02)
A great deal of information has been collected from 1959 through 1979 about the physical, physiological, social, economic and familial characteristics of residents of Tecumseh, Michigan. Multiple variables from these data will be related to prevalence and incidence of diabetes and its complications. Alterable environmental, physical and physiological factors which contribute to risk of diabetes and its pathological manifestations will be identified.
SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Arthritis Metabolism & Digestive Diseases $86,977

3.0972,
COMPARISON OF OVERWEIGHT AND OBESITY AS RISK FACTORS
J. Habicht, Cornell University, Ithaca Campus, New York State College of Human Ecology, Division of Nutritional Sciences, *Ithaca, New York* 14850 (R01 AM 26236-02)
The first aim of the project is to develop a critique of current methods of assessing overweight as a risk factor in epidemiological studies, and to define valid procedures for evaluating the performance of these methods. The second aim is to develop a model of body weight in a large population sample as a function of body composition, expressed in anthropometric and demographic variables. The third aim is to examine the relationships of (1) weight-height indices, (2) obesity and body composition, and (3) other aspects of physical configuration, to the risks of diabetes and of hypertension. The purpose is to ascertain what empirical effects the theoretical problems of indices have on risk estimates for two diseases believed to be associated with overweight, and to see if the aspects of body composition and configuration which affect risks of disease can be identified more accurately. An overall goal is to make specific recommendations for using anthropometric measurements (including weight and height) to assess risk factors in chronic disease in adults.
SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Arthritis Metabolism & Digestive Diseases $11,660

3.0973,
PATHOGENESIS OF PORPHYRIA CUTANEA TARDA
B.F. Felsher, University of California, Irvine Campus, California College of Medicine, Dept. of Medicine, *Irvine, California* 92664 (R01 AM 26008-02)
The proposed studies are designed to elucidate the role of genetic and environmental factors in the pathogenesis of porphyria cutanea tarda.
The incidence of familial porphyria cutanea tarda in a large group of patients with this disease will be determined by measuring urinary uroporphyrin concentration, fecal isocoproporphyrin concentration, and red cell uroporphyrinogen decarboxylase activity in all the available first degree relatives of these patients. These values will be compared to our previously determined normal values, as well as those obtained in clinically non-porphyric subjects with alcoholic liver disease, subjects with hepatic siderosis, and all the available first degree relatives of these subjects. The effects of the chronic administration of alcohol on hepatic and red cell uroporphyrinogen decarboxylase activity will be studied in rats.

BIBLIOGRAPHIC REFERENCES: Feisher, BF, and Carpio, NM: Chronic persistent hepatitis and unconjugated hyperbilirubinemia. Gastroenterology 76:248-252, 1979. Feisher, BF, Carpio, NM, and VanCouvering, K: Effect of fasting and phenobarbital on hepatic UDP-glucuronic acid formation in the rat. J. Lab. Clin. Med. 93:414-427, 1979.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Arthritis Metabolism & Digestive Diseases $36,659

3.0974,

GENETIC EPIDEMIOLOGY OF DIABETES IN RUBELLA DEAFNESS

W.E. Nance, Virginia Commonwealth University, School of Basic Sciences & Graduate Studies, Dept. of Human Genetics, *901 W. Franklin St., Richmond, Virginia* 23284 (R01 AM 25786-02)

A three-year study will be conducted to determine the prevalence of metabolic and immunologic indices of islet cell damage and/or glucose intolerance in a cohort of adolescent children with rubella embryopathy in relation to the maternal and offspring HLA phenotypes. The study will thus exploit the naturally occurring paradigm of isletopathy in 6,000 children with congenital rubella who were born during the 1964-65 pandemic to test the general hypothesis that diabetes can arise from a gentically determined adverse host response to viral infection either in the affected individual or in the mother during pregnancy. The study will further define the rubella syndrome and could lead to the identification of specific maternal factors that are of importance in the etiology diabetes and birth defects. Longitidinal observations of blood glucose and insulin response to a standard oral glucose challenge will be obtained along with C-peptide assays, insulin antibody determinations, Hb Alc measurements and screening for auto-antibodies to islet cells and other tissues. These studies, along with HLA typing, will permit an accurate characterization of the type of juvenile diabetes that occurs in the rubella syndrome as well as providing evidence as to whether immunologic abnormalities can precede or only follow the onset of glucose intolerance in this high-risk population.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Arthritis Metabolism & Digestive Diseases $90,559

3.0975,

DIABETES IN THE PACIFIC-GENETIC-ENVIRONMENT INTERACTIONS

P.Z. Zimmet, Royal Southern Memorial Hospital, Dept. of Metabolic Medicine & Epidemiology, *260 Kooyong Rd., Box 185 Caulfield S., Melbourne, Victoria, Australia* (R01 AM 25446-02)

The specific objectives of this project are to determine: (a) whether specific genetic markers exist in the maturity-onset diabetic (NIDDM) or in individuals who have predisposing genes for diabetes. (b) whether the differing susceptibility of various ethnic groups to maturity-onset diabetes is related to the presence or absence of these genetic markers. (c) to establish the relative role of other factors such as age, nutrient intake, physical activity, obesity, stress, etc. in the causation of diabetes in genetically susceptible individuals. (d) the definition of possible preventative factors relating to diabetes in high prevalence populations. On the basis of these findings it is hoped that intervention programmes might be undertaken.

It is hoped to achieve these objectives by measurement of genetic markers (e.g., tissue typing, red blood cell enzymes and serum proteins with known gene loci). The studies will be carried out on Caucasian, Melanesian, Polynesian, Micronesian, and American Indian populations.

Such a study provides a broad spectrum of ethnic groups with varying susceptibility to diabetes. It will allow the comparison of genetic and various environmental factors which may influence the development of diabetes in these populations.

BIBLIOGRAPHIC REFERENCES: Zimmet, P., Kiely, P., Cross, R., Court, J., and Bornstein, J. HLA patterns in Australian patients with insulin dependent diabetes mellitus. Aust. N.Z.J. Med. 9:633, 1979. Sergeantson S., Kirk, R.L., Dry, P.J., Ryan, D.P.,Court, J., Zimmet, P., Stepanas, A.V. HLA studies in Australian multiple-case families of juvenile onset diabetes mellitus Med. J. Aust. 1:197, 1980.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Arthritis Metabolism & Digestive Diseases $149,625

3.0976,

DYSPEPSIA, PEPTIC ULCER AND ITS COMPLICATIONS

J.H. Kurata, University of California, Los Angeles Campus, School of Public Health, Dept. of Epidemiology, *405 Hilgard Ave., Los Angeles, California* 90024 (R01 AM 25330-02)

This study will examine and further elucidate the epidemiology of peptic ulcer disease and dyspepsia. Three samples will be drawn from patients from the VA Wadsworth clinics: 100 men with duodenal ulcer; 100 men with dyspepsia negative to all tests; and 100 control men without any history of ulcer disease, matched to the duodenal ulcer cases on the basis of age and race. Risk profiles will be developed for each of these groups. The dyspeptics negative to all tests will be compared with the duodenal ulcer cases and the controls to determine if this group, or a subset, can be considered as representing a pre-ulcer population. Comparisons of the risk profiles of the three groups will be made--the risk profiles will be based on demographic characteristics, genetic markers, psychosocial risk factors, medical history, and biochemical variables. An attempt will be made to develop a classification scheme based on risk profiles and to determine if there is an identifiable subset of patients with dyspepsia negative to all tests who could be regarded as having a mild and/or pre-ulcer condition.

In addition, conducted by means of a subcontract to Los Angeles County Harbor General Hospital (under Dr. Jerome I. Rotter) an investigation will be made of the interaction of the genetic and environmental factors in peptic ulcer.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Arthritis Metabolism & Digestive Diseases $101,853

3.0977,

JUVENILE DIABETES MELLITUS - EPIDEMIOLOGY & ETIOLOGY

A.L. Drash, Childrens Hospital of Pittsburgh, *125 De Soto St., Pittsburgh, Pennsylvania* 15213 (R01 AM 24021-03)

The incidence of J.O.D. less than 16 years of age will be determined for the first time in a defined community. The incidence will be related to age, sex, race and geographic area of residence. Seasonal and temporal trends will be evaluated. Secondary cases of J.O.D. within families during a 10 year follow up will be identified. The interrelationship of the demographic characteristics with HLA type, immunoglobulin and autoantibodies within and between families will be measured. Genetic analysis will include analysis of both immediate and extended families and will include HLA typing, immunoglobulin and autoantibody studies. The distribution of glucose tolerance within the families in relation to immunology, genetic and epidemiological characteristics will be considered. Viral antibody studies at the time of the initial diagnosis of a case within a family and prior to secondary case will be also be included. These studies should help determine the interrelationship of host and environmental factors in the etiology of J.O.D.

BIBLIOGRAPHIC REFERENCES: Epstein, L., Coburn, C., Becker, D., Drash, A.L. and Siminerio, L. Measurement and Modification of Urinary Glucose Reduction Accuracy. In press, Diabetes Care, 1980. Becker, D.J., Tsalikian, E., Daneman, D., Hengstenberg, F., and Drash, A.L. Plasma lipids and glycosylated hemoglobin in children with insulin dependent diabetes mellitus. In press, 1980.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Arthritis Metabolism & Digestive Diseases $297,144

3.0978,

RISK FACTORS IN GLUCOSE INTOLERANCE

M. Modan, Chaim Sheba Medical Center, Dept. of Clinical Epidemiology, *Bitan 27, Tel Hashomer, Ramat Gan, Israel* (R01 AM 23080-02)

OBJECTIVES: A. Overall: 1. General: To attempt to quantify the interrelationships, distinguish between causes and consequences, evaluate the relative role of environmental and genetic factors and understand the temporal sequence of events in the complex of glucose intolerance - obesity - macro and micro vascular complications. 2. Specific: A nationwide sample of 5600 Jewish residents, born 1912-1941, stratified by sex, age, place of birth and length of residence in Israel is being followed prospectively in three phases. In phase I (1968-72) ten consecutive once-daily blood pressure measurements, weight, height and morbidity information were collected on each individual at home. In phase II, (which started at the end of 1976), about 1500 phase I participants were examined for oral glucose tolerance (OGT), urea, ECG, weight, morbidity and mortality. Phase III, (1979-current grant, comprises four parts: Main study: consists of examinations of 4000 phase I participants by the main set of examinations namely: the above listed phase II examinations as well as determination of glycolsylated hemoglobin (HbA1) insulin response curve (IRC), high, low and very low density lipoproteins (HDL, LDL, and VLDL) and creatinine. Dietary study: About 1200 detailed dietary interviews in all overt diabetics and a sample of persons with chemical diabetes and with normal glucose tolerance. High molecular weight proteinuria study: In the dietary study group presence of high molecular weight proteinuria will be determined. Drug study: In an estimated 600 persons on oral hypoglycemic and/or antihypertensive drugs, urine, and serum drug concentrations will be determined for assessment of compliance, factors affecting response to these drugs and the interrelation of drug therapy with morbidity.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Arthritis Metabolism & Digestive Diseases $200,000

3.0979,

VITAMIN B12 TRANSPORT AND ITS DISORDERS

R. Carmel, University of Southern California, School of Medicine, Dept. of Medicine, *2025 Zonal Ave., Los Angeles, California* 90033 (R01 AM 23027-03)

Three distinct areas of research are planned, which all deal with vitamin B12 transport and its relation to various diseases and abnormalities of such transport. The first study deals with the role of the pancreas in vitamin B12 transport, and involves the delineation of the nature and composition of normal and abnormal human pancreatic secretions in relation to vitamin B12. It is hoped thereby to clarify the role of the pancreas in vitamin B12 absorption and malabsorption. The second area of study involves the characterization of a macromolecular transcobalamin which is ubiquitous in human serum but about whose nature and function very little is known. The third area deals with an extensive analysis of clinical, laboratory and epidemiological data compiled on the large, heterogenous patient population with pernicious anemia at LAC-USC Medical Center. Particular attention will be paid to potential subgroups within this disease entity. In addition it is planned to analyze gastric juice from such patients with an intrinsic factor radioimmunoassay to be developed to better define the nature of the defect in various types of pernicious anemia and gastritis. Methodology to be used in all the above studies includes use of electrophoretic, chromatographic, and immunologic techniques, and cell uptake studies using various in vitro cell systems.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Arthritis Metabolism & Digestive Diseases $39,283

3.0980,

BONE QUALITY CHANGES IN HUMANS - A 20-YEAR FOLLOW-UP

A.N. Milner, Texas Womans University, College of Nutrition Textiles & Human Development, Dept. of Nutrition & Food Sciences, *Box 23925, Denton, Texas* 76204 (R01 AM 21518-03)

Approximately 1,000 persons who underwent bionutritional and medical tests (including radiographs of the hand and os calcis for x-ray bone mineral quantitation) will be retested after a 20-25 year time lapse. Changes in individual bone mineral content and cortical volume during the intervening quarter century will be determined by radiographic densitometry using the Texas Woman's University method (with recently incorporated improved technology); direct radiographic scaling of bone morphology; and, terminally, by gamma ray absorptiometry using the Norland-Cameron method.

Bone changes during the time period will be compared with the 'normal' profile of bone development/regression currently being ascertained through our contractual work with the National Center for Health Statistics. This work encompasses bone mineral and cortical thickness measurements of 12,000 individuals who have been computer-selected by the Bureaus of Census to represent the United States population.

The specific aim of the proposed program is to determine if bone rarefaction with age is uniform and universal, or if nutritional, environmental/occupational, or pathologic factors are conducive to deviations from the normal profile which may result in the syndrome known as osteoporosis.
SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Arthritis Metabolism & Digestive Diseases $31,555

3.0981,
NEUROPATHOLOGIC-EPIDEMIOLOGIC STUDY-COLLABORATIVE PERINATAL PROJECT (HUMAN)
A. Leviton, Childrens Hospital Medical Center, *300 Longwood Ave., Boston, Massachusetts* 02115 (P30 HD 06276-090009)
This project is part of a broader program (HD 06276).
SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Child Health & Human Development funds n.a.

3.0982,
CLASSIFICATION AND EPIDEMIOLOGY OF SCHOOL PROBLEM SYNDROMES
A. Leviton, Childrens Hospital Medical Center, *300 Longwood Ave., Boston, Massachusetts* 02115 (P30 HD 06276-090010)
This project is part of a broader program (HD 06276).
SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Child Health & Human Development funds n.a.

3.0983,
MYOCARDIAL INFARCTION AND ROLE OF ORAL CONTRACEPTIVES
D. Slone, Boston University, School of Medicine, Dept. of Medicine, *80 E. Concord St., Boston, Massachusetts* 02215
The analysis of data from this study shall include: determination of the relationship of present and past oral contraceptive use to the risk of non-fatal myocardial infarction; identification of subgroups of women at varying levels of risk for non-fatal myocardial infarction, given oral contraceptive use, determination of the nature of interactions between oral contraceptives and other myocardial infarction risk factors.
SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Child Health & Human Development $12,303

3.0984,
EFFECTS OF PLACEMENT SERVICES AND CLIENT MANAGEMENT ON MORTALITY AND ADAPTATION
R.K. Eyman, University of California, Los Angeles Campus, Neuropsychiatric Inst., *760 Westwood Plaza, Los Angeles, California* 90024 (P01 HD 05540-090002)
This project is part of a broader program (HD 05540).
SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Child Health & Human Development funds n.a.

3.0985,
ABORTION--SUBSEQUENT REPRODUCTIVE FUNCTION/PREGNANCY
C.S. Chung, University of Hawaii System, Manoa Campus, School of Public Health, Dept. of Public Health Sciences, *Spalding Hall, Room 255, Honolulu, Hawaii* 96822
Quantify the effects of induced abortion on subsequent reproductive function by performing a classical cohort study of 16,500 women who collectively underwent 17,700 recorded abortions in the State of Hawaii between July, 1970, and July, 1974. Compare pregnancy outcome rates of pregnancies occurring to these women between January, 1971, and December, 1976, to rates of two control groups: the entire set of live births and fetal deaths for the period January, 1971, through December, 1976, minus those occurring to women in the 'recorded abortion' group; and births or fetal deaths occurring to women with no recorded abortion history matched to the 'recorded abortion' group by maternal age, racial background, residence (urban vs. rural), and birth order. Specifically, compare rates of fetal death, neonatal death, prematurity, ectopic pregnancy, and labor and delivery complications.
SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Child Health & Human Development $240,278

3.0986,
MATERNAL HEALTH AND EPIDEMIOLOGY (HUMAN)
E.H. Kass, Peter Bent Brigham Hospital, *721 Huntington Ave., Boston, Massachusetts* 02115 (P01 HD 11924-030002)
This project is part of a broader program (HD 11924).
SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Child Health & Human Development funds n.a.

3.0987,
PACIFIC STATE HOSPITAL-BEHAVIORAL AND EPIDEMIOLOGICAL RESEARCH (HUMAN)
R. Eyman, University of California, Los Angeles Campus, Neuropsychiatric Inst., Mental Retardation Research Center, *760 Westwood Plaza, Los Angeles, California* 90024 (P30 HD 04612-120032)
This project is part of a broader program (HD 04612).
SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Child Health & Human Development funds n.a.

3.0988,
EPIDEMIOLOGY OF TROPHOBLAST DISEASE (HAWAII)
P.A. Jacobs, University of Hawaii System, Manoa Campus, John A. Burns School of Medicine, Dept. of Anatomy & Reproductive Biology, *2444 Dole St., Pacific Biomedical Res. Ctr., Honolulu, Hawaii* 96822 (R01 HD 07879-070005)
This project is part of a broader program (HD 07879).
SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Child Health & Human Development funds n.a.

3.0989,
SIDS RISK FACTOR COOPERATIVE STUDY
L.S. Hillman, St. Louis Regional Maternal & Child Health Council, *607 Grand Ave., St. Louis, Missouri* 63103
The contractor will participate in a collaborative study along with five other centers to collect and process information on SIDS cases and controls in an effort to develop a group of risk factors which will characterize infants who subsequently die. This information will hopefully be used to identify a subset of infants at birth who are at high risk.
SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Child Health & Human Development $51,298

3.0990,
THE EPIDEMIOLOGY OF INFANT MORTALITY IN BALTIMORE, MD
C.A. Keller, U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Child Health & Human Development, Epidemiology Branch, *9000 Rockville Pike, Bethesda, Maryland* 20205
This contract was designed to study the simultaneous effects of a number of risk factors for infant mortality in a total community. The contractor was let pursuant to an RFP which specified that the study be conducted in a high risk community within 50 miles of NIH so that Branch staff could collaborate with contractor frequently on a regular basis. The results of this study will be used to assess the relative importance of a number of risk factors for infant mortality which might be incorporated in the design of an intervention program.
SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Child Health & Human Development funds n.a.

3.0991,
CLASSIFICATION AND EPIDEMIOLOGY OF CHILDHOOD BRAIN TUMORS (HUMAN)
A. Leviton, Childrens Hospital Medical Center, *300 Longwood Ave., Boston, Massachusetts* 02115 (P30 HD 06276-090008)
This project is part of a broader program (HD 06276).
SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Child Health & Human Development funds n.a.

3.0992,
CONGENITAL, NATAL AND EARLY POSTNATAL CMV INFECTIONS - LONGITUDINAL STUDY (HUMAN)
C.A. Alford, University of Alabama in Birmingham, School of Medicine, Dept. of Pediatrics, *1919 7th Ave. S., Birmingham, Alabama* 35233 (P01 HD 10699-040004)
This project is part of a broader program (HD 10699).
SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Child Health & Human Development funds n.a.

3.0993,
SIDS RISK FACTOR COOPERATIVE STUDY
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Participate in a collaborative study along with five other centers to collect and process information on SIDS cases and controls in an effort to develop a group of risk factors which will characterize infants who subsequently die. This information will hopefully be used to identify a subset of infants at birth who are at high risk.
SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Child Health & Human Development $131,865

3.0994,
EFFECTS OF CONTRACEPTIVE STEROIDS ON BLOOD PRESSURE
C.G. Hames, Evans County Dept. of Health, *2 N. Newton St., Claxton, Georgia* 30417
Determination of the incidence of oral-contraceptive induced hypertension and the magnitude of mean blood pressure increase in a biracial southeastern Georgia population. Identification of characteristics of pill-takers that may increase the risk of pill-induced blood pressure elevation, with a view of developing inclusion and exclusion criteria for patient selection, & possible contribution toward some understanding of pathophysiologic mechanisms. Investigation of reversibility of steroid-induced hypertension or blood pressure elevation following cessation of the pill. The three-year incidence of pill-induced elevation of blood pressure will be determined in a biracial population in Georgia. One thousand women (700 whites and 300 blacks) attending newly established Family Planning Clinics will participate in the study.
SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Child Health & Human Development $21,703

3.0995,
PHARMACOKINETICS & TERATOGENICITY OF ANTICONVULSANTS
R.E. Ramsay, University of Miami, School of Medicine, Dept. of Neurology, *1400 N.W. 10th Ave., Box 520875, Coral Gables, Florida* 33152 (R01 HD 12740-02)
The objective of the proposed project is to study prospectively (1) the effects which pregnancy has on the epileptic patient and (2) the teratogenic effect of anticonvulsant drugs. Evidence to date indicates that pregnancy may alter the pharmacokinetics and metabolism of drugs. Alterations in drug dosages are definitely necessary to maintain seizure control during pregnancy. Seizures exacerbate in more than 50% of pregnant epileptics, even when drug dosages are appropriately changed. The frequency of this change has not been accurately documented and the etiology, which may be secondary to changing hormone levels, has not been clarified. Studies on teratogenesis of anticonvulsant drugs have con-

centrated on the changes in the children but have not examined the mothers during pregnancy to document their metabolic or drug status. In this project, we propose to examine both the mothers during pregnancy and their offspring. The children will be reexamined periodically for years. Major malformations occur in 6 to 8% of children born to mothers taking anticonvulsant drugs. Up to 30% may have dysmorphic features. Delayed maturation and development has also been reported to occur but the true incidence, severity and etiology has not been defined. In this study, we hope to elucidate some of these questions by monitoring the mothers during pregnancy and serially examining the children for neurological, developmental and morphologic abnormalities.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Child Health & Human Development $40,104

3.0996,
PATHOBIOLOGY OF AMENORRHEA/HYPERPROLACTINEMIA

B.M. Sherman, University of Iowa, School of Medicine, Dept. of Internal Medicine, *Jessup Hall, Iowa City, Iowa* 52240 (R01 HD 13136-01A1)

This proposal will use clinical, anatomic, endocrine, histopathologic and epidemiologic methods to gain information that will substantiate the hypothesis that potentially prolactin-secreting adenomas of the pituitary may exist in as many as 5% of women, that they may be a frequent cause of ovulatory dysfunction and infertility, and that their growth and clinical expression may be stimulated by estrogen use, usually in the form of oral contraceptives. An autopsy study will seek to determine the prevalence of prolactin-secreting adsnomas by immunocytochemical and electron-microscopic methods. A case-control study will ascertain whether oral contraceptive use and menstrual dysfunction are in fact more frequent in women with amenorrhea and hyperprolactinemia. A prospective study of oral contraceptive users will determine what proportion of women will develop frank hyperprolactinemia. The prolactin responses to a short course of estrogen administration will be assessed in women with ovulatory dysfunction and/or infertility who have basal serum prolactin concentrations in the high normal range and in a control group. This is an attempt to elaborate on the pathogenesis of pituitary adenomas and hyperprolactinemia and to design a method that will identify early those individuals who may harbor a nascent prolactin-secreting adenoma and who may be subject to estrogen-induced hyperprolactinemia.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Child Health & Human Development $114,015

3.0997,
EPIDEMIOLOGY OF EARLY REPRODUCTIVE LOSS

Z.A. Stein, Columbia University, College of Physicians & Surgeons, Dept. of Public Health, *630 W. 168th St., New York, New York* 10032 (R01 HD 12207-03)

Research questions of central interest are possible relations between the attributes and experiences of parents, and adverse reproductive outcomes. Attributes of parents include age, prior reproductive experiences, medical conditions including genetic disorders, demographic background; experiences include habits (cigarette smoking), home and job exposures to chemicals, therapeutic drugs, contraceptives. The adverse reproductive events are the event of spontaneous abortion estimated as an odds ratio, in a case-control study and the event at given stages of gestation; the karyotypic character of the abortus (euploid, trisomic, monosomic, triploid, tetraploid, translocation, mosaic, other); the morphology of the abortus beyond 28 weeks. There is also interest indifferences in sex ratio, and differential findings for male and female offspring.

Findings established by the study include: an excess risk for spontaneous abortion (and in particular, for euploid conceptions) among women who smoke during pregnancy, for those drinking in moderate amounts of alcohol during pregnancy, and for those whose conception occurred while using an intrauterine device; for women over 35 years; for women using heroin or methadone and women with a history of repeat abortions. The risk was not raised for those who had experienced a single previous induced abortion, nor for those who ingested saccharine.

BIBLIOGRAPHIC REFERENCES: Warburton, D., Stein, Z.A., Kline, J. and Susser, M.: Chromosome abnormalities in spontaneous abortion: Data from New York City study. In Human Embryonic and Fetal Death, Eds. I. Porter and E. Hook, New York, Academic Press, 1980, in press. Stein, Z., Kline, J., Levin, B., Susser, M. and Warburton, D.: Epidemiologic Studies of Environmental Exposures in Human Reproduction. Proceedings of Conference on Environmental Toxicity, Rochester Medical Center, Rochester, New York, 1980, in press.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Child Health & Human Development $63,261

3.0998,
CELL-MEDIATED IMMUNITY IN CONGENITAL CMV INFECTIONS

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A CMV-specific cell-mediated immune defect has been found in 9 young children with congenital or neonatal CMV infections. To investigate the possibility that this defect could play a role in the pathogenesis of cytomegalic inclusion disease, we are performing an intensive epidemiologic, virologic and immunologic investigation of the role of CMV-specific cell-mediated immunity in mothers and their infants. Infants from newborn nurseries are being screened to detect active CMV infections. Those infected will have CMV-specific immune studies performed. Normal pregnant women are being studied to establish the effect of pregnancy on generalized and CMV-specific cell-mediated immunity. Infants with clinical manifestations of CMV will be followed for at least 3 years. At the present some of these infants are being enrolled on an open protocol to receive transfer factor prepared from adults shown to have cell-mediated immunity to CMV. In 2 such infants administration of transfer factor has been temporally related to cessation of viruria and acquisition of lymphocyte proliferative responses to CMV. To establish the normal kinetics of CMV humoral and cell-mediated immunity in normals, volunteers given live, attenuated CMV vaccine and adults with CMV mono are being followed.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Child Health & Human Development $74,629

3.0999,
PSYCHOSOCIAL AND PHYSICAL RESULTS OF TUBAL LIGATION

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The objectives of the proposed study are to 1) determine the type and extent of long-term psychosocial and physical consequences which can be directly or indirectly attributed to tubal sterilization, 2) determine the conditions with respect to the (a) surgery itself (indications for, type and timing) (b) factors internal to the woman herself and (c) factors in the woman's personal situation which minimize and maximize the occurrence of positive outcomes as well as problems, and 3) develop an instrument which would help physicians select individuals with whom intervention with additional counseling and preparation is warranted.

In order to satisfy these objectives, a well-controlled prospective study of 250 randomly selected tubal ligation (postpartum and interval) patients and 2 control groups (250 women who have completed childbearing but do not anticipate a tubal ligation or a vasectomy for their mates, and are relying on other contraceptive methods, and 250 wives of vasectomy patients) is proposed. Age, parity, and contraceptive method used prior to sterilization will be the major control variables. Where initial analysis indicates that these variables are related to outcomes, post-hoc matching with respect to that variable will be introduced.

Measures of all relevant psychosocial and physical variables with respect to both the study and control groups will be determined prior to the surgery (at a randomly assigned time for temporary method users) so that changes can be documented at one and two years following the initial interview.

All data involving demographic, psychosocial, and physical variables will be collected through the initial and followup interview schedules, routine physical examination, and completion of the Physical Symptoms Checklist.

Data analysis will focus upon characterizing the physical, demographic and psychosocial features of both study and control groups, determining which of the various variables predict consequences of tubal sterilization during the first two years following surgery, and comparing the study and control groups on their initial features and responses toward sterilization.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Child Health & Human Development $146,434

3.1000,
RISK FACTORS FOR PREGNANCY COMPLICATIONS IN SMOKERS

M.B. Meyer, Johns Hopkins University, School of Hygiene & Public Health, Dept. of Epidemiology, *615 N. Wolfe St., Baltimore, Maryland* 21205 (R01 HD 13583-02)

The risks of early and late bleeding, placenta previa, abruptio placentae, and premature and prolonged rupture of membranes increase with increasing levels of maternal smoking during pregnancy. However, the degree of risk appears to vary depending on other maternal factors. The objectives of this study are: 1) to identify women in terms of age-parity, socioeconomic status, height, weight, weight gain, hemoglobin level, past obstetric and medical history, use of medical services, and other factors who will be at highest risk for these complications if they smoke; 2) to trace the progression of these complications prospectively to preterm or term delivery and to perinatal death or survival, weighing the relative importance of maternal smoking and of other risk factors in the process; 3) to serve as a model for future prospective studies by identifying mothers at maximum risk of complications and by determining an optimum comparison group.

Data from the Ontario Perinatal Mortality Study are now being analyzed to fulfill these objectives. Preliminary findings indicate the relative importance of maternal smoking and other antecedent factors to a) the occurrence of selected pregnancy complications and b) the incidence of adverse pregnancy outcomes with and without these complications. The current application is for support for a similar analysis of data from the Jerusalem Perinatal Study, which have been made available to us since the original application. Advantages of using a second data set are that the consistency of results in a different population can be tested; Jerusalem data are more recent, and some complications of interest were more completely ascertained in Jerusalem. Data from both studies will be used a) to calculate sample sizes needed in prospective studies of pregnancy complications and b) to produce a nomogram to assess the risk of pregnancy complications and the risk of adverse pregnancy outcomes for women with different profiles, and to measure the impact of smoking on these risks.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Child Health & Human Development $32,209

3.1001,
GROUP B STREPTOCOCCAL INFECTIONS

H.C. Dillon, University of Alabama in Birmingham, School of Medicine, Dept. of Pediatrics/Microbiology, *1919 7th Ave. S., Birmingham, Alabama* 35233 (R01 HD 13920-01)

The natural history of group B streptococcal (GBS) infections is being investigated. Longitudinal, prospective clinical, epidemiological and serological studies are concentrated in the area of puerperal and perinatal infections. Maternal GBS carrier/infection rates are determined during pregnancy and at delivery. GBS acquisitions in prospectively studied newborns are defined according to culture sites, and the degree of exposure to GBS at or around time of birth is correlated with risk of disease. The spectrum of disease in infancy is defined and attack rates of early and late sepsis are determined. Maternal factors possibly predisposing to GBS infection are evaluated. The role of GBS in UTI in women with complicated pregnancies is being studied in separate but related investigation. Studies of host defense include assays for type-specific Ab in parturients and offspring and the relation between Ab and disease incidence. The role of homologous and heterologous carriage in the evolution of antibody is being explored. An ELISA method has been devised for seroepidemiological study. Protective Ab assays include the chick embryo and mouse protection models and indirect bactericidal test for opsonic Ab. Long-term

trends in maternal carriage/infection and neonatal disease caused by GBS will be determined in the course of this investigation in anticipation of the possibility for implementing and evaluating prophylactic or preventive measures.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Child Health & Human Development $104,990

3.1002,
ANALGESIA AND ANESTHESIA IN LABOR AND DELIVERY

B.J. van den Berg, University of California, Berkeley Campus, School of Public Health, Dept. of Biostatistics, *Berkeley, California* 94720 (R01 HD 14213-02)

This project is based on prospective longitudinal data assembled in the Child Health and Development Studies, starting with observations of 20,000 pregnant women and continuing with follow-up studies of the children born to these women.

The families were members of Kaiser Foundation Health plan in the Oakland area of California. The focus of this research project is on the evaluation of association of drugs, adminstered for analgesia during labor or for anesthesia during delivery, to health and development of the child at birth, as well as at the ages of 5 years and 10 years.

The data on the well-being of the children at 5 years and 10 years were obtained during developmental examinations of subcohorts of the basic population.

Though it is known that these drugs pass the placenta to reach the fetal circulation, and sometimes have transient undesirable effects on the newborn, associations between these drugs and later development of children have hardly been studied. Our longitudinal observations will be used to approach this problem.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Child Health & Human Development $18,212

3.1003,
MORTALITY LEVELS AND DIFFERENTIALS IN THE U.S., 1900

S.H. Preston, University of Pennsylvania, School of Arts & Sciences, Dept. of Sociology, *34th & Spruce Sts., Philadelphia, Pennsylvania* 19104 (R01 HD 14359-01)

The project is designed to provide more reliable estimates of mortality than are currently available for the American population at the turn of the century. At this time there was a rich diversity of social conditions deriving from recent industrialization and rapid immigration. A 1 in 753 sample of households from the 1900 U.S. Census of Population will be the principal data source. Census questions on children ever born and children surviving will be converted into estimate of child mortality for the whole population and for significant social groups. Particularly valuable will be estimates for the rural population and for blacks, groups that were severely underrepresented in the Death Registration Area in 1900. Multivariate techniques will be developed to permit examination of the independent effect of specific factors on mortality. Inferences regarding adult mortality conditions among various groups can be made by reference to a model life table system that appears broadly applicable to American experience at this time.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Child Health & Human Development $84,366

3.1004,
PARENTAL OCCUPATION AND PREGNANCY OUTCOME

B.J. van den Berg, University of California, Berkeley Campus, School of Public Health, Dept. of Biomedical & Environmental Health Sciences, *Berkeley, California* 94720 (R01 HD 14522-01)

This research project will address the following questions: (1) Does employment during pregnancy have measurable (unfavorable) effects on the course of pregnancy and/or health and development of fetus and infant? (2) Can specific types of occupation of either father or mother be identified that have measurable effects on the course of pregnancy or on the health and development of the offspring?

The data for this research are assembled in the Child Health and Development Studies, including information on 15,000 families. The procedures will be to investigate relationships of a variety of parental occupations to the course of pregnancy and pregnancy complications; to the health of the newborn, as well as to subsequent growth and development of the child. The data are large enough to control for confounding variables.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Child Health & Human Development $60,134

3.1005,
ORGANIZATION OF SLEEP STATES AND RISK FOR SIDS

R.M. Harper, University of California, Los Angeles Campus, School of Medicine, Dept. of Anatomy, *2025 Zonal Ave., Los Angeles, California* 90024 (R01 HD 14608-01)

This project will examine the temporal patterning of autonomic, central nervous system and somatic activity during sleep-waking states in normal infants and infants at risk for the Sudden infant Death Syndrome (SIDS). The objective is to determine whether sleep disturbances, previously noted in infants at risk for SIDS, results from a failure to arouse from apneic and other transient events during sleep. Physiological activity during sleep will be examined by measuring EEG, somatic activity, and cardiac rate variability before and after apnea and transient events of sleep, and during transition periods between states. These studies will be carried out on data already collected from normal infants and siblings of SIDS victims over the first 6 months of life. The integration of sleep states will be studied by examination of coupling between sequencing of particular states and temporal patterning of physiological activity. The presence of fast ultradian periodicities will be studied in each age group.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Child Health & Human Development $89,181

3.1006,
SOCIOECONOMIC EFFECTS ON CHILD MORTALITY IN THE U.S.

R.D. Mare, University of Wisconsin, Madison Campus, School of Letters & Science, Dept. of Sociology, *500 Lincoln Dr., Madison, Wisconsin* 53706 (R01 HD 14690-01)

The proposed research assesses the effects of socioeconomic conditions on the mortality of chilren aged one through twenty in the United States. Except for aggregate analyses, research on socioeconomic mortality differentials has been confined to adults or infants. This research investigates the extent, pattern, trend, and causes of socioeconomic child mortality differentials and develops methods for using limited data to infer socioeconomic effects. The analysis is based on mothers' reports of the survival status of their children contained in the June 1975 and 1980 Current Population Surveys (CPS) and on indirect estimates from the 1960 and 1979 Census Public Use Samples and the 1975 and 1980 June CPSs. The goals of the research are to estimate child mortality rates specific to socioeconomic characteristics of parents and families through several procedures; to perform multivariate analysis of June CPS data to assess the independent effects of mother's schooling, family income, father's schooling, father's occupation, family size and structure, mother's age, race, sex, and age on child mortality; to develop indirect estimates of child mortality differentials from the 1960, 1979, 1975, and 1980 data to assess changes in socioeconomic effects; to develop and test a hypothesis that socioeconomic child mortality differentials are strongest in populations in which accident mortality constitutes the largest proportion of deaths (that is, among boys, blacks, and teenagers, and for the most recent period); to use data on the mortality of siblings (from the June CPSs) to statistically control family-related sources of population heterogeneity in making differential mortality comparisons; and to develop modified Brass and intercensal survival methods to estimate socioeconomic child mortality differentials from U.S census data.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Child Health & Human Development $58,937

3.1007,
FETAL DEATH IN LABOR - EPIDEMIOLOGY AND PREVENTABILITY

N.S. Paneth, Columbia University, College of Physicians & Surgeons, Dept. of Pediatrics/Public Health, *630 W. 168th St., New York, New York* 10032 (R01 HD 14807-01)

Using vital records of the City of New York, we will examine the epidemiology of intrapartum fetal death (IFD) in a total population. The variations of this component of perinatal mortality in time, place, and season, and in relation to social, demographic and maternal risk factors will be studied. We will compare the distribution of such variables among cases of IFD, to their distribution among the other components of perinatal mortality: late antepartum fetal death and early neonatal mortality.

Completion of the descriptive and comparative epidemiology will be followed by analysis of the relationship of obstetric care to IFD rates, the latter standardized for confounding factors. This study builds on our present study of hospital care and neonatal mortality and makes use of our knowledge of equipment, procedures, and staffing in each of New York City's maternity services.

The analysis will be performed on several levels: 1) A cross-sectional comparison of IFD rates and maternity service quality scores. 2) A comparison of IFD rates and rates of labor surveillance and intervention by hospital. 3. An analysis of the secular trend of IFD rates in relation to secular trends in rates of obstetric intervention.

By the end of the study we expect to have a firm understanding of the descriptive and comparative epidemiology of IFD in our population. We further expect to know how IFD rates vary in relation to quality of maternal care, intensity of labor surveillance and frequency of obstetric intervention.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Child Health & Human Development $120,138

3.1008,
DEVELOPMENTAL DYSLEXIA - CROSS-NATIONAL COMPARISONS

S.D. Lindgren, University of Iowa, School of Medicine, Dept. of Neurology, *Oakdale, Iowa* 52319 (R01 HD 15026-01)

This study is the second phase of a cross-national investigation of developmental dyslexia in Italy and the United States. Assessing children in differing linguistic environments provides an opportunity to evaluate the degree to which the phonetic regularity of a language influences the prevalence and types of dyslexia. Children in a linguistic environment where dyslexia is reportedly rare and where the language shows relatively consistent grapheme-phoneme correspondence (Italy) will be compared to children in a setting where dyslexia is common and where the language is comparatively irregular (the U.S.). This will permit analysis of the interaction between phonetic-linguistic factors and individual patterns of cognitive ability. Cognitive patterns will be examined by analyzing the children's performance on a battery of neuropsychological tests assessing both auditory-verbal and visual-spatial abilities. The performances of dyslexic children will be compared to the performances of children with adequate reading skills in order to determine the proportion of dyslexics whose reading disability is related to specific deficits in verbal or spatial processing. The study will attempt to discover whether the orthographic regularity of the Italian language reduces the prevalence of dyslexia, modifies the neuropsychological characteristics of the disorder, creates a dissociation between reading comprehension and decoding, and produces shift in the type of reading errors, when compared to American children. Understanding the effects of linguistic factors on the prevalence and pattern of reading disabilities should have direct impact on clarifying the etiology of dyslexia and should have important implications for developing strategies for remediation.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Child Health & Human Development $30,549

3.1009,

CASE-CONTROL STUDIES

J. Schlesselman, U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Child Health & Human Development, Biometry Branch, *9000 Rockville Pike, Bethesda, Maryland* 20205 (Z01-HD-00806-03)

Abook on case-control studies is being written which will detail the logic of the study design, provide explicit recommendations for its application, and describe a variety of methods for the analysis of case-control data. The book is planned as a reference for researchers and advanced students in medicine, public health, epidemiology, and statistics.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Child Health & Human Development funds n.a.

3.1010,

THE GEOGRAPHIC VARIATION OF FETAL AND INFANT MORTALITY AND LOW BIRTH WEIGHT IN THE UNITED STATES, 1969-1974

C.A. Keller, U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Child Health & Human Development, Epidemiology Branch, *9000 Rockville Pike, Bethesda, Maryland* 20205 (Z01-HD-00305-03 EB)

The assembly of a large number of variables, including pregnancy outcome, has provided data on the marked variability in infant and fetal mortality among different populations in the U.S. The correlation of adverse pregnancy outcome rates with environmental variables will make it possible to assess the relative importance of the various factors associated with these rates in a large population. These data will also provide a basis for the assessment of changes in infant and fetal mortality which may be occurring in some populations.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Child Health & Human Development funds n.a.

3.1011,

THE SEASONALITY OF INFANT MORTALITY FROM LINKED BIRTH-DEATH RECORDS IN NORTH CAROLINA, 1967-1973

R.P. Nugent, U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Child Health & Human Development, Epidemiology Branch, *9000 Rockville Pike, Bethesda, Maryland* 20205 (Z01-HD-00306-03 EB)

The observed seasonality of neonatal deaths in the U.S. has implications as to the role of environmental agents, e.g., infectious organisms, during pregnancy in influencing pregnancy outcomes. Since seasonality of conceptions may generate seasonality of neonatal death rates, linked birth-death records from North Carolina and Minnesota are being utilized to examine this relationship so that seasonality of death rates can be assessed independently of any seasonal variation in conceptions.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Child Health & Human Development funds n.a.

3.1012,

COSTS OF CASE-CONTROL STUDIES

J.J. Schlesselman, U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Child Health & Human Development, Biometry Branch, *9000 Rockville Pike, Bethesda, Maryland* 20205 (Z01-HD-00810-02)

A financial review of five case-control studies funded by the NICHD is being conducted to identify the costs associated with the planning, conduct and analysis of case-control studies. Expenditures associated with data collection, travel, operating expenses, and salaries of professional staff have been summarized for three phases of each study (1) planning, (2) data collection, and (3) analysis.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Child Health & Human Development funds n.a.

3.1013,

NATIONAL NATALITY FOLLOW-BACK SURVEY AND NATIONAL FETAL MORTALITY SURVEY

C.A. Keller, U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Child Health & Human Development, Epidemiology Branch, *9000 Rockville Pike, Bethesda, Maryland* 20205 (Z01-HD-00312-01 EB)

The National Natality Follow-Back Survey is a mailed survey to mothers, physicians and hospitals for a 1 in 500 sample of legitimate births in the U.S. during calendar 1980. The National Fetal Mortality Survey is a similar survey to a 1 in 4 sample of all stillbirths over 20 weeks gestation.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Child Health & Human Development funds n.a.

3.1014,

HLA TYPES AND MALFORMATIONS IN INFANTS OF DIABETIC MOTHERS PILOT STUDY

J.L. Mills, U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Child Health & Human Development, Epidemiology & Biometry Research Branch, *9000 Rockville Pike, Bethesda, Maryland* 20205 (Z01 HD-00314 EBRP)

Diabetes Mellitus is known to be associated with certain HLA types. It is also known to cause malformations in infants of diabetic mothers. This study will examine the relationship between HLA 'markers' for diabetes and malformations. The pilot study will examine HLA types of malformed patients, mothers and siblings in The Netherlands to determine whether a formal case-control study is warranted.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Child Health & Human Development funds n.a.

3.1015,

MALFORMATIONS AND FETAL LOSSES IN PREGNANCY IN WOMEN AND JUVENILE ONSET DIABETES MELLITUS

J.L. Mills, U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Child Health & Human Development, Epidemiology & Biometry Research Branch, *9000 Rockville Pike, Bethesda, Maryland* 20205 (N01-HD-0-2839-40-41-42-43)

The Epidemiology research program solicited proposals, conducted technical review, negotiated with acceptable centers, and awarded contracts in the 1978-1979 fiscal year. The collaborating institutions are currently recruiting subjects by January 1, 1981. Protocol development will begin with a meeting of principle investigators August 7th and 8th at NICHD. An Advisory Group is being recruited. It will be chaired by Leon Gordis, M.D.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Child Health & Human Development funds n.a.

3.1016,

REVIEW OF TERATOGENIC EFFECTS OF MATERNAL DIABETES MELLITUS

J.L. Mills, U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Child Health & Human Development, Epidemiology & Biometry Research Branch, *9000 Rockville Pike, Bethesda, Maryland* 20205 (Z01 HD-00316 EBRP)

The purpose of this project was to summarize the current state of knowledge of teratogenic effects of maternal diabetes mellitus and to review suggested teratogenic mechanisms. This will result in an article for publication in the medical literature.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Child Health & Human Development funds n.a.

3.1017,

ADVERSE EFFECTS OF COITUS DURING PREGNANCY

J.L. Mills, U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Child Health & Human Development, Epidemiology & Biometry Research Branch, *9000 Rockville Pike, Bethesda, Maryland* 20205 (Z01 HD-00317 EBRP)

The objective of this study is to identify adverse effects, if any, of intercourse late in pregnancy. A case-control approach is being used. Data is retrospectively ascertained from women in the Jerusalem Perinatal Study. Risks of pre-term delivery, low birth weight, stillbirth and neonatal death will be examined.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Child Health & Human Development funds n.a.

3.1018,

STUDIES BASED ON THE MEDICAL BIRTH REGISTRY OF NORWAY, 1967-1973

H. Hoffman, U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Child Health & Human Development, Biometry Branch, *9000 Rockville Pike, Bethesda, Maryland* 20205 (Z01-HD-00801-04)

These studies have focused on: (1) the relation of the quality of medical care to the risk of perinatal death in Norway, (2) the tendency to repeat similar birth weight and gestational age in subsequent pregnancy outcomes to the same mothers, (3) perinatal mortality in relation to order of birth and size of sibship, and (4) epidemiologic risk factors for preterm birth.

BIBLIOGRAPHIC REFERENCES: Bakketeig, L.S., Hoffman, H.J. and Sternthal, P.M.: Obstetric service and perinatal mortality in Norway. Acta Obstetrica et Gynecologica Scandinavica, Supplement. 1978, (in press). Hoffman, H.J., Bakketeig, L.S. and Stark, C.R.: Twins and perinatal mortality-a comparison between single and twin births in Minnesota and in Norway, 1967-1973. In Nance, W.E., Allen, G. and Parisi, (Eds.): Twin Research (Part B): Biology and Epidemiology. New York, N.Y., Alan R. Liss, Inc., pp. 131-142, 1978.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Child Health & Human Development funds n.a.

3.1019,

STUDY OF LINKED INFORMATION OF INFANT DEATH CERTIFICATES AND LIVE BIRTH CERTIFICATES FOR SELECTED U.S. STATES

H. Hoffman, U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Child Health & Human Development, Biometry Branch, *9000 Rockville Pike, Bethesda, Maryland* 20205 (Z01-HD-00802-05)

The objective is to assemble a multi-state data file of infant deaths in which prior linkage with birth certificate information has been performed. The studies to be done on the data set include associations between infant (and fetal) mortality with the standard information on birth certificates (e.g. birth weight, gestational age, maternal age and race, parity, etc). These studies will be compared with similar studies on a 1950 and 1960 cohort of U.S. births. Additional comparisons will be linked data from Canada (1971), Great Britain (1970) and Norway (1976-1973).

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Child Health & Human Development funds n.a.

3.1020,

BIRTH CONTROL AND THE RISK OF INFERTILITY

J.R. Daling, University of Washington, School of Public Health & Community Medicine, Dept. of Epidemiology, *4000 15th Ave. N.E., Seattle, Washington* 98105

Conduct a population based case-control study of the relationship between birth control practices and the occurrence of subsequent undesired infertility. Study will take place in Kings County, Washington. Study approximately 1500 cases and 1500 controls. Data analysis would be focuesd on estimates of the

relative risk of infertility for users of different contraceptive modalities.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Child Health & Human Development $480,700

3.1021,

INTERNATIONAL CENTER FOR EPIDEMIOLOGY OF HUMAN REPRODUCTION

A.R. Omran, University of North Carolina, Chapel Hill Campus, School of Public Health, Dept. of Epidemiology, *Rosenau Hall, 201H, Chapel Hill, North Carolina* 27514 (P30 HD 05798-060007)

This project is part of a broader program (HD 05798).

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Child Health & Human Development funds n.a.

3.1022,

LACTOSE INTOLERANCE IN CANADIAN AND INUIT CHILDREN

J.J. Ellestad Sayed, University of Western Ontario, *1151 Richmond St., London, Ontario, Canada* N6A 3K7

Document the prevalence of lactose (milk) intolerance on Vitamin status in Canadian and Inuit children.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Child Health & Human Development funds n.a.

3.1023,

EPIDEMIOLOGY OF BEHAVIOR DISORDERS IN PRESCHOOL CHILDREN

F. Earls, Childrens Hospital Medical Center, *300 Longwood Ave., Boston, Massachusetts* 02115 (P30 HD 06276-090148)

This project is part of a broader program (HD 06276).

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Child Health & Human Development funds n.a.

3.1024,

EPIDEMIOLOGY OF VASECTOMY AND ATHEROSCLEROSIS

A.A. Rimm, Medical College of Wisconsin, School of Medicine, Dept. of Preventive Medicine, *561 N. 15th St., Milwaukee, Wisconsin* 53233

No summary has been provided to the Smithsonian Science Information Exchange.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Child Health & Human Development $86,000

3.1025,

LONG-TERM EFFECTS OF DIETHYLSTILBESTROL DURING PREGNANCY

A.L. Herbst, University of Chicago, Pritzker School of Medicine, Dept. of Obstetrics & Gynecology, *5801 S. Ellis Ave., Chicago, Illinois* 60637

OBJECTIVE: Continue examinations of both male and female offspring of women given diethylstilbestrol (DES) or placebos during pregnancies in 1951 and 1952 in a double-blind study. The aim is to assess the possible long-term effects of DES on sexual development, fertility, complications in pregnancy, and the development of precancerous lesions or carcinoma. It is also proposed to continue follow-up of the mothers who were administered DES or placebos during pregnancies. They should be contacted at least once during the three-year period for telephone interview, with documentation of pathology by hospital records.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Child Health & Human Development $208,280

3.1026,

OUTCOME OF SUCCESSIVE PREGNANCIES FOR NORWEGIAN WOMEN

L.S. Bakketeig, Universitetet i Trondheim, *7000 Trondheim, Norway, Norway*

Study the epidemiology of low birth weight and preterm delivery using the outcome of several successive pregnancies in a large population of women. Since the mother's identification number is recorded on the birth certificates, it is possible to retrieve medical information about consecutive births to the same mother. This system of data collection was begun in 1967, data is now available over a ten year span. This time period will provide a sufficient number of large sibships in order to examine the importance of familial tendencies for pregnancy outcome.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Child Health & Human Development $5,150

3.1027,

PERINATAL INFECTIONS, IMMUNITY AND MALDEVELOPMENT

C.A. Alford, University of Alabama in Birmingham, School of Medicine, Dept. of Pediatrics, *1919 7th Ave. S., Birmingham, Alabama* 35233 (P01 HD 10699-04)

The major objective of the program project is to study the natural history of perinatal cytomegalovirus (CMV) infections in mothers, infants and children by large scale, prospective and longitudinal investigations. The CMV studies include in the mothers: 1) the role of recurrent versus primary infection in intrauterine and intrapartal transmission, 2) mechanisms of fetal transmission with recurrent maternal infection and, 3) effect of pregnancy hormones on growth of CMV. In infants and children they include studies on: 1) long-term developmental outcome, 2) assessment of immunologic assays for detection of silent infection in the newborn, 3) pathogenetic studies of severe disease and, 4) nature of immune complex formation in congenital CMV. In addition, longitudinal studies of the humoral and cellular immune response in the maternal, congenital and natal infections are to be determined and related to virologic and clinical parameters over time. Human strains of virus are to be also genetically analyzed and related to the disease state in man to search for microbial virulence factors.

BIBLIOGRAPHIC REFERENCES: Knox, G.E., Pass, R.F., Reynolds, D.W., Stagno, S. and Alford, C.A.: Comparative prevalence of subclinical cytomegalovirus and herpes simplex virus infections in the genital and urinary tracts of low income, urban females. J. Infect. Dis., 1979 in press. Reynolds, D.W., Dean, P.H., Pass, R.F. and Alford, C.A.: Specific cell mediated immunity in children with congenital and neonatal cytomegalovirus infection and their mothers. J. Infect. Dis., 1979 in press.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Child Health & Human Development $381,285

3.1028,

DETERMINANTS OF URBAN MORTALITY - LATE 19TH CENTURY PHILADELPHIA

G.A. Condran, University of Pennsylvania, School of Public & Urban Policy, Dept. of Demography, *203 Logan Hall, Philadelphia, Pennsylvania* 19104 (R01 HD 12413-03)

The proposed research focuses on the determinants of the urban mortality transition in the late nineteenth and early twentieth centuries. Although scholars agree that major advances in diet and nutrition, sanitation and environment, and medicine and medical care all contributed to a decline in mortality, few specifics are known about their separate effects. We propose to examine the relative contributions of these various factors through an intensive case study of the shifts in mortality in the city of Philadelphia from 1880 to 1930. Using both published aggregate mortality statistics covering the entire time period, and data for individual decedents from 1880, 1900, and 1930, we will study the changes in the age and cause-of-death structure of mortality during the transition.

Our specific aims are threefold. First, to isolate the shifts in cause- and age-specific mortality rates which account for the change in the overall mortality levels in Philadelphia. Second, to examine mortality differentials by race and ethnicity, by geographic area, and by socioeconomic status for the years 1900 and 1930. These efforts will build upon our ongoing analysis of the same differentials in 1880. We will establish whether the mortality decline occurred differentially across population subgroups and across spatial units within the city. Third, to determine the changes in mortality from specific causes in relation to the factors affecting mortality levels. The relative contributions of changes in food and housing, public health measures, and improvements in medical practice along with changes in the population composition and the general environment will be examined for the city as a whole and for small areal units within the city. This analysis will use individual death records in conjunction with data from a combination of sources including vital statistics reports, board of health reports, manufacturing and population censuses, and hospital records.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Child Health & Human Development $134,539

3.1029,

BOTULINAL TOXIN AS ONE CAUSE OF SUDDEN INFANT DEATH

J. Chin, State Dept. of Health Services, Infectious Disease Section, *2151 Berkeley Way, Berkeley, California* 94704 (R01 HD 12530-02)

This study is investigating the part played in Sudden Infant Death Syndrome (SIDS, crib death) by infant botulism, a recently-recognized infectious disease of the intestine. To do so, more senitive diagnostic techniques are being developed. In addition, epidemiological information that bears on host and environmental factors in pathogenesis is being collected.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Child Health & Human Development $237,019

3.1030,

SUPPORT FOR POPULATION CENTER

J.R. Udry, University of North Carolina, Chapel Hill Campus, Carolina Population Center, Dept. of Sociology/Maternal & Child Health, *Chapel Hill, North Carolina* 27514 (P30 HD 05798-06A2)

This is a proposal for the renewal for another five years of the existing Centers Award administered by the Carolina Population Center.

The proposal requests a continuation of core research services support in four areas encompassed by the existing award: (1) research development and coordination, (2) publication services, (3) library and reference services, and (4) demographic and technical support. Increased support is requested in the latter two areas, reflecting the changing directions and needs of the Center.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Child Health & Human Development $290,241

3.1031,

MENTAL RETARDATION RESEARCH PROGRAM

C.F. Barlow, Childrens Hospital Medical Center, *300 Longwood Ave., Boston, Massachusetts* 02115 (P30 HD 06276-09)

This program-project requests CORE and implementation support for broadly based program for the study of mental retardation and related aspects of human development. The scientific base for the program rests upon investigation in three major areas: (a) Genetics and Metabolism; (b) Neuroscience; (c) Behavioral Science; all converging on a fourth area, (d) Clinical Studies of the Human Subject. The methodological and philosophical approaches include the clinical disciplines of pediatrics, neurology, neurosurgery, radiology, psychiatry, psychology, ophthalmology, otology and the basic science disciplines of pathology, physiology, pharmacology and biochemistry. The program is housed in five floors of the Pediatric Sciences Building.

The objective of the program is to provide a scientific and clinical base for the better understanding of the factors leading to mental retardation and to apply this information to prevention of the disorder, and management of the mentally handicapped individual.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Child Health & Human Development $483,545

3.1032,
PREGNANCY OUTCOMES IN HUMAN POPULATIONS

M.P. Mi, University of Hawaii System, Manoa Campus, John A. Burns School of Medicine, Dept. of Genetics, *2444 Dole St., Pacific Biomedical Res. Ctr., Honolulu, Hawaii* 96822 (R01 HD 12142-03)

The project is to utilize two computerized population data bases for genetic and epidemiologic studies of pregnancy outcome. These unique resources, one in Hawaii and the other in British Columbia, have been similarly developed from routinely produced vital and ill-health records. These include records of all fetal, infants, and childhood deaths and livebirths recorded in each population over a long period of time. In addition, records from a health surveillance registry and selected childhood hospitalization are also available in one of the populations. By means of computerized linkages, these records have been assembled into individual and family health histories on a population basis. It is planned to analyze the etiological components of empiric risks of fetal wastage, perinatal and infant deaths, and congenital malformations at a population level. It is specially designed to study familial recurrence risks of pregnancy wastage and to develop means for identifying high-risk families.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Child Health & Human Development $83,715

3.1033,
DETERMINANTS OF CHILD MORTALITY

T.P. Schultz, Yale University, Graduate School, Dept. of Economics, *206 Elm, New Haven, Connecticut* 06520 (R01 HD 12172-03)

The proposed research is concerned with the development of approaches to evaluating the impact of family planning and medical inputs on infant health. The major objective of the research is the measurement of the joint effects of family behavior, environmental factors and health program inputs, such as the use and availability of medical inputs, female labor-force participation, family size, cigarette smoking and pollutants, on infant mortality rates and birthweight. Statistical procedures will be used which take into account the potentially simultaneous nature of related household decisions and child health outcomes. Data on socioeconomic characteristics of family members, behavior, and measures of child health from national surveys will be analyzed in conjunction with aggregate data on the price and availability of various medical services in the region in which the household resides. The areal information on prices and conditions confronting the household may be assumed exogenous to its behavior and health outcomes. Linking this areal data to household records permits, therefore, one to identify how a variety of program activities and prices affect birthweight and child survival both directly and indirectly by influencing related household behavior. Within the limitations of existing data files and the many and imperfectly integrated hypotheses concerning the causes of child health status, the proposed research aims to test certain of these hypotheses in a common statistical and economic framework.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Child Health & Human Development $38,156

3.1034,
UREAPLASMA UREALYTICUM--THREAT TO PERINATAL SURVIVAL

R.B. Kundsin, Harvard University, Boston Campus, School of Medicine, Dept. of Microbiology & Molecular Genetics, *25 Shattuck St., Boston, Massachusetts* 02115 (R01 HD 10984-03)

This study proposes to prospectively investigate the presence of Ureaplasma urealyticum (T-mycoplasmas) in the lungs and fetal membranes of infants dying during the perinatal period. Cultures will also be done for Mycoplasma hominis, Chlamydia trachomatis, cytomegalovirus, aerobic and anaerobic bacteria, including Group B streptococci. The results will be correlated with perinatal death. The two most common disorders in which ureaplasmas have been implicated in the perinatal period are congenital pneumonia and chorioamnionitis. Chlamydia trachomatis and cytomegalovirus have been implicated in infants with interstitial pneumonia. Stillborn and liveborn deaths from 20 weeks' gestation through 28 postnatal days will be studied. It is anticipated that 100 such deaths will occur per year for a total of 300 in the three year period covered by this proposal. The results of cultures will be related to clinical and pathologic findings of the infant and with the histology of the placenta. As controls, 100 placentas of normal, full-term infants will be similarly cultured; 100 additional placentas of infants admitted to the intensive care unit and surviving will also be cultured. The microorganisms studied are sexually transmitted and genitourinary tract infections can occur prior to or during pregnancy. Fetal infection with these microorganisms is a logical sequel. The joint expertise of a pathologist, neonatologist, and microbiologists will all focus on the problem of perinatal mortality. Such a multidisciplinary approach should define the role of the microorganisms studied on poor pregnancy outcome.

BIBLIOGRAPHIC REFERENCES: Kundsin, R.B., Parreno, A., and Poulin, S.: Significance of appropriate techniques and media for the isolation and identification of Ureaplasma urealyticum from clinical specimens. J. Clin. Microbiol. 8(4):445-453, 1978.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Child Health & Human Development $143,905

3.1035,
PREGNANCY AND DES ASSOCIATED UPPER GENITAL ANOMALIES

R.H. Kaufman, Baylor College of Medicine, School of Medicine, Dept. of Obstetrics & Gynecology, *1200 Moursund Ave., Houston, Texas* 77025 (R01 HD 10989-04)

The investigators intend to continue their studies of the prevalence of upper reproductive tract anomalies in a patient population exposed in utero to diethylstilbestrol. These patients are adult females of child bearing age who were exposed in utero to diethylstilbestrol.

A relationship between upper genital tract abnormalities noted and pregnancy outcome will be studied. This will be accomplished by conducting a retrospective and prospective correlation of each patient's pregnancy outcome with the types of anomalies found.

The detection of the upper genital tract anomalies will be carried out by the use of hysterosalpingography.

The patients to be studied are presently enrolled in another federally funded project and will be contacted and recruited into the current study. Currently, over three hundred DES exposed women who have had hysterosalpingograms are being followed. It is proposed to increase the number of women studied by HSG to at least seven hundred and to further relate the pregnancy outcomes of these women to the changes noted in the x-ray studies.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Child Health & Human Development $98,821

3.1036,
PHYSIOLOGIC AND DEVELOPMENTAL MECHANISMS IN DIABETES

R.E. Greenberg, University of New Mexico, School of Medicine, Dept. of Pediatrics, *University Hill N.E., Albuquerque, New Mexico* 87131 (P50 HD 11327-04)

The general objective of this proposal is to develop a center of the study of the relationship between aberrant carbohydrate metabolism and developmental events in animals, established disease patterns in humans, its effect on the offspring and the mechanisms leading to the diabetic state in both animals and humans. It is anticipated that this effort will provide a more rational therapy for diabetic patients.

The specific objectives are to a) clarify the relationship between diabetes in women and the occurrence of congenital abnormalities in their offspring, b) determine the mechanisms operative in regulation of carbohydrate metabolism during immediate extrauterine adaptation, c) study the factors modulating insulin receptor number and/or affinity during development, d) study the mechanisms leading to hyperinsulinemia and its effects on hepatic hormone clearance, hepatic ketogenesis and glycogenolysis in the genetically obese rodent, e) develop an external programmable microelectronic control system for insulin administration in the control of diabetes mellitus in humans after appropriate observations in diabetic dogs, with an implantable pump reservoir system exploring the feasibility of intraperitoneal versus intravenous insulin therapy, and f) clarify the interrelationships between insulin binding, internalization and degradation and the factors that regulate the metabolic disposition of insulin.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Child Health & Human Development $288,010

3.1037,
DIFFERENTIAL FERTILITY & MORTALITY

R.C. Avery, Cornell University, Ithaca Campus, Center for International Studies, International Population Program, *Ithaca, New York* 14850 (R01 HD 11348-03)

The project studies comparative differential fertility and child mortality in four Central American nations (Costa Rica, El Salvador, Guatemala, and Honduras). Attention is focused on the period surrounding and prior to the 1970-round censuses, and particular interest is paid to the factors operating at the environmental level (involving the structure of the community, government and private services, housing, and household characteristics) and at the individual level. Two main sources of data are used: (a) large microsamples of the 1970-round censuses; and (b) data on small areal units constructed from various sources.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Child Health & Human Development $61,619

3.1038,
PREGNANCY COMPLICATIONS AFTER INDUCED ABORTION

M.B. Bracken, Yale University, School of Medicine, Dept. of Epidemiology & Public Health/Obstetrics & Gynecol, *333 Cedar St., New Haven, Connecticut* 06510 (R01 HD 11357-02)

This prospective cohort study will provide estimates of the relative and attributable risks of different induced abortion experiences and procedures for a number of complications of subsequent pregnancies, labor, deliveries and newborns.

All women (estimated n equals 8,000) who have made a first prenatal visit to physicians, health plans and clinics, and who anticipate delivery at Yale-New Haven Hospital, will be invited to participate in the study. To ascertain information about abortion experiences and other risk factors patients will be interviewed, with their physicians's consent, using a standardized questionnaire given by trained interviewers. Supplemental information will be obtained from physicians and clinics where abortion was obtained. Information about pregnancy outcomes will be obtained by surveying all deliveries at the hospital and linking these to respondents who have been interviewed. Obstetricians and patients may be recontacted if necessary.

In the analysis complications of pregnancy, labor, delivery and in newborns will be compared in women exposed and not exposed to prior abortion. Experience of abortion will include: number and sequence of abortions, technique used and gestation at abortion. Possible confounding factors will be accounted for such as: maternal age, pregnancy history, smoking history, history of venereal infections, interpregnancy intervals and contraceptive use. A multivariate analysis using log liner models will be used which can identify sub-groups of women who have unusually high or low risk of developing complications if exposed to induced abortion.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Child Health & Human Development $283,765

3.1039,
CONTRIBUTION OF IRON DEFICIENCY TO MENTAL RETARDATION

J.C. Martin, University of Washington, School of Medicine, Dept. of Psychiatry & Behavioral Sciences, *A-300 Health Sciences Ctr., SC-64, Seattle, Washington* 98195 (P01 HD 11680-02)

The most widespread nutritional deficiency in the country today is iron, particularly in pregnant women and children in different socio-economic strata. A variety of metabolic disturbances and physiological and developmental changes appear to be concommitants of iron deficiency during pregnancy, including low birth weights, increased still-birth rate, elevation of toxemia, and possible increases in fetal anomalies. Some studies suggest that iron deficient children have lower I.Q.'s and poorer academic performance. In addition they are described as inattentive, hyperactive, perseverative, and poorly integrated, all

behaviors which would retard their learning and performance.

Recent evidence for central nervous system disorders from iron deficiency which involve the serotonin pathway and by implication mental function, led to the enclosed program project. This is a collaboration between the departments of Psychiatry & Behavioral Sciences, Pediatrics, Laboratory Medicine, Medicine, Biostatistics and the Child Development Mental Retardation Center.

Th metabolic and behavior concommitants of iron deficiency will be examined both longitudinally in the infants of iron deficient women, and cross-sectionally in iron deficient children. In addition an animal model will be utilized in parallel studies.

Eight senior investigators are submitting four related research projects to be performed collaboratively.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Child Health & Human Development $418,483

3.1040,
UNSUSPECTED INFECTION AND PERINATAL MORBIDITY

E.H. Kass, Harvard University, Boston Campus, Peter Bent Brigham Hospital, Dept. of Medicine, *721 Huntington Ave., Boston, Massachusetts* 02115 (P01 HD 11924-03)

The role of unsuspected maternal infection in the pathogenesis of perinatal morbidity has assumed increasing importance as newer knowledge has accumulated. Classically, symptomatic infections have always been recognized as being responsible for much perinatal morbidity. Studies of asymptomatic bacteriuria have demonstrated a relation between unsuspected infection and perinatal morbidity. Recent observations in this laboratory now indicate a relation between genital mycoplasmas and such morbidity. It is proposed to explore further this relation by the the following approaches: 1) to continue ongoing studies of the effect of antimicrobial agents on the outcome of pregnancy, in terms of low birth weight, postpartum fever and associated morbidity; 2) to examine further the relation between changes in antibody titer to genital mycoplasmas and the outcome of pregnancy, with particular emphasis on the role of Ureaplasma urealyticum; 3) to study further the role of bacteremia due to genital mycoplasmas, and particularly that due to M. hominis, occurring during the second stage of labor; 4) To determine whether any specific serotype of M. hominis or of U. urealyticum is associated with morbidity; 5) to determine if genital mycoplasmas play similar role in pregnancies of women from more affluent social classes that they do in those of the social classes that have thus far been studied; 6) to determine interactive affect between genital mycoplasmas and other microflora of the genital tract, including Chlamydia trachomatis, trichomonas, group B Streptococcus, Haemophilus vaginale, Herpes hominis, selected anaerobes, and related microflora; 7) to investigate further the possible effect of U. urealyticum as a suppressant to antibody formation; 8) to continue analyses of the antigenic components of the membrane of different strains of genital mycoplasmas, in order to develop better serologic tests, and in order to isolate in purified form the major antigenic components.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Child Health & Human Development $206,520

3.1041,
CYTOMEGALOVIRUS - TRANSMISSION TO NEWBORNS BY BLOOD

A.S. Yeager, Stanford University, School of Medicine, Dept. of Pediatrics, *300 Pasteur Dr., Stanford, California* 94305 (R01 HD 09872-05)

The purpose of the investigation is to determine whether the risk of transfusion-acquired cytomegalovirus (CMV) infections in premature infants can be decreased by the use of donors who have no measurable antibody to CMV and to evaluate the most practical assay for use by a blood bank. Host factors which influence the severity of the disease in the baby are being evaluated.

Severe infections have been identified in infants of seronegative mothers. Surviving infected infants are being studied in comparison with controls for the possibility that prenatally acquired CMV infections result in long term sequelae in premature infants. Tests of vision, hearing and intellectual function are being performed at 1, 2 and 3 years of age. Current studies are aimed at identifying the reasons for the failure of infected infants to respond to CMV antigen in the lymphocyte transformation assay. The transmission of CMV from infected baby to seronegative household contacts is being investigated in an effort to evaluate the risk of transmission from infected infants to seronegative mothers during a subsequent pregnancy.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Child Health & Human Development $108,310

3.1042,
CLINICAL CORRELATIONS TO VITAMIN D STATUS IN INFANTS

L.S. Hillman, Washington University, School of Medicine, Dept. of Pediatrics, *660 S. Euclid Ave., St. Louis, Missouri* 63110 (R01 HD 09998-04A1)

The objectives of the grant are to define the short and long term effects of 25-hydroxy-vitamin D (25-OHD) deficiency, specifically focusing on 6 defined infant problems and to begin to define rational prophylaxis. To date, 80 premature and 35 SGA infants have been prospectively followed and 6 infants with late neonatal hypocalcemia and 30 SIDS infants have been studied. The study has defined 1) a high incidence of early neonatal hypocalcemia without significant correlation to low 25-OHD, 2) no evidence for 25-OHD deficiency in late neonatal hypocalcemia but evidence for low PTH, 3) a strong association between 25-OHD deficiency and osteopenia, fractures, and rickets plus hypocalcemia (P less than .01) and hypophosphatemia (P less than .01) at 3 months of age, 4) a significant (P less than .02) correlation between 3 month 25-OHD and 1 year height percentile correlated for gestation with a fourth of infants less than third percentile for height at 1 year, 5) a 25 percent incidence of abnormal upper incisors plus delayed eruption of teeth corrected for gestational age, 6) no evidence for a deficiency of serum 25-OHD in SIDS; however, confirmation of costochondral junction abnormalities. This grant will a) continue long term follow-up of infants currently enrolled in the study; b) begin to evaluate short and long term effectiveness of three alternative treatment trials; 1) higher dose vitamin D, 2) 25-hydroxycholecalciferal supplementation, and 3) calcium supplementation; c) further explore the roles of elevations of calcitonin and depression of PTH in early and late neonatal hypocalcemia; d) use tissue measurements to define whether total body deficiencies of calcium, magnesium, copper, and zinc do exist in premature infants and SIDS; e) further define histologically the normal process of in utero bone formation and define how premature infants with osteopenia and SIDS infants differ from that process.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Child Health & Human Development $95,787

3.1043,
SEX CHROMOSOMAL ABNORMALITIES - A PROSPECTIVE STUDY

A. Robinson, National Jewish Hospital & Research Center, *3800 E. Colfax Ave., Denver, Colorado* 80206 (R01 HD 10032-06)

The purpose of this research is to continue our study of a group of children with abnormalities of the sex chromosomes who were identified in a cytogenetic survey of 40,000 consecutive births from 1964-1974. Our long-term objective is to define the ultimate prognosis for each of these conditions--47,XXX; 47,XXY; 47,XYY; 45,X and mosaicisms of these. Data from biased samples of children and adults with these karyotypes indicate that they are at an increased risk for intellectual, emotional, social or physical problems in later life. The data from this 'Family Development Study' are being analyzed by comparisons between subgroups and by using chromosomally normal siblings as controls. We have identified delayed language development as an important problem in many of the propositi, and are conducting an in-depth study in this area.

The chief investigator and his associates have been receiving inquiries from all over the world as to the prognosis of fetuses identified in utero as having these karyotypes, thus stressing one significant result of these continuing studies.

BIBLIOGRAPHIC REFERENCES: Robinson, A., Lubs, H.A. and Bergsma, D. (eds.): Sex Chromosome Aneuploidy: Prospective Studies in Children. National Foundation--March of Dimes, Birth Defects: Original Article Series, Vol. XV. Liss, New York, 1979. Peakman, D.C., Moreton, M.F., Corn, B.J. and Robinson, A.: Chromosomal Mosaicism in Amniotic Fluid Cell Cultures. Am. J. Hum. Genet., 31:149-155, March 1979.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Child Health & Human Development $151,536

3.1044,
ACUTE RESPIRATORY ILLNESSES IN SURVIVORS OF INFANT RDS

M.G. Myers, University of Iowa, School of Medicine, Dept. of Pediatrics, *Jessup Hall, Iowa City, Iowa* 52240 (R01 HD 10598-03)

Infant survivors of idiopathic respiratory distress syndrome (RDS) develop pulmonary residua which are believed to predispose these infants to more frequent and/or more severe respiratory infections. To assess this aspect of the long-term morbidity of RDS, we are systematically and prospectively evaluating the frequency, severity, and etiologies of acute respiratory illnesses in survivors of RDS, and preterm infants who did not have RDS compared to normal infants matched for sex, race, season of birth and presence of pre-adolescent children in the household.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Child Health & Human Development $126,493

3.1045,
DEVELOPMENTAL EFFECTS OF LOW LEVEL LEAD EXPOSURE

H.L. Needleman, Childrens Hospital Medical Center, *300 Longwood Ave., Boston, Massachusetts* 02115 (P01 HD 08945-04A1)

This Program Project Grant proposes to extend our studies of low level lead exposure in children and experimental animals to address the following questions: 1) Does prenatal exposure to lead affect outcome at birth and later in life? 2) Does lead exposure have long delayed effects related to aging or late neurologic disease? 3) Does chelation prevent demonstrated changes in synaptic maturity and dendritic complexity?

Epidemiologic studies of gravid women and their offspring in which lead is the risk factor will conducted, treating birth outcome and later development as outcome variables.

Animal models of controlled lead exposure will be employed to test the same hypotheses under experimental conditions. Animals will be given controlled amounts of lead at varied periods of gestation, and offspring studied for ultrastructural changes in brain, distribution of lead by radiosotopes, and behavioral change by quantitative techniques. The effects of chelation on outcome will also be studied.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Child Health & Human Development $430,176

3.1046,
DIPLOCOCCUS PNEUMONIAE - INFECTION AND IMMUNITY

H.C. Dillon, University of Alabama in Birmingham, School of Medicine, Dept. of Pediatrics, *1919 7th Ave. S., Birmingham, Alabama* 35233 (R01 HD 09732-05)

The natural history of Str. pneumoniae infections is being studied in a group of infants now 3-4 years of age, who have been followed since birth. The relation between pneumococcal carriage, infection and immunity is being determined in prospective fashion. Pneumococci are serotyped with Danish reference antisera. Antibody is determined in this laboratory by NBT assay and by a newly developed ELISA method. Collaborative arrangements with Dr. Gerald Schiffman provide for antibody assay by the RIA technique. In addition to patients prospectively investigated, seroepidemiologic studies are being performed, utilizing sera for children and adolescents stored from prior investigations. Included in the latter are sera from patients with well-defined pneumococcal infections. including otitis media and bacteremia. Comparative epidemiology of pneumococcal infections in children and adults is investigated by examining collections of clinically relevant pneumococci from pediatric and adult infectious disease services. Host age range, clinical syndrome, serotype causing disease, serological response to infections and seasonal trends of pneumococcal disease are being determined.

BIBLIOGRAPHIC REFERENCES: Gray, B.M., Converse, G.M., and Dillon, H.C., Jr.: Further studies on

the natural history of pneumococcal infections in children. Clin. Res. 26:79A, 1978.
SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Child Health & Human Development $74,029

3.1047,
A PROGRAM OF RESEARCH IN POPULATION CYTOGENETICS

P.A. Jacobs, University of Hawaii System, Manoa Campus, John A. Burns School of Medicine, Dept. of Anatomy & Reproductive Biology, *2444 Dole St., Pacific Biomedical Res. Ctr., Honolulu, Hawaii* 96822 (R01 HD 07879-07)

Utilizing material from spontaneous and inevitable abortions and their parents and from mentally retarded males we will determine: (1) the origin of the additional chromosome in trisomics, the additional haploid set in triploids and the mutation in structural aberrations by the use of chromosome heteromorphisms; (2) whether age-related somatic non-disjunction is correlated with meiotic non-disjunction as measured by the production of trisomic conceptuses; (3) the contribution of chromosome aberrations and ABO blood group incompatibility to fetal wastage and the practicality of using spontaneously aborted fetuses for population surveillance for mutagens and teratogens; (4) the cytogenetic status of trophoblast disease; (5) the relationship of race and social class to the epidemiology of trophoblast disease; (6) whether the source of the X-chromosome is related to its activation or inactivation and whether an active paternally derived X-chromosome in trophoblast plays any part in the genesis of trophoblast disease; (7) a method for enhancing the appearance of the abnormal X-chromosome in Renpenning's syndrome and the formal genetics and effect on retardation of the abnormal chromosome and its frequency among mentally retarded males.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Child Health & Human Development $280,431

3.1048,
MENTAL RETARDATION RESEARCH CENTER

N.A. Buchwald, University of California, Los Angeles Campus, Neuropsychiatric Inst., *760 Westwood Plaza, Los Angeles, California* 90024 (P30 HD 04612-12)

This proposal provides central support for Research in Mental Retardation at UCLA. The Mental Retardation Research Center at UCLA is a multi-funded, interdisciplinary research and teaching program which has the following objectives: 1. Research into problems of mental retardation and related aspects of human development. 2. Research training, at the pre- and post-doctoral levels, of specialists in a variety of disciplines related to our goals.

Studies fall into the following categories: Developmental Biology, Neurophysiology, Neurobiochemistry and Socio-Behavioral Research. Most of our research efforts are carried out on the UCLA campus. Additionally, a large multi-disciplinary research program exists at the Pacific State Hospital (recently renamed Lanterman State Hospital) in Pomona, California.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Child Health & Human Development $676,672

3.1049,
PROGRAM FOR THE DEVELOPMENT OF THE MENTALLY RETARDED

R.K. Eyman, University of California, Los Angeles Campus, Neuropsychiatric Inst., Dept. of Psychiatry, *760 Westwood Plaza, Los Angeles, California* 90024 (P01 HD 05540-09)

The proposed research will investigate the effects of residential and educational environments on four sets of outcome variables as they relate to the mentally retarded: (a) mortality and the development of adaptive behavior, (b) personal-social development, (c) cognitive development, and (d) school and home adaptation. The research is based on rigorous investigation of the impact of two powerful and pervasive forces in the provision of services for mentally retarded persons - the principles of normalization and mainstreaming. In addition, the longitudinal study of mortality and changes in adaptive behavior for a five- to ten-year period is suggested to discern developmental trends on a large population of mentally retarded individuals from a number of states.

Four interrelated projects are proposed, each of which has its own specific aims, methods of procedure, and significance. All of them relate to the basic model, and all have as their ultimate objective the discovery of ways to improve retarded individuals' adaptation to their environments.

BIBLIOGRAPHIC REFERENCES: Chaney, R.H., Eyman, R.K., & Miller, C.R. Comparison of respiratory mortality in the profoundly mentally retarded and in the less retarded. Journal of Mental Deficiency, 1979, 23, 1-7. Eyman, R.K., Demaine, G.C., & Lei, J. Relationship between community environments and resident changes in adaptive behavior: A path model. American Journal of Mental Deficiency, 1979, 83 (4), 330-338.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Child Health & Human Development $525,759

3.1050,
EFFECTS OF VARNISH AND TRACE ELEMENTS ON ENAMEL FLUORIDE AND DENTAL CARIES

D.H. Retief, University of Alabama in Birmingham, School of Dentistry, Dept. of Biomaterials, *1919 7th Ave. S., Birmingham, Alabama* 35233 (P50 DE 02670-130036)

One of the objectives is to evaluate in vitro and in vivo fluoride uptake by enamel from topical fluoride varnishes. Calcium fluoride is the main reaction product when topical fluoride agents are applied to enamel surfaces. Fluoride-containing varnishes have been introduced to prolong the contact time of topically applied fluoride to enamel and thus promote the formation of fluoroapatite.

The application of fluoride-containing varnishes to enamel resulted in significantly increased fluoride uptake, distribution and retention when compared to acidulated phosphate fluoride. An interesting finding in this in vitro study was that the fluoride uptake by enamel was inversely related to the fluoride concentration of the enamel prior to topical fluoride application.

The relationship between enamel fluoride content and caries experience in a community living in an endemic fluoride area with fluoride content in the drinking water of 3.2 ppm was determined. A highly significant positive association between caries experience and enamel fluoride concentration was established.

It is proposed to further investigate the acquisition of fluoride by enamel after treatment with fluoride-containing varnishes. Particular attention will be paid to the retention of the acquired fluoride after prolonged immersion in synthetic saliva and the effect of more frequent topical applications on fluoride uptake.

The caries inhibitory effect of the fluoride-containing varnishes will be evaluated in the rat, and attempts will be made to relate caries inhibition with enamel fluoride concentration.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Dental Research $60,014

3.1051,
PERIODONTITIS AND HOST DEFENSE IN JUVENILE DIABETES

B.H. Park, State University of New York, Health Science Center at Buffalo, Childrens Hospital of Buffalo, Dept. of Pediatrics/Microbiology & Immunology, *219 Bryant St., Buffalo, New York* 14222 (R01 DE 05505-02)

Patients with diabetes often suffer from undue infection. Juvenile diabetes (insulin-dependent diabetes mellitus - IDDM) is one form of diabetes which affects mainly children and young adults. Some of these young diabetics are known to have particular difficulty in controlling their diabetes and consequently have more complications of diabetes. One of the complications, which precipitates the so-called 'diabetic ketoacidoses' is infection; some overt, others hidden unnoticed.

We have found that more than 20% of young adult (12 years or older) diabetics have periodontal infection with bone loss (jaw bone) demonstrable X-ray examination. The onset of the periodontal complication appears to coincide with puberty, related to poor dental hygiene and to poor control of their diabetes.

We plan to examine further the exact nature of the periodontal complications in our juvenile diabetes patients with regard to: 1) What is the natural course of the development of the periodontal disease, a longitudinal study? 2) What microbial agent is responsible for the development of the infection? 3) How can these lesions be treated? 4) How can these complications be prevented? 5) What defect in immunological, host defense mechanism can be associated with the development of periodontal complication?

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Dental Research $44,691

3.1052,
PSYCHOMOTOR IMPAIRMENT RELATED TO N2O EXPOSURE

P.A. Moore, Harvard University, Boston Campus, Harvard School of Dental Medicine, Dept. of Oral Biology, *188 Longwood Ave., Boston, Massachusetts* 02115 (R23 DE 05507-01)

In an effort to determine the risk involving exposure to nitrous oxide (N2O), this research proposal is designed to define the psychomotor impairment related to the exposure of humans to N2O. The work during the first year of this project will involve constructing a testing chamber where the concentration of N2O can be carefully controlled and monitored. A forced choice, audiovisual reaction time testing apparatus for evaluating the psychomotor impairment will be designed and its accuracy and sensitivity will be evaluated. Following development of this testing environment, healthy young adults will be exposed to various concentrations of N2O and the dose dependent decrease in function will be determined. The lowest concentration of N2O that induces impairment (threshold) will also be determined. This initial work will serve as baseline data for the studies of the second and third year of the project. The changes in threshold and dose vs. impairment relationship will be determined following prolonged exposure to low concentrations of N2O (a situation similar to occupational exposure) to repeated high concentrations of N2O (a situation similar to recreational exposure). Changes in the rate of recovery following N2O exposure will be determined following therapeutic exposures of long and short duration. Recovery will be similarly evaluated following different concentrations of therapeutic exposure. The results of this study will be valuable in constructing guidelines for the safe use of N2O in dentistry.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Dental Research $47,165

3.1053,
THE EFFECT OF SCHOOL WATER FLUORIDATION ON DENTAL CARIES

S.B. Heifetz, U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Dental Research, Community Programs Section, *9000 Rockville Pike, Bethesda, Maryland* 20205 (Z01 DE 00029-13 CPR)

Fluorides were added to the water supply of a school in Seagrove, North Carolina. The concentration of fluoride used was higher than the level considered optimal for the community water fluoridation in the geographic area. Children attending the Seagrove school live in an area without a central water supply and where the various sources of well water contain negligible levels of fluoride. Children are exposed to the higher fluoride level only while at school in an attempt to approximate the total fluoride intake of children who drink optimally fluoridated water on a full-time basis. Baseline dental examinations for dental caries were made prior to the installation of fluoridation equipment. Follow-up examinations were conducted after four, eight, and twelve years to determine the extent of caries protection as increasingly larger segments of the study population become continuously exposed to fluoridated water at school since entering the first grade. Results of the four- and eight-year examinations on full beneficiaries of the procedure showed decreases in caries prevalence of 30 and 40%, respectively, compared with baseline findings. On the eight-year examinations, an assessment of the prevalence of dental fluorosis showed that no children had any definite signs of the condition.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Dental Research $13,621

3.1054,

ASSOCIATION OF STREPTOCOCCUS MUTANS WITH DENTAL CARIES REDUCTION IN A SCHOOL POPULATION

L.A. Thomson, U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Dental Research, Etiology Section, *9000 Rockville Pike, Bethesda, Maryland* 20205 (Z01 DE 00228-04 CPR)

Dental plaque is being studied to determine whether changes in microorganisms, specificially Strep. mutans, occur during fluoride preventive procedures. The school population consists of children using fluoride rinses either daily or weekly, as well as some children using placebo solution. Dental plaque samples are obtained periodically and analyzed using cultural methods and fluorescent antibody reagents specific for bacteria under study. Plaque samples were obtained at the following times: Fall, 1976, Spring, 1977, Fall, 1977, and Fall, 1979. Saliva samples were also obtained during the 1979 examination. Alterations in plaque composition during the study period will be compared with the changes in the caries incidence.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Dental Research $27,339

3.1055,

PREVALENCE OF DENTAL CARIES AND DENTAL FLUOROSIS IN AREAS WITH OPTIMAL AND ABOVE OPTIMAL CONCENTRATIONS OF FLUORIDE IN THEIR WATER SUPPLIES

H.S. Horowitz, U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Dental Research, Community Programs Section, *9000 Rockville Pike, Bethesda, Maryland* 20205 (Z01 DE 00277-01 CPR)

In 1980, a cross-sectional survey to measure the prevalence of dental caries and dental fluorosis was conducted in several study sites served by public water supplies that contained natural fluorides at approximately the optimum recommended concentration and at two, three and four times the optimum. Only children who were continuous residents since birth at each site and who used the public water supply as their primary source of drinking water were included in the survey. About 800 children, ages 8-15 years, were examined. Dental caries was assessed with the DMF surface index and dental fluorosis was measured traditionally with Dean's Index and with a newly developed tooth surface index of fluorosis (TSIF). Fluorosis was assessed independently in each child by each index. In addition, color photographs were taken to depict varying degrees of fluorosis.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Dental Research $26,555

3.1056,

GENETIC POLYMORPHISMS OF SALIVA

E.A. Azen, University of Wisconsin, Madison Campus, Medical School, Dept. of Medicine, *450 N. Randall Ave., Madison, Wisconsin* 53706 (R01 DE 03658-16)

We will identify new genetic polymorphisms in saliva using a variety of electrophoretic and staining methods with special emphasis on isoelectric focussing. Major components and defined systems will be studied first followed by fractionation of saliva and radiolabelling of trace components. We will extend linkage studies of genes for proline-rich proteins to include six loci (Pr, Dd, Pa, Gl, Pm and Ps). The gene order and map distances will be estimated and an attempt will be made to assign the cluster of genes to a chromosome by linkage studies with a variety of known genetic markers. We will extend epidemiologic studies, showing a relationship between phenotypes in the polymorphic systems and dental disease, by increasing the population base and including several new genetic markers (Gl, Pm, and Ps) in the analysis. We plan to develop a program at the University of Wisconsin through collaborative arrangements, for the molecular cloning of the proline-rich protein gene complex in humans.

BIBLIOGRAPHIC REFERENCES: Azen, E.A., Hurley, C.K., and Denniston, C. Genetic polymorphisms of the major parotid salivary glycoprotein (G1) with linkage to the genes for Pr, Db and Pa. Biochem. Gen. 17: 257, 1979., in press. Azen, E.A. and Denniston, C. Genetic polymorphism of vitamin B12 binding (R) proteins of human saliva detected by isoelectric focussing. Biochem. Gen. 17: —, 1979., in press.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Dental Research $67,378

3.1057,

NATIONAL CARIES PREVALENCE SURVEY

T.W. McKenna, Westat Inc., *11600 Nebel St., Rockville, Maryland* 20852

Plan and conduct the gathering of data for a survey of the prevlence of dental caries among school aged children in the continental United States. Develop and utilize a probability sample according to NIDR specifications of children in grades Kindergarten through twelve (K-12). Conduct examinations for dental caries, gingivitis, and need foz dental treatment on children in randomly selected classrooms; record ther residence history; obtain and record the fluoride content of their drinking water; and provide these data to the NIDR. Examinations will be conducted during the 1979-1980 school year.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Dental Research $378,545

3.1058,

SELECTED FACTORS INFLUENCING INCIDENCE OF ORAL CLEFTS

J. Niebyl, Johns Hopkins University, School of Medicine, Dept. of Obstetrics & Gynecology, *725 N. Wolfe St., Baltimore, Maryland* 21205

A study to determine the feasibility of studying high-risk mothers (mothers who have given birth to cleft children previously) with respect to potential environmental and metabolic etiological factors affecting their children prenatally and resulting in oral clefts. The final target of such research would be to identify a large-scale high-risk group of mothers and to reduce the risk by modifying prenatal circumstances. The first step in the development of a preventive program for congenital cleft lip and palate will be to identify likely etiologic factors and explore a small population to determine the needs and objectives of a larger study.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Dental Research $0

3.1059,

THE BIOLOGY OF THE PERIODONTIUM IN HEALTH AND DISEASE

B.M. Levy, University of Texas, Health Science Center at Houston, Dental Branch, Dept. of Pathology, *6515 Freeman, Houston, Texas* 77025 (P01 DE 02232-10)

Research on the biology of the periodontium of various primate species from man to marmosets will be performed in a coordinated multidisciplinary program. The target is the control of human periodontal disease through an understanding of the basic disease processes. The basic objective of the program-project is the study of the periodontium as a biological unit in health and disease. Multidisciplinary and interdisciplinary experiments are designed to elicit the responsiveness of the periodontium to changes in its biological environment. A three-pronged interdiecipllnary attack on the problems of periodontal disease, designed to estabish the manner in which (I) environmental factors, (II) conditioning factors and (III) mediating factors interact to produce inflammatory periodontal disease in men and other primates has been developed. Thus, a solution to the complex health problem, periodontal disease, is being sought through coordinated research on multiple and interdisciplinary aspects of the problem. The effectiveness of the program is critically dependent upon the contribution of each member of the research team. The disciplines represented are: bacteriology, biochemistry, electron microscopy, histology, immunology, immunopathology, nutrition, oral physiology and virology.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Dental Research $0

3.1060,

INSTITUTE OF DENTAL RESEARCH

H.M. Fullmer, University of Alabama in Birmingham, School of Dentistry, Dept. of Pathology, *1919 7th Ave. S., Birmingham, Alabama* 35233 (P50 DE 02670-13)

The Institute of Dental Research, University of Alabama in Birmingham, conducts basic studies of connective tissues, mineralization, and oncogenesis, and basic and clinical studies of caries and periodontal diseases.

Specifically, studies will be undertaken in the following areas: the physicochemical, structural, and biological features of collagen; biochemical and structural aspects of dentin; the biosynthesis of heparin; the structure and function of link proteins of proteoglycans; mechanisms of fusion of biological membranes; interacting mechanisms between cell growth and preparation for cell division using polymorphonuclear leukocytes; the crystal structures of pea lectin and certain complement proteins; mechanisms and demineralization of bones and teeth; regulatory mechanisms for collagen biosynthesis in eukaryocytes using a plasmid and E. coli chi 1776; the genetic and biochemical basis for virulence of S. mutans; biochemical activities of S. mutans in relation to control of dental caries; and the effectiveness of various fluoride and other formulations in prevention of dental caries.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Dental Research $1,922,942

3.1061,

CENTER FOR CRANIOFACIAL ANOMALIES

S. Pruzansky, University of Illinois, Medical Center at Chicago, Abraham Lincoln School of Medicine, Dept. of Pediatrics, *1853 W. Polk St., Box 6998, Chicago, Illinois* 60680 (P01 DE 02872-12)

The Center for Craniofacial Anomalies of the A. Lincoln School of Medicine of the University of Illinois Medical Center at Chicago is a multidisciplinary organization that provides comprehensive care for patients with congenital, developmental, and acquired malformations. The Center contributes to special training programs in the health sciences and conducts clinical and laboratory research. The major research thrust is a continuing longitudinal growth study of the natural history of various malformations. The data base includes case histories, photos, study cases, cephalometric and tomographic radiographs, audiometric and speech records on approximately 5500 subjects. Current projects focus on the epidemiology and genetics of congenital palatopharyngeal incompetence and auricular and juxtaauricular malformations in isolation and in syndromes. Early treatment of serous otitis in children with cleft palate is being investigated under controlled conditions. Results of craniofacial surgery for orbital hypertelorism, Apert and Crouzon syndromes, hemifacial microsomia, and mandibulofacial dysostosis are evaluated in terms of subsequent growth and functional studies involving eye motility, vision, speech and hearing. Screening programs are underway to determine the frequency of ophthalmopathy in patients at risk for retinal detachment (Robin and Stickler syndromes). Clues derived from clinical investigation have led to electronmicroscopic studies in ectodermal dysplasia and abnormalities of mucopolysaccharide mechanisms. Family studies on congenital palatopharyngeal incompetence and auricular malformations are underway to allow estimates of recurrence risks. Brain stem electric response audiological studies in infants with craniofacial anomalies and controls have been initiated as part of a developmental study.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Dental Research $281,714

3.1062,

PSYCHOPHYSIOLOGY OF TMJ & OTHER FACIAL PAIN SYNDROMES

D.M. Laskin, University of Illinois, Medical Center at Chicago, School of Dentistry, Dept. of Oral & Maxillofacial Surgery, *1853 W. Polk St., Chicago, Illinois* 60680 (R01 DE 02899-11)

This research program emphasizes the psychological and physiological factors in the etiology and treatment of myofacial pain-dysfunction (MFD) syndrome and the objective evaluation of various physical, pharmacological and psychological modalities used for the management of this condition. Historical, physical and psychological data on patients with other atypical facial pain syndromes are also being collected with the ultimate objective of analyzing many of the same factors that initially led to a better understanding of MPD syndrome. Investigations of organic temporomandibular joint disorders are also continuing since their etiology must be understood in order to establish a rational approach to prevention and cure.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Dental Research $0

3.1063,

GENETIC AND EPIDEMIOLOGICAL STUDY OF SALIVARY PROTEINS

R.D. Friedman, Temple University, School of Dentistry, Dept. of Biochemistry, *3223 N. Broad St., Philadelphia, Pennsylvania* 19122 (R01 DE 04279-02)

Human parotid saliva contains many acidic proteins which are genetically determined. Studies have indicated that certain acidic salivary proteins absorb onto enamel surfaces, and that these proteins could be involved in the organization and development of the plaque matrix. The purpose of this study was to investigate the possible influence of salivary phenotype on individual proclivity to develop dental plaque, periodontal disease and/or caries. Each subject was clinically examined to determine their DMFS score, periodontal and dental plaque indices. A parotid saliva sample was collected for phenotyping. Pr and Db salivary phenotypes were analyzed with data obtained from 63 Caucasian subjects by one-way analysis of variance. Subjects that were phenotypically Db plus had a significantly (P less than 0.05) higher plaque index and higher periodontal index than Db-individuals. Thus far correlations were not discerned between Pr phenotypes and clinical observations. Chi-square analysis showed a disproportionate number of individuals with both Pr 1-2' and Db-phenotypes. There are indications that Caucasian individuals with the Db plus phenotype are more prone to developing dental plaque with concurrent periodontal disease.

BIBLIOGRAPHIC REFERENCES: Friedman, R.D. and Karn, R.C. (1977) Immunological Relationship and a Genetic Interpretation of Major and Minor Acidic Proteins in Human Parotid Saliva. Biochem. Gen. 15, 549-561. Karn, R.C., Friedman, R.D., Laughner, W.J., Merritt, A.D. and West, L.J. (1977) Purification and Partial Characterization of Human Salivary Protein-Rich Proteins. FASEB Meeting, Chicago, Ill.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Dental Research $0

3.1064,

STRONTIUM AND DENTAL CARIES

M.E. Curzon, Eastman Dental Center, Dept. of Caries Research, *625 Elmwood Ave., Rochester, New York* 14620 (R01 DE 04330-06)

Field studies will be carried out in the Fall of 1980 to collect further plaque samples for descriptive microbiology of subjects in low and high caries areas. These samples will also be used to study the physiology of oral bacteria as affected by trace elements in water supplies.

To continue studies on the possible ways of using strontium, with fluoride, as an anti-caries agent. In vitro studies on dissolution and subsequent remineralization will continue with Sr-F solutions.

Analytical studies on the availability of trace elements from vegetables and soils in N.W. Ohio will continue.

The morphology studies of strontium on tooth development will be completed.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Dental Research $87,789

3.1065,

LONGITUDINAL STUDY OF DENTAL ROOT SURFACE CARIES

R.P. Ellen, University of Toronto, Dept. of Clinical Sciences, *Medical Sciences Bldg., Toronto, Ontario, Canada* M5S 1A8 (R01 DE 04464-03)

A 3-year longitudinal clinical research project is proposed to study the incidence of root surface caries and the microbial flora associated with the initiation of lesions. The elderly population at Parkwood Hospital, London, Ontario, will be studied. A preliminary study of root caries prevalence in this population indicated that a sufficient number of new lesions should develop.

Each of approximately 50 subjects will be examined annually to record 1) plaque accumulation and periodontal inflammation indices; 2) distribution of developing root lesions; 3) distance of lesions from the crest of gingival margins; and 4) gingival recession. Bitewing radiographs will also be taken.

An average of 8 root plaque samples and a saliva sample will be collected from each subject three times annually. The samples will be diluted and plated on non-selective and selective media. After transportation of plates to Toronto, the proportions and isolation frequency of potentially cariogenic bacteria in the total cultivable flora will be determined, with special reference to Streptococcus mutans, Actinomyces viscosus, Actinomyces naeslundii, lactobacilli, enterococci, and Arthrobacter-like microorganisms.

A bacterial flora profile will be incorporated in the general computer analysis to determine the relationship of the degree of odontopathic infection and the clinical parameters measured. The degree of association of both bacterial and clinical parameters with the initiation of root lesions will be calculated. The data should indicate the microbial and periodontal environments which determine susceptibility to root caries or maintenance of root surface health.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Dental Research $0

3.1066,

LONGITUDINAL STUDY OF DENTAL ROOT SURFACE CARIES

D.W. Banting, University of Western Ontario, School of Dentistry, Paediatric & Comm Dentistry, *London, Ontario, Canada* (R01 DE 04465-03)

A 3-year longitudinal clinical research project is proposed to study the incidence of root surface caries and the microbial flora associated with the initiation of lesions. The elderly population at Parkwood Hospital, London, Ontario will be studied. A preliminary study of root caries prevalence in this population indicated a high risk of this disease.

Each of approximately 50 subjects will be examined annually to record: 1) plaque accumulation and periodontal inflammation indices; 2) distribution of developing root lesions; 3) distance of lesions from the crest of gingival margins; and 4) gingival recession. Bitewing radiographs will also be taken.

Root surface plaque samples will be collected from each subject three times annually. The samples will be diluted and plated on non-selective and selective media. After transportation of plates to Toronto, the proportions and isolation frequency of potentially cariogenic bacteria in the total cultivable flora will be determined, with special reference to streptococcus mutants, Actinomyces viscosus, Actinomyces naeslundii, lactobacilli, enterococci, and Arthrobacter-like micrcorganisms.

A bacterial flora profile will be incorporated in the general computer analysis to determine the relationship of the degree of odontopathic infection and the clinical parameters measured. The degree of association of both bacterial and clinical parameters with the initiation of root lesions will be calculated. The data should indicate the microbial and periodontal environments which determine susceptibility to root caries or maintenance of root surface health.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Dental Research $0

3.1067,

PLAQUE BACTERIA AS PREDICTORS OF HUMAN DENTAL CARIES

B.A. Burt, University of Michigan, Ann Arbor Campus, School of Public Health, Inst. of Environmental & Industrial Health, *Ann Arbor, Michigan* 48104 (R01 DE 04504-03)

The study is to assess the extent to which S. mutans, S. sanguis and organisms of the lactobacillus species precede the clinical manifestation of fissure caries. It will also examine, over time the quantitative relationship between these organisms in both clinically sound and in clinically carious teeth. The time sequence of colonization of the organisms, will be related to the development, or absence of development, of clinical caries, and the study will seek to demonstrate microbiological developments that predict the diagnosis of clinical caries with a high degree of probability. This three-year longitudinal study is an epidemiological-microbiological collaboration. The study began with 495 children aged 6-7 in the nonfluoridated community of Coldwater, Michigan, in April 1979. Each child is having samples of dental plaque taken from the occlusal fissures of the mandibular first permanent molars at six-month intervals, and is receiving a dental examination each year. Results of the subsequent bacterial counts are compared with the carious status of the teeth as determined by clinical examinations, and the results from various examination and sampling cycles compared.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Dental Research $91,549

3.1068,

A GENETIC STUDY OF HUMAN OROFACIAL CLEFTS

S.W. Oka, Lancaster Cleft Palate Clinic, Genetic Services, *24 N. Lime St., Lancaster, Pennsylvania* 17602 (R23 DE 04537-03)

Family pedigree data on 1178 probands are to be analyzed from a clinical epidemiological and from a genetic orientation. A subpopulation of pedigrees with a positive family history will be focused upon for the initial analysis to test specific genetic hypotheses including the generally accepted multifactorial threshold model.

Previously collected data include dental casts, facial photographs, and cephalograms. The cephalograms which were collected by family groups will be analyzed to compare basi-cranial and C1 and C2 mensurational relationships. This analysis will seek variant patterns of these structures in unaffected relatives. It will also enable a comparison of methodology by measuring these structures from radiographs as well as directly from digitally enhanced cephalograms.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Dental Research $0

3.1069,

AUTOMATED PHYSIOPRINTING OF FACIAL PATTERN

V. Sassouni, University of Pittsburgh, School of Dental Medicine, Dept. of Orthodontics, *C336 Salk Hall, Pittsburgh, Pennsylvania* 15213 (R01 DE 04584-02)

At this time, there is no practical, accurate, rapid and economical quantitative method of measuring the soft tissue appearance of the face. At the same time, many treatment decisions in orthodontics, maxillo-facial surgery, dento-facial prosthesis, are based on a subjective evaluation of facial balance.

The objectives of this proposal is to combine the physioprint, a standardized photographic technique, with automatic optical scanner to record and compute the facial pattern in three dimensions.

The five-year project is subdivided in the following manner: 1st year: Improvement of the physioprinting and its processing with automated optical scanner for quantitative data collection in three dimensions - Estimate of errors - Reduction of coordinates to the most meaningful ones (Parsimony). 2nd and 3rd Years - Application of the system for the establishment of facial soft tissue 'standards of normality' (in terms of association with normal occlusion) and of facial esthetic standards - These will have a major value for diagnostic and reference purposes. 4th year - Application of the system for the epidemiology of extreme facial variations in order to assess the nature and the severity of the soft tissue deviations. This study may provide criteria to determine 'handicapping malocclusion'. It also may give criteria for distinguishing patients in need of maxillofacial surgery rather than orthodontics. 5th Year - Initiate the application of this technique for the study of treatment effect on the face. This initial start into treatment may be followed by a second five-year project for the application of the technique to the diverse orthodontic, surgical or prosthetic treatment of dento-facial abnormalities.

The advantages of this system are its capabilities in recording, measuring and storing automatically large numbers of three-dimensional facial soft tissue measurements. Because the external soft tissue is closely the expression of underlying bone and teeth, this system may become, in part, a substitute for roentgenographic cephalometry, thus reducing radiation hazard to the population, without reduction of diagnostic information.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Dental Research $0

3.1070,

WORKSHOP ON THE ETIOLOGY OF FACIAL CLEFTING

D. Bixler, Indiana University, Indiana University - Purdue University at Indianapolis, School of Dentistry, Dept. of Oral Facial Genetics, *1121 W. Michigan St., Indianapolis, Indiana* 46202 (R13 DE 05213-01)

This proposal requests support for a 3-day workshop on the etiology of facial clefting. The meeting place will be the Airlie House in Virginia and participants will be invited. A panel of experts in the fields of teratology and embryology, genetics and mathematics and epidemiology will be presenting formal papers critically reviewing the current status of the

literature with regard to clefts in animals and humans. The emphasis is, however, heavily on the human data. Discussants of each formal presentation will be assigned and the entire workshop discussions and papers tape-recoded. The major topic areas to be considered are: (1) animal model systems (2) human population data (3) mathematical models applied to the etiology of clefts and (4) genetic and phenotypic markers related to clefting. The workshop will conclude with committee reports from each of these areas, and the entire group will make specific recommendations regarding the goals of future research in this area.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Dental Research $0

3.1071,

ORAL MANIFESTATIONS OF PHENYTOIN THERAPY

T.M. Hassell, University of North Carolina, Chapel Hill Campus, School of Dentistry, *Chapel Hill, North Carolina* 27514 (R13 DE 05433-01)

The purpose of this international symposium on oral manifestations of phenytoin therapy is to bring together, essentially for the first time, basic science and clinical researchers who have demonstrated expertise in approaching the various oro-facio-dental problems which result from long-term phenytoin ingestion. Fourteen invited speakers will present their most recent research in collagen biochemistry, immunology, histopathology, pathophysiology, teratology, periodontology, pharmacology, epidemiology and related fields. A panel discussion will permit direct interaction among experts in various disciplines.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Dental Research $0

3.1072,

DENTAL DISEASE AND WORK LOSS

S.T. Reisine, University of Connecticut, Health Center, School of Dental Medicine, Dept. of Behavioral Sciences & Community Health, *Farmington Ave., Farmington, Connecticut* 06032 (R23 DE 05497-01)

Measures of oral health status have traditionally been based on clinical measures of oral tissue pathology. Despite the growing movement in medicine to conceptualize health status in terms of ability to function in social roles, dental research has given little attention to the effects of oral conditions on an individual's social function level. The purpose of this study is to apply a behavioral approach to oral health status measurement by investigating the effects of oral conditions on work loss.

A prospective telephone survey will be used to collect work loss data on a randomly selected employed population in Connecticut. Data on sociodemographic factors, regularity of care, health insurance and paid work leave will be recorded during the initial interview. Each participant will be re-interviewed quarterly for one year to gather data on incidence of work loss. Data on health-related work loss, both oral and systemic causes, will be collected including work loss due to treatment and preventive visits, pain, anxiety and cosmetic appearance.

The incidence of work loss will be analyzed by major categories of oral and systemic conditions, treatment-related causes and psychological reasons. Incidence will be analyzed on an annual basis and on the basis of quarterly reports to identify seasonal variations. The effects of sociodemographic factors, health insurance and availability of paid sick leave will be investigated to determine if portions of the population are at greater risk or if any of these variables mediate work loss disability.

At the broadest level of concern, this study will provide baseline data on the social impact of oral conditions. This measure of oral health status may be of particular interest to health planners in predicting health care utilization and to social epidemiologists in defining health outcomes.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Dental Research $57,516

3.1073,

CLINICAL STUDIES OF OCCUPATIONAL BRONCHIAL ASTHMA (HUMAN)

S.M. Brooks, University of Cincinnati, College of Medicine, Dept. of Environmental Health, *Eden & Bethesda Aves., Cincinnati, Ohio* 45221 (P30 ES 00159-150026)

This project is part of a broader program (ES 00159).

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Environmental Health Sciences funds n.a.

3.1074,

BEHAVIORAL TOXICOLOGY (MONKEYS, MICE, PIGEONS, RATS, CHILDREN)

B. Weiss, University of Rochester, School of Medicine & Dentistry, Dept. of Radiation Biology & Biophysics, *601 Elmwood Ave., P.O. Box 607, Rochester, New York* 14642 (P30 ES 01247-060002)

This project is part of a broader program (ES 01247).

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Environmental Health Sciences funds n.a.

3.1075,

KINETICS AND TOXICOLOGY OF CADMIUM

J.M. Frazier, Johns Hopkins University, School of Hygiene & Public Health, Dept. of Environmental Health Sciences, *615 N. Wolfe St., Baltimore, Maryland* 21205 (ES00454-11)

The overall objectives of this research project are a) to investigate alterations in mechanical, biochemical, and physiological pulmonary function resulting from chronic inhalation of cadmium at dose levels equivalent to smoking three packs of cigarettes per day; b) to investigate the differences in systematic distribution and toxicity of cadmium in relation to the route of exposure, oral vs. pulmonary; and c) to investigate the mechanisms of pulmonary clearance of cadmium in the rat model.

Experiments involving chronic chronic inhalation of cadmium oxide aerosols (50 and 500 microgram/cu. m x 3 hr/day x 5 days/week x 52 week) and ingestion of cadmium chloride in drinking water (0.5, 5.0, and 50 ppm for 2 years) are being carried out employing male Wistar rats. Pulmonary and renal function tests are being employed to evaluate cadmium toxicity.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Environmental Health Sciences $35,000

3.1076,

METALLOTHIONEIN IN METABOLISM AND TOXICITY OF CADMIUM

Z.A. Shaikh, University of Rochester, School of Medicine & Dentistry, Dept. of Radiation Biology & Biophysics, *601 Elmwood Ave., P.O. Box 607, Rochester, New York* 14642 (ES 01448)

The proposed research will deal with the role of metallothionein in cadmium metabolism as well as toxicity. A radioimmunoassay procedure will be developed to measure metallothionein. Using this procedure, plasma and urine samples from rats experimentally exposed to cadmium and from occupationally exposed humans will be assayed for metallothionein. Renal tubular dysfunction will be correlated with the metallothionein level. Since genetic predisposition for sensitivity to cadmium-induced testicular damage and hypertension has been suggested, this will be evaluated with respect to metallothionein levels in tissues. Inbred strains of mice will be used to study the relationship of metallothionein to testicular damage. Cadmium will be administered by subcutaneous injections.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Environmental Health Sciences $30,277

3.1077,

MALIGNANT MELANOMA IN WOMEN USING CONTRACEPTIVE STEROIDS

R.E. Albert, New York University, School of Medicine, Dept. of Environmental Medicine, *100 Washington Sq. E., New York, New York* 10003 (P30 ES 00260-180097)

This project is part of a broader program (ES 00260).

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Environmental Health Sciences funds n.a.

3.1078,

ANALYTICAL CHEMISTRY UNIT

R.A. Hites, Massachusetts Inst. of Technology, Harvard M.I.T. Program in Health Sciences & Technology, *77 Massachusetts Ave., Cambridge, Massachusetts* 02139 (P30 ES 02109-039002)

This project is part of a broader program (ES 02109).

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Environmental Health Sciences funds n.a.

3.1079,

HAIR DYE USE AND BREAST CANCER (HUMAN)

R.E. Albert, New York University, School of Medicine, Dept. of Environmental Medicine, *100 Washington Sq. E., New York, New York* 10003 (P30 ES 00260-180095)

This project is part of a broader program (ES 00260).

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Environmental Health Sciences funds n.a.

3.1080,

FOSSIL FUELS, PROCESS STREAMS AND UTILIZATION (RODENTS, RABBITS, HUMAN)

E. Bingham, University of Cincinnati, College of Medicine, Dept. of Environmental Health, *Eden & Bethesda Aves., Cincinnati, Ohio* 45221 (P30 ES 00159-150034)

This project is part of a broader program (ES 00159).

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Environmental Health Sciences funds n.a.

3.1081,

EPIDEMIOLOGY AND BIOSTATISTICS

C.S. Clark, University of Cincinnati, College of Medicine, Dept. of Environmental Health, *Eden & Bethesda Aves., Cincinnati, Ohio* 45221 (P30 ES 00159-150039)

This project is part of a broader program (ES 00159).

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Environmental Health Sciences funds n.a.

3.1082,

ENVIRONMENTAL VARIABLES AND RESPIRATORY TRACT DEFENSES (HUMAN, DOGS)

D.F. Proctor, Johns Hopkins University, School of Hygiene & Public Health, Dept. of Environmental Health Sciences, *615 N. Wolfe St., Baltimore, Maryland* 21205 (P01 ES 00454-120012)

This project is part of a broader program (ES 00454).

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Environmental Health Sciences funds n.a.

3.1083,

MUTAGENESIS AND CARCINOGENESIS (HUMAN, MICROORGANISMS, HAMSTERS)

P.C. Huang, Johns Hopkins University, School of Hygiene & Public Health, Dept. of Environmental Health Sciences, *615 N. Wolfe St., Baltimore, Maryland* 21205 (P01 ES 00454-120024)

This project is part of a broader program (ES 00454).

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Environmental Health Sciences funds n.a.

3.1084,

AIRWAY SECRETION AND MUCOCILIARY FUNCTION IN DOGS

G.K. Adams, Johns Hopkins University, School of Hygiene & Public Health, Dept. of Environmental Health Sciences, *615 N. Wolfe St., Baltimore, Maryland* 21205 (P01 ES 00454-120025)

This project is part of a broader program (ES 00454). SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Environmental Health Sciences funds n.a.

3.1085,

EPIDEMIOLOGY OF HEAT STRESS (NEW YORK)

B.S. Pasternack, New York University, School of Medicine, Dept. of Environmental Medicine, *100 Washington Sq. E., New York, New York* 10003 (P30 ES 00260-180061)

This project is part of a broader program (ES 00260). SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Environmental Health Sciences funds n.a.

3.1086,

MORTALITY AND ENVIRONMENTAL FACTORS (BERGER COUNTY)

B.S. Pasternack, New York University, School of Medicine, Dept. of Environmental Medicine, *100 Washington Sq. E., New York, New York* 10003 (P30 ES 00260-180070)

This project is part of a broader program (ES 00260). SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Environmental Health Sciences funds n.a.

3.1087,

RADIONUCLIDES IN THE ENVIRONMENT (HUMAN)

M.E. Wrenn, New York University, School of Medicine, Dept. of Environmental Medicine, *100 Washington Sq. E., New York, New York* 10003 (P30 ES 00260-180036)

This project is part of a broader program (ES 00260). SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Environmental Health Sciences funds n.a.

3.1088,

MORTALITY STUDY OF OCCUPATIONAL EXPOSURE TO HALO ETHERS (HUMAN)

R.E. Albert, New York University, School of Medicine, Dept. of Environmental Medicine, *100 Washington Sq. E., New York, New York* 10003 (P30 ES 00260-180022)

This project is part of a broader program (ES 00260). SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Environmental Health Sciences funds n.a.

3.1089,

MORTALITY AMONG INDIVIDUALS TREATED WITH ARSENICALS

R.E. Albert, New York University, School of Medicine, Dept. of Environmental Medicine, *100 Washington Sq. E., New York, New York* 10003 (P30 ES 00260-180030)

This project is part of a broader program (ES 00260). SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Environmental Health Sciences funds n.a.

3.1090,

TOXIC HAZARDS IN FIRE ENVIRONMENT (HUMAN)

E.P. Radford, Johns Hopkins University, School of Hygiene & Public Health, Dept. of Environmental Health Sciences, *615 N. Wolfe St., Baltimore, Maryland* 21205 (P01 ES 00454-120027)

This project is part of a broader program (ES 00454). SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Environmental Health Sciences funds n.a.

3.1091,

ENVIRONMENTAL HEALTH SCIENCES CENTER GRANT

I.J. Selikoff, City University of New York, Mount Sinai School of Medicine, School of Medicine, Dept. of Community Medicine, *1 Gustave L. Levy Pl., New York, New York* 10029 (P30 ES 00928-07)

The research program will be focused in seven program areas: effects of low-level, long-term exposure to environmental agents, multiple-factor interactions, environmental cancer, asbestos-associated disease, biological properties of inorganic microparticles, halogenated aromatic hydrocarbons and related chemicals and evaluation of disease potential of new suspect environmental agents. In this we are primarily concerned with human health effects and utilize population studies as an essential methodological approach, with interdigitation of epidemiological, clinical, biological and physical sciences. Because of the recognized need to evaluate the magnitude of the problems studied, environmental evaluation is regularly added to provide quantitative information concerning dose-disease response relationships, to facilitate evaluation of proposals for regulations and control, and prevention of disease. Cooperative studies with occupational groups and identified populations in the general community subject to specific exposures provide an effective approach to such research aims and serve further to build the application of information into the process of seeking the data. Too, such investigations serve to identify groups of people which have been exposed to these agents, i.e., high risk groups. Preventive surveillance becomes feasible, in addition to modification of adverse exposure.

BIBLIOGRAPHIC REFERENCES: Fischbein, A., Wolff, M.S., Lilis, R. Thornton, J., and Selikoff, I.J. Clinical Findings among PCB-exposed capacitor manufacturing workers. Ann. N.Y. Acad. Sci. 320:703-715, 1979. Fischbein, A., Rice, C. Sarkozi, L., Kon, S., Lorimer, W., Holstein, E., Rosenman, K., Robinson, C.G., and Selikoff, I.J. Health effects of exposure to lead in firing ranges. J. Police Science Admin. 7(2): 172-178, 1979.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Environmental Health Sciences $1,291,930

3.1092,

EFFECTS OF SO2 AND RESPIRABLE PARTICULATES ON HEALTH

B.G. Ferris, Harvard University, Boston Campus, School of Public Health, Dept. of Physiology, *55 Shattuck St., Boston, Massachusetts* 02115 (R01 ES 01108-07)

This research is designed to determine whether exposures of human populations to levels of SO2 and particulates around the present ambient standards have an effect on the health of these populations. Random samples of adults and children have been selected in six communities with different levels of pollution and are being followed prospectively. We have completed the first six years and are about to start on our third survey of the adult population. Respiratory symptoms are obtained by means of a standard questionnaire and more objective data from tests of pulmonary function by spirometry. The exposure of the population is measured by data collected from a central station and satellite stations (about 10 per community, both indoor and outdoor). In addition, personal monitors are worn by a number of volunteers at different times of the year to determine how representative the data from the central station are for the exposure to mass respirable particulates.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Environmental Health Sciences $1,370,164

3.1093,

TRACE CONTAMINANTS:

T.W. Clarkson, University of Rochester, School of Medicine & Dentistry, Dept. of Radiation Biology & Biophysics, *601 Elmwood Ave., P.O. Box 607, Rochester, New York* 14642 (P30 ES 01247-05)

This grant provides core support for a program on trace contaminants with special emphasis on heavy metals. Several interrelated research programs in environmental toxicology have grown to the point at which consolidation into a center offers clear scientific and administrative advantages. The center will provide core facilities in terms of analytical and histopathological laboratories and services in data processing, pharmacokinetics modeling and biomathematics. It will provide resources to develop embryonic research ideas to the point at which independent support may be obtained. The core faculty will provide long-term continuity of professional expertise and experience in the general field of environmental health science, will provide a national resource to respond to urgent needs in its field, and will provide training for new professionals in the field.

The research in the center will be restricted to those trace contaminants most likely to affect human health. In the immediate future, the center will concentrate on the toxic heavy metals (Cd, Hg and Pb), in continuation of well-established projects at Rochester. Since multiple exposures (e.g., dietary methylmercury and selenium from pelagic fish) also occur, the interaction of heavy metals with other substances will be studied as well.

The center will pursue a coordinated program of studies on exposed human populations, on volunteers, and laboratory animals. This program has drawn support in the past, and will continue to draw support from virtually all the classical disciplines available in the medical center.

BIBLIOGRAPHIC REFERENCES: Al-Abbasi, A.E., Kostyniak, P.J. and Clarkson, T.W. An extra-corporeal regional complexing hemodialysis system for the treatment of methylmercury poisoning. III. Clinical applications. J Pharmacol Exp Ther 207: 249-254, 1978. Amin-Zaki, L., Majeed, M.A., Elhassani, S., Clarkson, T.W., Greenwood, M. and Doherty, R.A. Prenatal methylmercury poisoning. Clinical observations over five years. Am J Dis Child 133: 172-177, 1979.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Environmental Health Sciences $1,120,117

3.1094,

HEAVY METALS AS ENVIRONMENTAL HAZARDS TO MAN

T.W. Clarkson, University of Rochester, School of Medicine & Dentistry, Dept. of Radiation Biology & Biophysics, *601 Elmwood Ave., P.O. Box 607, Rochester, New York* 14642 (P01 ES 01248-05)

Quantitative estimates of the human health hazards posed by toxic metals in the environment play the key role in setting realistic exposure standards and in devising efficient preventive measures. Three recognized heavy metals provide the focus for this program project: mercury (both as methylmercury and as metallic mercury vapor), cadmium and lead. Since toxicity is typically both defined and determined by multiple factors, the research plan is also multidimensional. It encompasses investigations of the physical and chemical properties of metals and metal compounds that determine how they enter the body; of how they are handled (distributed, metabolized) by the body and its organ systems; of their capacity to impair the processes of reproduction and development; of their action on behavior and the nervous system; of their potential for tissue pathology; of their impact on the health of selected human populations.

BIBLIOGRAPHIC REFERENCES: Clarkson, T.W., Halbach, S., Magos, L., and Sugata, Y. On the mechanism of oxidation of inhaled mercury vapor. In: Molecular Basis on Environmental Toxicity. Ed. R.S. Bhatnagar. Ann Arbor Science Publishers, Ann Arbor, Michigan, pp. 419-427, 1980. Dunn, J. and Clarckson, T.W. Does mercury exhalation signal demethylation of mercury? Health Phys. 38(3):411-414,1980.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Environmental Health Sciences $873,600

3.1095,

AUDITORY EFFECTS OF LONG EXPOSURE TO LOW LEVELS OF NOISE

J.H. Mills, Medical University of South Carolina, School of Medicine, Dept. of Otolaryngology, *80 Barre St., Charleston, South Carolina* 29401 (R01 ES 01301-06)

The major objective is the specification of the qualitative and quantitative facts of noise-induced hearing loss, particularly asymptotic threshold shifts in human observers. A second objective is to specify the audiometric correlates of asymptotic threshold shifts, particularly temporal integration, psychophysical tuning curves, and physiological response assumed to arise from the brain stem and auditory cortex. Groups of human subjects are exposed to noise for durations as long as 48 hours. Measurements are made before, and after the noise exposure as well as during quiet periods interspersed

within an exposure. The exposures are selected in order to evaluate the Equivalent Power Model and/or to noise produce a given temporary hearing loss which can be evaluated with current psychophysical and physiological tests of hearing. Results are expected to have a significant impact on the topic of noise-induced hearing loss and in establishing criteria for the development of the acoustic environment. In addition, many of the methods developed here have immediate application to the diagnosis and treatment of hearing loss and deafness, particularly in infants and young children.

BIBLIOGRAPHIC REFERENCES: Mills, J. H., Adkins, W. Y., and Gilbert, R. M. (1978). High Frequency Hearing Losses Caused by Low Frequency Noise, Otolaryngology. 86, 821-823. Mills, J. H. (1978). Effects of Noise on Young and Old People, in Noise and Audiology, D. Lipscomb, Ed. University Park Press: Baltimore 229-241.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Environmental Health Sciences $86,263

3.1096,
BEHAVIORAL EFFECTS OF LEAD EXPOSURE IN CHILDREN

P.B. Hammond, University of Cincinnati, College of Medicine, Dept. of Environmental Health, *Eden & Bethesda Aves., Cincinnati, Ohio* 45221 (P01 ES 01566-02)

This is a prospective study of the effects of lead exposure on the physical and mental health of children. It is composed of both human and animal studies. The study of children is to be conducted in the natural environmental setting where elevated lead exposure is common. We hope to establish whether and under what environmental circumstances lead causes adverse health effects. Prospective mothers will be recruited into the study during the first or second trimester of pregnancy. Their offspring will be followed for five years. Since many factors are known to influence the behavioral and intellectual development of a child, a multivariate design will be used rather than design which employs a control versus experimental group comparison. Data to be collected on each child include; prenatal and delivery records; physical growth, behavioral and intellectual profiles beginning at 3 days of age and repeated at 9-month intervals; blood lead, FEP, and iron status at 3-month intervals; evaluation of the home environment with respect to quality of child care and sources of lead exposure. The animal studies will use rats exposed perinatally to low levels of lead. Tissue and blood will be monitored for lead and trace metal content. Other measures will include neurotransmitter metabolism, electrophysiological assessment and behavioral evaluation. The animal studies will explore critical periods, persistence and reversibility of toxicity and the utility of hematopoietic indices for identifying individuals at risk for subsequent behavioral impairment. Both human and animal studies will examine the role of age, duration and levels of lead exposure as determinants of effect as well as exploring leads interaction with numerous environmental variables as a determinant of toxicity. The ultimate purpose of all research on neurobehavioral effects of lead is to establish the minimal level of exposure at which effects may occur, as reflected in biological indices e.g., blood lead. A prospective study of the type proposed is necessary to answer crucial questions pertaining to the maximal safe level of exposure at any time in the child's life. Only with such a study can regulatory agencies institute proper control of exposure.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Environmental Health Sciences $519,221

3.1097,
SILICATE, PULMONARY SECRETIONS AND LUNG DISEASE

W.S. Lynn, Duke University, School of Medicine, Dept. of Medicine/Biochemistry, *Box 3711, Durham, North Carolina* 27710 (P01 ES 01581-03)

Characterization and quantitation of foreign substances, secretions and cells which accumulate in airways and interstitium of persons exposed to foreign inhalants and who develop impaired pulmonary functions is in progress. These foreign materials include, in addition to amorphous carbon, several types of crystalline aluminum silicates as well as silica. A major environmental source of these soil-type inflammagens is cigarette smoke but other sources, not yet identified, exist since similar crystals are also found in alveolar macrophages of non-smokers. The toxic effect of these accumulated silicious materials, on isolated alveolar macrophages, cultured Type II cells and pulmonary fibroblasts are in progress. These silicates, when contaminated with cigarette smoke, cause peritoneal macrophages to become cytotoxic against transformed cultured human cells, but do not alter growth rates of human Type II cells or pulmonary fibroblasts.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Environmental Health Sciences $256,238

3.1098,
LONGITUDINAL STUDY OF AIR POLLUTION ON MORTALITY

S.J. Finch, State University of New York, Stony Brook Campus, School of Engineering & Applied Sciences, Dept. of Applied Mathematics & Statistics, *Stony Brook, New York* 11794 (R23 ES 01686-02S1)

This study examines whether reductions in air pollution are associated with reductions in the prevailing mortality rates. The areas considered are census tracts that have 'high' residential stability; this restriction reduces the effect of migration into and out of the area. Analysis of data from Buffalo will be completed by the end of the first year of the project. Next year, data from Detroit, Seattle, and the major cities of Ohio will be analyzed. Results to date from Buffalo support the hypothesis of an association between reduced air pollution levels and a reduction in the prevailing mortality rate; however, these results are not statistically significant. Consideration of the larger data sets will clarify this point. In addition to time trend analyses, the study is examining whether there are any unusual geographical clusterings of mortality rate changes and performing other exploratory analyses. The deaths are analyzed by cause of death to specify the nature of the putative air pollution and mortality association. Primary attention, of course, is given to lung and chronic heart disease.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Environmental Health Sciences $4,052

3.1099,
ENVIRONMENTAL HEALTH SCIENCES CENTER

G.N. Wogan, Massachusetts Inst. of Technology, Harvard M.I.T. Program in Health Sciences & Technology, Dept. of Nutrition & Food Science, *77 Massachusetts Ave., Cambridge, Massachusetts* 02139 (P30 ES 02109-03)

The overall objective is to develop a series of data bases on which assessment of potential health consequences, especially total burden of environmental carcinogens and mutagens, resulting from utilization of fossil fuels can be made more objectively and with greater precision than is currently possible. The program of research has the objective of determining the character and range of potential health effects associated with several technologies for fossil fuel combustion by relating evaluations of a variety of biological responses to critical operating parameters characteristic of existing and alternative combustion equipment.

The ultimate aim is to define conditions of combustion for each of several fuel types which result in the emission of minimal amounts of substances with mutagenic and/or carcinogenic properties. This objective is being approached through the following lines of investigation: (1) Conducting parametric combustion studies using laboratory and larger-scale combustors to determine effects of temperature, equivalence ratio and fuel type on the formation of particulates and polycyclic compounds. (2) Subjecting selected samples from the combustion experiments to exhaustive chemical analysis. (3) Evaluating the biological and biochemical properties of selected samples produced under defined combustion conditions with respect to mutagenicity in bacteria and human cells and ability to form covalent adducts with nucleic acids when activated in vitro and in vivo.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Environmental Health Sciences $427,697

3.1100,
ABESTOS AND CANCER

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Our previous studies have failed to demonstrate a relation between numbers of asbestos bodies and the presence of carcinoma of the lung or gastrointestinal tract in workers with very low asbestos exposure. Asbestos bodies, however, represent only a part, and perhaps only a small part, of the total lung asbestos burden, which is composed of coated bodies as well as uncoated fibers. It remains possible that a relation exists between numbers of uncoated asbestos fibers and the presence of bronchogenic carcinoma. This study will attempt to quantify and type the uncoated asbestos fibers as well as asbestos bodies at various sites in the lung. A new preparative method has already been developed and used for examining and identifying the nature of the cores of asbestos bodies by electron diffraction. The same method will be used to identify further these same bodies by electron microprobe analysis. An additional preparative method has been devised for recovering uncoated asbestos fibers. Relations between numbers of coated and uncoated asbestos fibers, as well as their relative locations within the lung, will be tabulated, and an attempt will be made to correlate numbers or types of fibers with the presence or absence of carcinomas. We have previously shown that numbers of asbestos bodies are related to occupation; an attempt will be made to establish whether a similar situation exists for uncoated fibers or whether they are derived from the environment.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Environmental Health Sciences $24,724

3.1101,
RESPIRATORY EFFECTS OF HOUSEHOLD EXPOSURES

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In 1977, 1,950 adult residents of Washington County, MD were examined for respiratory symptoms and impaired ventilatory function by means of standardized procedures. Nearly half of these persons had never smoked; the remainder were cigarette smokers. By matching records from these respiratory examinations against the records from a private census of the county in 1975, it will be possible to identify which of the examined subjects were exposed to smokers in the household in 1975. This will give a close approximation of the 1977 exposure because relatively few persons changed their smoking habits during this two-year period. Other household exposures of possible importance for respiratory findings are respiratory infections in the household oxides of nitrogen, and summer pollens. The effects of these other exposures can be assessed by indirect indices: Probability of respiratory infection by the number of school children in the household; oxides of nitrogen by the use of gas for heating or cooking; and summer pollens by location of residence and the absence of air conditioning. The analysis will compare the frequency of respiratory symptoms and impaired ventilatory function among smokers and non-smokers with and without these exposures, using appropriate statistical adjustments for the effects of other exposures and confounding factors such as race, sex, age and socioeconomic status.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Environmental Health Sciences $616

3.1102,
METABOLIC EFFECTS OF LEAD

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Studies in the first period of these projects have demonstrated that the measurement of free erythrocyte protoporphyrin is an exquisite indicator of Pb poisoning. Free erythrocyte porphyrins can be measured rapidly and precisely by a micromethod (FEP test).

The proposed research will investigate the clinical significance of hemotological evidence of lead toxicity in asymptomatic children with moderately elevated body burden of lead. These studies will investigate whether, at equal blood Pb levels, more pro-

nounced metabolic effects reflect a greater body burden of lead and greater evidence of neurological toxicity.

These studies will evaluate the different content and the molecular species of protoporphyrin present in red cells fractionated according to age to provide an insight into the temporal sequence of lead exposure at time of testing to be used in diagnosis and treatment. These studies will also evaluate the effect of Fe deficiency on porphyrin elevation.

An epidemiological study will be performed in children, as well as in adults, to substantiate the evidence for a dose-effect relationship between body burden of Pb and metabolic interference. These studies will be performed in individuals with blood Pb in the range presently considered 'normal,' to demonstrate evidence of metabolic effects even in this range.

These studies will investigate the lag phase between exposure of animals to lead and elevation of porphyrins as well as the sequence of production of free and Zn-chelated protoporphyrin.

These studies will evaluate the mechanism of action of lead on the mitochondrial enzyme ferrochelatase and evaluate whether this is a specific effect or an interference with mitochondrial function and Fe transport.

BIBLIOGRAPHIC REFERENCES: Piomelli, S., Corash, L., Corash, M.B., Seaman, C., Mushak, P., Glover, B., Padgett, R.: Blood Lead Concentrations in a Remote Himalyan Population. Science 210: 1135-1137, 1980. Hart, D., Graziano, J., Piomelli, S.: Red Blood Cell Protoporphyrin Accumulation in Experimental Lead Poisoning. Biocham. Med. 23: 167-178, 1980.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Environmental Health Sciences $83,188

3.1103,
CASE-CONTROL STUDY OF HAIR DYE USE AND BREAST CANCER

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Because of the potential public health importance of the possible association between hair dye exposure and breast cancer, a case-control study has been designed to clarify the previous conflicting findings concerning this issue. About 780 breast cancer cases and 1560 controls will be obtained from a breast cancer screening clinic, and will consist of recent screenees and prospective screenees. The prospective cases will permit a history of hair dye use to be obtained before breast cancer is diagnosed. Latency effects and the confounding effects of other breast cancer risk factors will be taken into account in the analyses. The sample size will be sufficiently large to detect relative risks on the order of 1.3-1.5, and to permit relatively precise estimates of risk. Dose-response relationships and interactions between hair dye exposure and other risk factors will be assessed.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Environmental Health Sciences $141,028

3.1104,
EPIDEMIOLOGICAL RISK MODELING AND ESTIMATION

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The research project proposes to implement and investigate stochastic compartment model methodology as a tool in modeling and estimating epidemiological risk due to environmental stresses. Although not all modeling of risk factors can be accomplished using a compartment model formulation, most epidemiological models of assessing risk currently in use can be quite simply put into this framework. In this setting, both an empirical and a theoretical investigation will be made of the current methods of risk estimation including bias, robustness and statistical power of the tests. Which kinds of hypotheses can and cannot be examined using the various methods will particularly be studied.

The model proposed is easily generalized to represent more complex survival-death processes. This generalization lends itself to the estimation of risk when more specific mechanisms regarding possible environmental hypotheses are proposed. Once such example is the estimation of latency in cancer studies. A second example is in extending the definition of risk to multiple cause mortality data incorporating intermediate as well as underlying causes of death in assessing disease linkage (correlations and causal sequencing). Thus, the second aim is to develop a methodology which will expand the family of risk estimable models from epidemiological data. As in all compartment formulations, however, problems of parameter identifiability are present. Which parameters of these more complex models can be practically identified and the robustness of these estimates under model fluctuations is also to be examined.

BIBLIOGRAPHIC REFERENCES: Matis, J. H. and H. D. Tolley. 1980. On the Stochastic Modeling of Tracer Kinetics, Federation Proceedings 39, pp 104-109. Tolley, H. D. 1980. Adjusting Survival Data for Covariates, Proceedings of 1980 DOE Statistical Symposium, (in press).

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Environmental Health Sciences $28,461

3.1105,
WORKSHOP ON BRAIN TUMORS IN THE CHEMICAL INDUSTRY

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In November of 1978 the Occupational Safety and Health Administration received a complaint from an employee who stated that he was suffering from a brain tumor and knew of others with the same problem. This spurred a series of epidemiological investigations to determine whether this was a random occurrence or whether these tumors might be related to worker exposure to toxic substances at the plant. At the one facility in question, 18 brain cancer deaths have occurred to date and 25 other cases have been indentified at another plant; similar cases are being reported in petrochemical facilities in other parts of the world. It is our intention to bring together scientists from government, industry, academic institutions and labor to review the current state of the knowledge concerning occupational and environmental etiology of brain tumors. The consideration of currently available data will allow dissemination of state-of-the-art information to researchers throughout the world. It will further serve to assist in evaluation of etiological factors, of particular significance now as measures are considered for control of the problem.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Environmental Health Sciences $13,218

3.1106,
ENVIRONMENTAL HEALTH SCIENCES CENTER GRANT

R.R. Suskind, University of Cincinnati, College of Medicine, Dept. of Environmental Health, *Eden & Bethesda Aves., Cincinnati, Ohio* 45221 (P30 ES 00159-14)

Environmental Health Sciences Center Grant at the University of Cincinnati provides core support for interdisciplinary, in-depth research on environmental health problems of public health significance. The objective is to enhance understanding of environmental hazards affecting human health and components of man's ecosystem so that detrimental affects may be prevented and controlled. The scope of the research effort for which Center resources are used covers a wide range of interests: from molecular aspects of biological effects. Tc the study of populations at risk, as well as identification and quantitation of hazard factors in the environment.

The problem areas for which multilevel approaches are used include: 1) The role of essential trace metals in health and disease as influenced by environmental factors. 2) Health problems of non-essential toxic metals. 3) The behavioral parameters of environmental hazards. 4) The health aspects of energy sources, particularly fossil fuels. 5) The toxicology of plastics and their combustion products. 6) The carcinogenic, mutagenic, and teratogenic aspects of environmental hazards. 7) The toxicologic and health aspects of drinking water contaminants and wastewater factors. 8) Pulmonary metabolism and toxicology of environmental agents. 9) The clinical and epidemiologic study of occupational and community hazards. 10) The identification, measurement and control of environmental contaminants in air, water, wastes, industry, agriculture, consumer products, etc.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Environmental Health Sciences $1,052,135

3.1107,
CHEMICAL AND BIOLOGICAL DETERMINANTS OF TOXICITY

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This proposal for a program project represents a continuing effort on the part of a multidisciplinary team in studying the basic biological effects of a variety of environmental chemicals. The research team consists of professionals trained in the field of biochemistry, chemistry, physiology, microbiology, engineering, pharmacology, toxicology, morphology and pathology, oncology, and medicine. Included in the proposal are 11 separate research projects dealing with the question of mechanisms and determinants of toxicity induced by environmental chemicals. There are 4 projects dealing with neuro- and behavioral toxicity of compounds such as lead, manganese, methyl butyl ketone, organophosphates and carbon monoxide. Of particular importance in these projects are questions of in utero and neonatal exposure, of simultaneous exposures to multiple agents, and of effects on cerebral blood flow. Three projects deal with pulmonary toxicology of agents such as acrolein, paraquat cadmium, asbestos and fiberglass and deal specifically with effects on lung defense mechanisms and deposition of fibers. One project deals with the toxicology of the phthalic acid esters with emphasis on the lung, liver, and mutagenic potential; another with the toxicokinetics and lung toxicity of cadmium. Two projects deal with genetic toxicology and the potential mutagenicity/carcinogenicity of SO2, nickel, cadmium, and benzene. The objective of all these studies are: (1) to evaluate hazard so as to prevent disease, (2) to develop predictive assays, and (3) to lead to the development of rational therapeutic agents to reverse or prevent toxic effects.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Environmental Health Sciences $1,131,979

3.1108,
TOXICITY OF ORGANIC MERCURY FOR THE FETUS AND NEWBORN

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Numerous infants born to women consuming foods contaminated with organic mercury during pregnancy have exhibited severe neurologic sequelae after birth. Because of similarity to the human with respect to reproductive parameters, fetal maturation and placental transport, monkeys (Macaca mulatta and M. arctoides) will be used for the following studies. 1) Localization of methylmercury and sites of damage in the macaque brain are being compared in the fetal and adult monkey. 2) The teratoganic potential of methylmercury in the embryonic macaque will be evaluated. 3) Potential therapeutic measures will be examined where a differentiating organism is involved. 4) Women of child-bearing age also exposed to phenylmercury and mercury vapor. Thus, measurements of placental transfer and fetal toxicity following maternal administration of these substances are to be carried out.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Environmental Health Sciences $97,335

3.1109,
TASTE OF MIXTURES

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Taste stimuli encountered in the real world like tap water, foods, and beverages are mixtures. The major objective of this study is to provide a framework that will permit the prediction of the taste of a mixture from knowledge of the tastes of its components and the manner in which it was tasted. When taste substances are mixed, their tastes change in intensity even when there are no chemical interactions among

the tastants. The mixture interactions depend in part on the shapes of the psychophysical functions that describe perceived intensity versus concentration and in part on other variables not yet identified. The taste of a complex solution actually comes from two sources: the solutes and the water solvent in which they are dissolved. The taste of water itself depends on the substance to which the tongue is adapted. Water can taste sweet, sour, salty, or bitter if it follows adaptation to appropriate substances. For example, adaptation of NaCl makes water taste bittersour. Under normal conditons, the tongue is adapted to saliva which contains NaCl. The water taste produced by adaptation to saliva contributes to the tastes of mixtures. We propose to study the tastes of complex solutions by 1) identifying the variables that control mixture interactions and 2) determining the contribution of water taste to the tastes of complex solutions. The experiments will be conducted on human subjects with the ratio scaling technique of magnitude estimation, with matching procedures, and with threshold procedures. The results of these studies may suggest ways to improve the tastes of important mixtures like tap water since rules of mixture interactions could be used to predict how the removal or addition of a particular substance would change the taste of the mixture.

BIBLIOGRAPHIC REFERENCES: Bartoshuk, L.M., Rifkin, B., & Speers, M. Tastes of salts. To be included in ISOT VII (International Symposium on Olfaction and Taste, Vol. VII), 1980, in press.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Environmental Health Sciences $37,191

3.1110,
OCCUPATIONAL AND ENVIRONMENTAL HEALTH

J.L. Whittenberger, Harvard University, Cambridge Campus, School of Public Health, Dept. of Physiology, *Cambridge, Massachusetts* 02138 (P30 ES 00002-18)

This research, and research training program emphasizes a variety of laboratory studies and epidemiologic approaches to the study of the effects of environmental and occupational factors on the health of man. Specific examples include the following: biology of alveolar macrophages as a pulmonary defense mechanism; effects of breathing pattern and lung volume on the distribution of inhaled particles; development and exploitation of differentiated mammalian cell culture systems to detect, examine the mechanisms of action, and develop means for prevention or reversal of certain environmental chemical toxic agents; development of new chemical and immunologic assay methods for certain classes of environmental chemicals; development and use of affinity probes to identify the sites and molecular mechanisms of action of specific toxic agents; experimental lung cancer; malignant transformation in vitro; cancer morbidity and mortality among rubber workers; pulmonary function changes in granite dust exposures, toluene di-isocyante exposures, and other occupational exposures; the uses of proportional mortality analysis in identifying suspected occupational exposures; a prospective study of children and adults exposed to specific indoor and outdoor air pollutants.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Environmental Health Sciences $752,057

3.1111,
MECHANISMS OF PESTICIDE TOXICITY

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This project has a two-fold component concerning studies directed to biochemical and environmental toxicological research. The biochemical aspects are primarily involved with proteins, specially involved with molecular interactions. Dauterman's project is devoted to a study of pathways of metabolism effected by transferases and includes partial purification of these enzymes. Hodgson's project is an attempt to characterize the several components of P-450 mediated activities, including ligand interaction. Main's effort concerns purification of cholinesterase and kinetic properties of purified enzymes. Moreland's project concerns the effect of herbicides on the sequence of phosphorylative activities in mammals. Guthrie's project is directed to comparative penetration of dermal and oral applications of pesticides and their distribution by blood proteins.

The environmental aspects are divided between studies of the possible genetic effects of a number of xenobiotics and the possible effects on health of agricultural workers who enter fields previously treated with OP insecticides.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Environmental Health Sciences $342,829

3.1112,
STUDIES OF REPRODUCTIVE EFFECTS OF LOW-LEVEL RADIATION EXPOSURE

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A series of four epidemiologic studies is intended to evaluate the possible effects on human reproduction of low-dose radiation exposure. The individual studies are designed to specifically examine the relationship of radiation exposure to birth defects, spontaneous abortion, fetal and infant death, childhood cancer and human growth and development. Each of the studies focuses on different possible reproductive outcomes, but the studies and the study populations overlap and will provide complementary data. Two general populations are being studied. These are a cohort of nuclear workers (female workers and wives of male workers) who are occupationally exposed to low levels of radiation (external and internal exposures), and a cohort of births to nuclear workers. Data for all segments of the study will be collected using medical records, vital records, subject interviews, employment records or a combination of these sources.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Environmental Health Sciences funds n.a.

3.1113,
USE OF THE LABORATORY IN STUDIES OF ENVIRONMENTAL EPIDEMIOLOGY

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The long term objective of this project is the effective use of the laboratory in studies of environmental epidemiology. It will include interdisciplinary development of ideas and methodologies, coupled with attention to details of both the laboratory procedures and the gathering and analysis of human data. The effort will focus on the development of techniques identifying possible genetic damage in man by identification of exposures to genetic toxins or disruption of human cellular material suggesting genetic damage.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Environmental Health Sciences funds n.a.

3.1114,
STUDIES IN PEDIATRIC LEAD EXPOSURE

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Lead exposure and undue absorption occurs not only in inner city children exposed to paint but also in children around smelters and those whose parents work with lead. Although the encephalopathy and renal disease of acute lead intoxication are well described, other toxicities of lead as well as factors that alter susceptibility need further research. We have begun investigation into genetic differences in susceptibility to the effects of lead on blood formation.

BIBLIOGRAPHIC REFERENCES: O'Tauma, L.A., Rogers, J.F., and Rogan, W.J.: Increased lead absorption in children of battery workers. Journal of the American Medical Association 24(18): 1893, 1979.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Environmental Health Sciences funds n.a.

3.1115,
DETECTION OF HUMAN EXPOSURE TO MUTAGENIC SUBSTANCES BY ANALYSIS OF BODY FLUIDS

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The objective of this work is to develop methods for detecting mutagenic substances in human body fluids and to use these methods in studies of environmental epidemiology. Laboratory methods necessary for these studies are currently being investigated and protocols developed for testing model populations. Following clarification of technical issues in these studies, body fluids from individuals suspected to have occupational or other environmental exposure to mutagenic substances will be analyzed to confirm and partially quantitate such exposure.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Environmental Health Sciences funds n.a.

3.1116,
EPIDEMIOLOGIC STUDY OF REPRODUCTIVE OUTCOMES AND ENVIRONMENTAL EXPOSURES

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This is a long-range project designed to improve epidemiologic methods for studying reproductive outcomes, particularly for studying spontaneous abortion, and to investigate the association between environmental exposures and reproductive outcomes. There are several facets to this project. A comprehensive reproductive questionnaire has been developed, and a study has been designed to test the validity of questionnaire data. The basic epidemiology of spontaneous abortion is being investigated using an extensive, previously-unanalyzed data set. Possible confounders in epidemiologic studies of spontaneous abortion are being analyzed, and questions regarding the underlying biological mechanisms of spontaneous abortion are being examined. Finally, a study of reproductive outcomes among workers exposed to perchloroethylene is being prepared. This solvent is widely used in drycleaning and has been shown in the laboratory to be a mutagen and carcinogen.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Environmental Health Sciences funds n.a.

3.1117,
THE BREAST MILK AND FORMULA PROJECT

W.J. Rogan, U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Environmental Health Sciences, Biometry Branch, *P.O. Box 12233, Research Triangle Park, North Carolina* 27709 (Z01 ES 43002-04 BB)

Polychlorinated biphenyl (PCB) contamination of breast milk in the ppb range is well documented, but health effects on infants fed such milk are unstudied. This project involves: (1) establishment of a cohort of breast and formula fed infants; (2) development of methodology to obtain reliable and reproducible samples of human body fluids and tissue from mother and child; (3) development of reliable methods for analysis of PCB's and other related parameters; (4) development and application of statistical procedures for the analysis of data generated from the study; and (5) evaluation of the children for specific outcomes thought to be related to organochlorine exposure, including PCB's.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Environmental Health Sciences funds n.a.

3.1118,
SURVEILLANCE OF POTENTIAL ENVIRONMENTAL HEALTH HAZARDS

T. Damstra, U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Environmental Health Sciences, *P.O. Box 12233, Research Triangle Park, North Carolina* 27709 (Z01 ES 20004-06 OHHA)

The objective of this long-term project are: (1) to compile an index of associations between organ

system diseases and symptoms in humans and exposure to environmental and occupational chemicals; and (2) to assess the availability, validity, and utility of using neurological and behavioral tests as early indicators of potential toxicity.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Environmental Health Sciences funds n.a.

3.1119,

DEMOGRAPHIC INVESTIGATIONS OF POTENTIAL HUMAN HEALTH HAZARDS

D.P. Sandler, U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Environmental Health Sciences, Biometry Branch, *P.O. Box 12233, Research Triangle Park, North Carolina* 27709 (Z01 ES 43001-08 BB)

The overall objective of this project is to identify and/or confirm the presence of various potential health hazards in the general environment through the mechanism of demographic investigations. Current research activities involve a correlational analysis of suspected liver cancer risk factors and liver cancer mortality in the United States.

BIBLIOGRAPHIC REFERENCES: Hogan, M.D., Chi, P-Y, Mitchell, T.J., and Hoel, D.G.: Association between chloroform levels in finished drinking water supplies and various site-specific cancer mortality rates. Journal of Environmental Pathology and Toxicology. 2: 873-887, 1979.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Environmental Health Sciences funds n.a.

3.1120,

STATISTICAL METHODS IN EPIDEMIOLOGY

B.C. Gladen, U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Environmental Health Sciences, Biometry Branch, *P.O. Box 12233, Research Triangle Park, North Carolina* 27709 (Z01 ES 40004-03 BB)

The purpose of this project is to conduct research on statistical methodology problems related to the Branch's activities in the field of epidemiology. The objectives are both to broaden understanding of the uses and limitations of currently employed study designs and corresponding analyses; and to develop new techniques for statistical analyses of epidemiological studies.

BIBLIOGRAPHIC REFERENCES: Gladen, B. and Rogan, W.J.: Misclassification and the design of environmental studies. American Journal of Epidemiolgy. 109(5): 607-616, 1979. Rogan, W.J. and Brown, S.M.: Some fundamental aspects of epidemiology: a guide for laboratory scientists. Federation Proceedings. 38: 1875-1879, 1979.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Environmental Health Sciences funds n.a.

3.1121,

RESEARCH IN ENVIRONMENTAL HEALTH SCIENCES

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The NIEHS Center Grant provides core support for the research and teaching program of the Institute of Environmental Medicine. The objectives of the research program are broadly related to the identification of environmental causes of disease, and the development of methods for controlling environmental hazards. The reseach program is an interdisciplinary effort encompassing a wide spectrum of studies ranging from those at the cellular and subcellular level on mechanisms of action, through experimental pathological and physiological and epidemiological studies, to a characterization of environmental transport processes. The NIEHS Center Grant provides salary support for the professional staff of the Institute and limited funds for shared equipment, exploratory studies, and central services. An NCI Center Grant provides complementary, although more limited, support which is exclusively focused on research in the area of environmental carcinogenesis.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Environmental Health Sciences $2,070,631

3.1122,

METABOLISM OF INHALED MERCURY VAPOR (MICE, HUMAN)

T.W. Clarkson, University of Rochester, School of Medicine & Dentistry, Dept. of Radiation Biology & Biophysics, *601 Elmwood Ave., P.O. Box 607, Rochester, New York* 14642 (P01 ES 01248-050015)

This project is part of a broader program (ES 01248).

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Environmental Health Sciences funds n.a.

3.1123,

ASSESSMENT OF DEFICIT IN PRENATALLY EXPOSED CHILDREN (IRAQ)

B. Weiss, University of Rochester, School of Medicine & Dentistry, Dept. of Radiation Biology & Biophysics, *601 Elmwood Ave., P.O. Box 607, Rochester, New York* 14642 (P01 ES 01248-050010)

This project is part of a broader program (ES 01248).

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Environmental Health Sciences funds n.a.

3.1124,

ENVIRONMENTAL EPIDEMIOLOGY & STATISTICS TRAINING PROGRAM

R. Detels, University of California, Los Angeles Campus, School of Public Health, Dept. of Epidemiology, *405 Hilgard Ave., Los Angeles, California* 90024 (ES07050)

This is a program to train pre- and postductoral students in the principles of epidemiology, statistics and environmental sciences as they apply to research in environmental problems. Candidates are prepared for careers in research on health outcomes of environmental exposures.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Environmental Health Sciences funds n.a.

3.1125,

LIVER CIRRHOSIS IN ROCHESTER, MINNESOTA

A. Lions, Mayo Foundation, Dept. of Medical Statistics & Epidemiology, *200 1st St. S.W., Rochester, Minnesota* 55901 (P01 GM 14231-150075)

This project is part of a broader program (GM 14231).

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of General Medical Sciences funds n.a.

3.1126,

LIMB FRACTURE IN A DEFINED POPULATION-FREQUENCY AND DISTRIBUTION (HUMAN)

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3.1127,

LEUKEMIA AND RADIATION - A CASE-CONTROL STUDY (HUMAN)

A. Lions, Mayo Foundation, Dept. of Medical Statistics & Epidemiology, *200 1st St. S.W., Rochester, Minnesota* 55901 (P01 GM 14231-150071)

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3.1128,

LIMB FRACTURES IN DEFINED POPULATION-ORTHOPEDIC TREATMENT & HEALTH CARE (HUMAN)

M. Garraway, Mayo Foundation, Dept. of Medical Statistics & Epidemiology, *200 1st St. S.W., Rochester, Minnesota* 55901 (P01 GM 14231-150082)

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3.1129,

CONGENITAL MALFORMATIONS IN UTERO PROGESTIN-EXPOSED OFFSPRING (HUMAN)

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3.1130,

LEUKEMIA AND OCCUPATION--CASE-CONTROL STUDY (HUMAN)

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3.1131,

DEMENTIA IN A DEFINED POPULATION

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3.1132,

CANCER OF PROSTATE IN ROCHESTER, MN, 1935-89

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This project is part of a broader program (GM 14231).

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3.1133,

EPIDEMIOLOGY OF NEOPLAMS OF SALIVARY GLANDS IN ROCHESTER

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3.1134,

ORAL, PHARYNGEAL, LARYNGEAL AND NASAL MALIGNANCY IN OLMSTED COUNTY, 1935-74

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3.1135,
CARPAL TUNNEL SYNDROME IN ROCHESTER, MN
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3.1136,
CHOLECYSTITIS AND CHOLELITHIASIS IN ROCHESTER, MN, 1950-1970
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SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of General Medical Sciences funds n.a.

3.1137,
RHEUMATOID ARTHRITIS INCIDENCE
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This project is part of a broader program (GM 14231).
SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of General Medical Sciences funds n.a.

3.1138,
RHEUMATOID ARTHRITIS - A CASE-CONTROL STUDY (HUMAN)
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This project is part of a broader program (GM 14231).
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3.1139,
RETINAL DETACHMENT IN ROCHESTER, MN, 1935-74
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This project is part of a broader program (GM 14231).
SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of General Medical Sciences funds n.a.

3.1140,
COLORECTAL POLYPS IN RELATIONSHIP TO COLORECTAL CANCER IN ROCHESTER
L.J. Melton, Mayo Foundation, Dept. of Medical Statistics & Epidemiology, *200 1st St. S.W., Rochester, Minnesota* 55901 (P01 GM 14231-150062)
This project is part of a broader program (GM 14231).
SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of General Medical Sciences funds n.a.

3.1141,
BREAST CANCER - CASE-CONTROL STUDY (HUMAN)
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This project is part of a broader program (GM 14231).
SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of General Medical Sciences funds n.a.

3.1142,
RISK FACTORS IN THE DEVELOPMENT OF TESTICULAR NEOPLASMS
C.M. Beard, Mayo Foundation, Dept. of Medical Statistics & Epidemiology, *200 1st St. S.W., Rochester, Minnesota* 55901 (P01 GM 14231-150087)
This project is part of a broader program (GM 14231).
SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of General Medical Sciences funds n.a.

3.1143,
AN EXPANSION OF RENAL STONE STUDY IN OLMSTED COUNTY
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This project is part of a broader program (GM 14231).
SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of General Medical Sciences funds n.a.

3.1144,
FRACTURE OF THE PROXIMAL FEMUR IN ROCHESTER, MN, 1965-74
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This project is part of a broader program (GM 14231).
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3.1145,
MALIGNANT LYMPHOMA - AN INCIDENCE STUDY (HUMAN)
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This project is part of a broader program (GM 14231).
SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of General Medical Sciences funds n.a.

3.1146,
MALIGNANT POTENTIAL OF THE CRYPTORCHID TESTIS (HUMAN)
C.M. Beard, Mayo Foundation, Dept. of Medical Statistics & Epidemiology, *200 1st St. S.W., Rochester, Minnesota* 55901 (P01 GM 14231-150086)
This project is part of a broader program (GM 14231).
SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of General Medical Sciences funds n.a.

3.1147,
BIOSTATISTICS AND EPIDEMIOLOGY - CORE
B. McPeek, Harvard University, Boston Campus, School of Medicine, Dept. of Anesthesia, *25 Shattuck St., Boston, Massachusetts* 02115 (P50 GM 15904-139002)
This project is part of a broader program (GM 15904).
SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of General Medical Sciences funds n.a.

3.1148,
INCIDENCE OF HEAD TRAUMA IN OLMSTED COUNTY, 1935-1974
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This project is part of a broader program (GM 14231).
SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of General Medical Sciences funds n.a.

3.1149,
THYROID CANCER IN ROCHESTER, MINNESOTA 1935 - 1974
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This project is part of a broader program (GM 14231).
SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of General Medical Sciences funds n.a.

3.1150,
ROCHESTER DIABETES PROJECT
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This project is part of a broader program (GM 14231).
SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of General Medical Sciences funds n.a.

3.1151,
EPIDEMIOLOGY OF BREAST CANCER IN OLMSTED COUNTY, MINNESOTA, 1935-1974
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This project is part of a broader program (GM 14231).
SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of General Medical Sciences funds n.a.

3.1152,
EVIDENCE AGAINST THE ASSOCIATION OF BREAST CANCER AND DES (HUMAN)
D.D. Brian, Mayo Foundation, Dept. of Medical Statistics & Epidemiology, *200 1st St. S.W., Rochester, Minnesota* 55901 (P01 GM 14231-150053)
This project is part of a broader program (GM 14231).
SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of General Medical Sciences funds n.a.

3.1153,
RESERPINE AND BREAST CANCER
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This project is part of a broader program (GM 14231).
SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of General Medical Sciences funds n.a.

3.1154,
UROLITHIASIS
C. Johnson, Mayo Foundation, Dept. of Medical Statistics & Epidemiology, *200 1st St. S.W., Rochester, Minnesota* 55901 (P01 GM 14231-150047)
This project is part of a broader program (GM 14231).
SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of General Medical Sciences funds n.a.

3.1155,
NATURAL HISTORY OF HEART, CANCER & STROKE--EPIDEMIOLOGY
L.T. Kurland, Mayo Foundation, *200 1st St. S.W., Rochester, Minnesota* 55901 (P01 GM 14231-15)
The central data bank of the Rochester Program Project (RPP) consists of a file of medical diagnoses and surgical procedures covering the population of Rochester and Olmsted County, MN, for a period of more than 40 years. These data have been assembled from records at Mayo Clinic and other medical care centers and are considered a national resource for epidemiological studies. The medical records upon which this resource depends cover essentially

all local patient-physician contacts and include records for home, outpatient and hospital visits, and autopsy data. This resource is maintained at the Mayo Clinic but is available to visiting scientists, students from other universities, and health agencies.

More than 100 epidemiological studies using this data bank have been completed. These include studies of incidence and outcome as well as case-control comparisons and prospective studies. Recently completed studies include those on pituitary adenomas, carcinoma of the lung, kidneys, ureter, gallbladder and extrahepatic biliary ducts, primary brain tumors, leukemia, rheumatoid arthritis, diabetes mellitus, cerebrovascular disease, stroke, and computed axial tomography brain scan. Underway at the present time are several descriptive epidemiologic studies on ischemic heart disease, retinal detachment, prostate cancer, multiple myeloma, alopecia areata, head trauma, renal stones, and sarcoidosis; case-control studies of leukemia, estrogen use in women with ischemic heart disease, rheumatoid arthritis, fracture risk in diabetics, progestin use in pregnancy, and studies of the use of the CAT scan and total body scans.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of General Medical Sciences $571,355

3.1156,

SUPPORT FOR STUDY OF INHERITED DISEASES

A.G. Motulsky, University of Washington, School of Medicine, Dept. of Medicine/Genetics, *A-300 Health Sciences Ctr., SC-64, Seattle, Washington* 98195 (P50 GM 15253-13)

This application relates to an interdisciplinary center in medical genetics and inherited diseases. The principal objective is to obtain more fundamental understanding of gene action in man at the level of molecules, cells, individuals and population, and to elucidate the role of genes in the causation of human disease. The Center aims to apply new knowledge to disease prevention and management. Areas to be investigated include: a) biochemical human genetics (proteins and enzymes of formed elements of blood and serum, hemoglobins, pharmacogenetics, developmental genetics); b) genetics of common disorders (coronary atherosclerosis, hypertension); c) genetics of tumor origin; d) somatic cell genetics (X-inactivation, hybridization, complementation, cell cycle mutants); e) cytogenetics (including gametic and early embryonal cytogenetics); f) clinical genetics; and g) statistical genetics.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of General Medical Sciences $1,173,242

3.1157,

ANESTHESIOLOGY CENTER FOR RESEARCH AND TEACHING

R.J. Kitz, Harvard University, Boston Campus, School of Medicine, Dept. of Anesthesia, *25 Shattuck St., Boston, Massachusetts* 02115 (P50 GM 15904-13)

We propose an anesthesiology research center consisting of six closely-interrelated research projects supported by a core facility and focused on the mechanisms of actions and aftereffects of drugs used in anesthesia. This will be a multidisciplinary, collaborative effort of basic laboratory scientists and clinicians. Through the center mechanism we will coordinate research groups working at different levels of organization on problems relating to the interaction of anesthetics with excitable tissues. The concepts and mechanisms elucidated through basic studies at molecular and biochemical levels in well defined systems will find application in the applied pharmacology and clinical work of other center investigators.

The six research projects are: 1. Mechanisms of Action of General Anesthetics and Pressure at Cholinergic Synapses. 2. Anesthetic Effects on Neuronal-Glial Central Nervous System Homeostasis. 3. The Role of Calcium in Malignant Hyperthermia. 4. Effects of Anesthetics on the In Vitro Biochemistry of Synaptic Activity. 5. Role of the Renin-Catecholamine-Prostaglandin System in Hemodynamic Performance. 6. Effect of Enkephalins and Endorphins on Anesthesia.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of General Medical Sciences $901,229

3.1158,

A RESEARCH PROGRAM IN GENETIC EPIDEMIOLOGY

N.E. Morton, University of Hawaii System, Manoa Campus, Population Genetics Lab., *Bachman Hall, Honolulu, Hawaii* 96822 (R01 GM 17173-12)

The five aims of this project are to extend segregation analysis for quantitative traits and attributes underlying such diseases as diabetes, gout, and atherosclerosis, to derive recurrence risks for computer-assisted genetic counseling, to test causal hypotheses relating to unfavorable pregnancy outcomes, to detect new linkages and integrate physical, genetic, and chiasma data into a chromosme map, and to extend path analysis with respect to assortative mating, qualitative data, and various measures of association relevant to common diseases.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of General Medical Sciences $150,020

3.1159,

STATISTICAL METHODS FOR CASE-CONTROL STUDIES

R.L. Prentice, Fred Hutchinson Cancer Research Center, *1124 Columbia St., Seattle, Washington* 98104 (R01 GM 24472-04)

The aim of this continuing project is the development and evaluation of improved statistical methods for the analysis of case-control data. The case-control study is a primary tool for epidemiological research into the relationship between 'exposure' variables or other risk factors and disease incidence. The methods under development promise more precise and comprehensive evaluation of the effect of such exposure variables and may lead to liberalization of case-control study design.

The main focus of this project is the adaptation of prospective disease incidence models to case-control sampling. Models considered include the proportional hazards regression model, in which exposure and other factors are presumed to affect the (instantaneous) disease incidence rate in multiplicative manner, and the associated logistic regression model in which such factors affect the odds-ratio multiplicatively.

We have developed a conditional likelihood procedure for adapting the proportional hazards model to 'time-stratified' case-control data. Numerical aspects and estimation properties based on this likelihood will be studied under this proposal. A central aim of the proposal is the adaptation of the same model in a form that utilizes the whole time-exposure history of individual study subjects and need not require time-stratified sampling. In addition we expect to complete, under this proposal, ongoing work showing the duality of representation and estimation from prospective and retrospective logistic models. Some non-iterative methods for logistic estimation will also be further studied.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of General Medical Sciences $39,789

3.1160,

COMPUTER RESOURCE FOR GENETIC EPIDEMIOLOGY

M.H. Skolnick, Utah Higher Education System, University of Utah, School of Medicine, Dept. of Medical Biophysics & Computing, *1400 E. 2nd S., Salt Lake City, Utah* 84112 (R01 GM 27192-02)

The resource uses the availability of genealogical information on the Utah descendents of the Mormon pioneers. A computerized data base of these large pedigrees linked to computerized medical records, death certificates, and genetic marker data creates a unique opportunity for medical genetic research. The objectives of the resource are: (1) to create a data resource for genetic and epidemiological studies, (2) to implement and develop methods for analysis of population based genetic epidemiological data, (3) to make resource available on a national basis to qualitified investigators, and (4) to collaborate with resource users for implementation of disease specific research.

BIBLIOGRAPHIC REFERENCES: Skolnick, M. 1980. The Utah genealogical data base, a resource for genetic epidemiology, in Banbury Report 4: Human Health Data on Defined Populations, J. Cairns, J.L. Lyon, M. Skolnick, eds., Cold Spring Harbor Laboratory, Cold Spring Harbor, New York (in press).

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of General Medical Sciences $143,261

3.1161,

STATISTICAL METHODS FOR FAILURE TIME DATA

R.L. Prentice, Fred Hutchinson Cancer Research Center, *1124 Columbia St., Seattle, Washington* 98104 (R01 GM 28314-01)

This project is designed to mount a substantial attack on a number of practically important topics in the analysis of time to response or 'failure time' date. The methodological starting point for most of the proposed work is the so-called proportional hazards (ph) regression model in which study subject characteristics or exposure variables are presumed to affect the (instantaneous) failure rate in a multiplicative manner. This model is aminable to generalizations and modifications that allow a number of important failure time topic to be addressed. These topics, listed below, are particularly relevant to the analysis of complex epidemiological or clinical cohort studies in which there is limited ability to control the characteristics or exposure variables under study. The topics are also important for therapeutic trials and laboratory experiments, for example, in animal carcinogenesis.

Data analytic topics of emphasis will include (1) theoretical and practical aspects of the use of time-dependent covariates that may record, throughout the observation period, study subject characteristics and exposure levels, (2) the joint analysis of multivariate failure times, as is required when individual study subjects may experience several failure times, (3) the accomodation of multiple failure types or competing risks and, in particular the study of interrelations among failure types and (4) the accomodation of missing covariate data, including circumstances in which the missing data rate depends on the corresponding failure time(s). A number of additional topics will also be considered including the standardization of 'mortality' rates to an external population using the ph model to adjust for demographic characteristics; parameter transformations to improve interval estimation for survival curves; goodness of fit testing for the ph model; efficiency and robustness of ph estimation; and the analysis of very large failure time data sets. Adaptation of methodological developments to case-control study designs and low dose extrapolation studies will also be considered.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of General Medical Sciences $79,815

3.1162,

STATISTICAL METHODS FOR HEALTH STUDIES

B.W. Turnbull, Cornell University, Ithaca Campus, School of Engineering, Dept. of Operations Research & Industrial Engineering, *242 Carpenter Hall, Ithaca, New York* 14853 (R01 GM 28364-01)

It is planned to carry out an extensive investigation of several areas of statistical methodology for the design and analysis of experimental studies, planned or observational, applicable to various areas of health research including cancer, toxicology, environmental health and epidemiology. The objective would be to provide more efficient statistical methods to achieve valid conclusions at less cost in terms of time and sample size.

Among the problem areas to be considered are: (1) Statistical design and analysis of animal survival/sacrifice studies; (2) Design and analysis of animal cancer induction and treatment studies; (3) Sequential methods for clinical trials (including the topics of screening and early stopping); (4) General statistical problems related to the analysis of censored and incomplete response-time (e.g., survival) data.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of General Medical Sciences $26,680

3.1163,

OCULOCUTANEOUS PIGMENT DEFECTS

C.J. Witkop, University of Minnesota, Minneapolis Campus, School of Dentistry, Dept. of Human & Oral Genetics, *6 Morrill Hall, Minneapolis, Minnesota* 55455 (R01 GM 24558-09)

The overall objectives of this project are to investigate ocular and oculocutaneous pigment defects in

man and animal homologues for their clinical, ophthalmologic, ultrastructural, genetic, epidemiologic, and pleiotropic features and to determine the biochemical or morphologic basis for these defects, with the final objective to seek therapeutic or other means of ameliorating, treating, or preventing these disorders.

BIBLIOGRAPHIC REFERENCES: Witkop, C.J., Jr., White, J.G., King, R.A., Young, W.G., and Sauk, J.J., Jr.: Hereditary mucoepithelial dysplasia. A disease apparently of desmosome and gap-junction formation. Am. J. Hum. Genet. 31: 414-427, 1979. Cervenka, J., Witkop, C.J., Jr., Okoro, A.N., and King, R.A.: Chromosome breaks and sister chromatid exchanges in albinos in Nigeria. Clin. Genet. 15:17-21, 1979.

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3.1164,

IMPACT OF ANTENATAL DIAGNOSIS ON FREQUENCY OF GENETIC DISEASES (HUMAN)

A.G. Motulsky, University of Washington, School of Medicine, Dept. of Medicine/Genetics, *A-300 Health Sciences Ctr., SC-64, Seattle, Washington* 98195 (P50 GM 15253-140089)

This project is part of a broader program (GM 15253).

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of General Medical Sciences funds n.a.

3.1165,

PRIMARY AMYLOIDOSIS - AN INCIDENCE STUDY (HUMAN)

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3.1166,

INCIDENCE, PREVALENCE AND OUTCOME OF SARCOIDOSIS IN OLMSTED COUNTY, 1946-75

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3.1167,

ALS IN ROCHESTER, MINNESOTA 1925-1977

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3.1168,

REGIONAL ENTERITIS IN OLMSTED COUNTY, MN, 1965-74

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3.1169,

MULTIPLE MYELOMA - AN INCIDENCE STUDY (HUMAN)

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This project is part of a broader program (GM 14231).

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3.1170,

CASE-CONTROL STUDY OF FRACTURE RISK IN DIABETES

H. Heath, Mayo Foundation, Dept. of Medical Statistics & Epidemiology, *200 1st St. S.W., Rochester, Minnesota* 55901 (P01 GM 14231-150104)

This project is part of a broader program (GM 14231).

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of General Medical Sciences funds n.a.

3.1171,

SPONTANEOUS PNEUMOTHORAX IN OLMSTEAD COUNTY

L.J. Melton, Mayo Foundation, Dept. of Medical Statistics & Epidemiology, *200 1st St. S.W., Rochester, Minnesota* 55901 (P01 GM 14231-150061)

This project is part of a broader program (GM 14231).

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3.1172,

INCIDENCE AND SPECTRUM OF HPT IN ROCHESTER, MN, 1965-1976

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3.1173,

ALOPECIA AREATA IN THE ROCHESTER POPULATION

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3.1174,

ISCHEMIC HEART DISEASE IN ROCHESTER

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This project is part of a broader program (GM 14231).

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of General Medical Sciences funds n.a.

3.1175,

A GENETIC AND EPIDEMIOLOGIC STUDY OF EPILEPSY (HUMAN)

V.E. Anderson, University of Minnesota, Minneapolis Campus, School of Liberal Arts, Dept. of Genetics & Cell Biology, *322 Johnston Hall, Minneapolis, Minnesota* 55455 (P50 NS 16308-010009)

This project is part of a broader program (NS 16308).

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Neurological & Communicative Dis. & Stroke funds n.a.

3.1176,

EPIDEMIOLOGY OF EPILEPSY (HUMAN)

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This project is part of a broader program (NS 16308).

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3.1177,

THE ROLE OF OCCUPATION IN THE ETIOLOGY OF LARYNGEAL CARCINOMA

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This is a case-control study of white male laryngeal cancer cases seen in the Yale-New Haven Hospital Head and Neck Clinic, newly diagnosed and histologically confirmed between 1977 and 1980. For each case, several white male general surgery admissions (excluding specific diagnoses) who live in the same county and are in the same age stratum as the case will be identified using hospital records. These persons will be briefly interviewed on the telephone to obtain two persons who match the case on smoking. The controls who meet the smoking requirement and who agree to participate will be interviewed in person by a trained interviewer. It is expected that 100-125 cases and 200-250 controls will be evaluated in the study. The subjects will be personally interviewed, preferably in the hospital, but because many will be cases previously seen in the hospital up to 300 may be interviewed in their homes. The risk factors of primary interest are occupational exposures; smoking habits and alcohol consumption will be taken into account in the analysis.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Neurological & Communicative Dis. & Stroke funds n.a.

3.1178,

COMPREHENSIVE DISEASE STATISTICS SURVEY

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Westat proposes to conduct a feasibility study for the Comprehensive Disease Statistics Survey. Developmental work for the feasibility study is essentially completed. During the period of this proposed activity, Westat will conduct negotiations with thirty hospitals and train medical record abstractors and reviewers. Data will be collected from the medical records department of the sampled hospitals for approximately 3100 medical records. Westat will process that data, including medical review, and will carry out appropriate quality control. The analysis will cover the comparison of various sampling and non-sampling aspects of the design, the operational feasibility of the plan, and estimated costsof conducting this survey in a larger full-scale pilot test of the survey design. A final report of these findings willbe prepared and submitted to NINCDS.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Neurological & Communicative Dis. & Stroke $362,874

3.1179,

THE INCIDENCE AND PREVALENCE OF STROKE

F.D. Weinfeld, U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Neurological & Communicative Dis. & Stroke, Section on Surveys & Demographic Studies, *9000 Rockville Pike, Bethesda, Maryland* 20205 (Z01 NS 02403-01 OBE)

Estimates of the incidence and prevalence of stroke were generated from the findings of the National Study of Stroke. These are being prepared for publication as a journal article, and for comparison with other commonly accepted estimates of incidence and prevalence.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Neurological & Communicative Dis. & Stroke funds n.a.

3.1180,

DEVELOPMENTAL FACTORS ASSOCIATED WITH MENTAL RETARDATION

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The purpose of this study is to identify predictors of mental retardation in a population of 37,000 children followed from the prenatal period to age 7. The incidence of mild retardation (1% in whites and 5% in blacks) and to a lesser degree, of severe retardation (0.5%) was inversely related to socioeconomic status. Among the severely retarded, 25% of whites and 50% of blacks had no major genetic or neurological abnormality. Perinatal risk factors for the severely retarded group as a whole include Down's syndrome, major CNS malformations, neonatal seizures and clinical signs of perinatal hypoxia. For the subgroup of severely retarded with unknown etiology, perinatal risk factors include non-CNS malformations, peripheral nerve abnormalities, signs of hypoxia, and maternal urinary tract infection during pregnancy. A report on teenage pregnancy as a risk factor for poor cognitive outcome has been published. This study is completed and a monograph is in preparation.

BIBLIOGRAPHIC REFERENCES: Broman, S. H.: Longterm Development of Children Born to Teenagers, In Scott, K., Field, T., and Robertson, E. (Eds.): Teenage Parents and Their Offspring. New York; Grune and Stratton, 1980.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Neurological & Communicative Dis. & Stroke funds n.a.

3.1181,

ASSESSMENT OF STRATEGIES FOR ANALYZING DATA FROM SMALL AREA MORTALITY SURVEYS

D.W. Anderson, U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Neurological & Communicative Dis. & Stroke, Section on Surveys & Demographic Studies, *9000 Rockville Pike, Bethesda, Maryland* 20205 (Z01 NS 02405-02 OBFS)

Studies of small areas, such as communities or counties, are an important tool of epidemiologists, who are interested in studying the distribution of particular diseases in populations. Many studies of this type have been reported in the scientific literature. An assessment of techniques of analysis frequently used in these studies was initiated to determine their adequacy for use in the NINCDS survey of major neurological disorders in Copiah County, Mississippi (YO1-NS-70031, NO1-NS-7-2357).

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Neurological & Communicative Dis. & Stroke funds n.a.

3.1182,

PERINATAL INFECTIONS CAUSING DAMAGE TO THE CHILD - COLLABORATIVE PERINATAL PROJECT

J.L. Sever, U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Neurological & Communicative Dis. & Stroke, Immunochemistry & Clinical Investigations Section, *9000 Rockville Pike, Bethesda, Maryland* 20205 (Z01 NS 00402-24 ID)

The purpose of this study is to determine insofar as possible the role of perinatal infections in the production of fetal damage. To accomplish this, clinical data and a large number of serial serum specimens have been obtained from the 58,000 women and their children in the Collaborative Perinatal Project. Now that the project is complete, it is possible to study perinatal infections with three main approaches: 1) clinical infections; 2) subclinical infections detected serologically using abnormals and matched controls; and 3) high risk children with elevated IgM levels. Special investigation included the epidemiology of infections and the frequency of congenital toxoplasmosis. Cooperating units work with the Infectious Diseases Branch to study newborns in high risk nurseries. Serum, IgM volumes, plus clinical findings are being used to identify infected infants at risk for perinatal damage. Specific tests are then developed and applied for identification of the infection. Preliminary data indicates that urinary tract infection during pregnancy were found to increase the risk for abortion, stillbirths, neonatal deaths and prematurity.

BIBLIOGRAPHIC REFERENCES: Sever, J.L.: Rubella antibody tests, new methods - new problems. Perinatal Press 4: 3, 1980. Sever, J.L.: 1979 Kimble Methodology Award Lecture: For developmental work in miniaturization of seroepidemiological techniques - microtiter system and development of diagnostic procedures and reagents in worldwide use. The Public Health Laboratory 38: 222-224, 1980.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Neurological & Communicative Dis. & Stroke funds n.a.

3.1183,

CHRONIC CENTRAL NERVOUS SYSTEM DISEASE STUDIES - SLOW, LATENT AND TEMPERATE VIRUS INFECTIONS

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Studies elucidate cause and pathogenesis of chronic degenerative CNS disorders with emphasis on MS, ALS, parkinsonism-dementia, Parkinson's, Pick's and Alzheimer's diseases, Huntington's chorea, supranuclear palsy, other presenile dementias, chronic encephalitis with focal epilepsy, muscular dystrophies, chronic schizophrenia, SSPE, PML, dialysis encephalopathy, and intracranial neoplasms. Even familial, apparently hereditary, diseases may be slow virus infections. Subacute spongiform virus encephalopathies (kuru and Creutzfeldt-Jakob (CJD) diseases of man; scrapie and mink encephalopathy) are caused by unconventional viruses with unique properties posing important theoretical problems to microbiology and molecular biology; a major goal is elucidation of their structure and mechanisms of replication. Transmissible virus dementias are increasingly recognized worldwide as causes of death: high incidence foci, transmission by corneal transplant or brain surgery, and occupational hazards from exposure to brain occur. In order to determine the usual mode of infection with the virus, a worldwide epidemiological study of transmissible virus dementia (CJD) cases is under way with special attention to familial clusters of cases and with a quest for possible relationship of scrapie of sheep to the human disease.

BIBLIOGRAPHIC REFERENCES: Baringer, J.R., Gajdusek, D.C., Gibbs, C.J. Jr., Masters, C.L., Stern, W.E., and Terry, R.D.: Transmissible dementias: current problems in tissue handling. Neurology, 1979. In press. Benfante, R., Hoffman, P.M., Garruto, R.M., and Gajdusek, D.C.: HLA phenotypes in the Chamorro population of the Mariana Islands. Human Biology 51: 201-212, 1979.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Neurological & Communicative Dis. & Stroke funds n.a.

3.1184,

SELECTED MATERNAL FACTORS AND CONGENITAL CARDIOVASCULAR ANOMALIES

L. Bajda, U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Neurological & Communicative Dis. & Stroke, Birth Defects & Genetic Disorders Section, *9000 Rockville Pike, Bethesda, Maryland* 20205 (Z01 NS 01163-18 DNB)

This study, using data form the NINCDS Collaborative Perinatal Project, investigates the relation of selected factors which may affect the mothers during pregnancy, and possible cause congenital heart defects in the children. Observations on about 47,000 pregnancy records provide case and control data for analysis. Some 486 children have been identified as having definite congenital cardiac anomalies. These include cardiac conditions which are part of known syndromes but exclude children suspected of having ventricular septal defect who are reported without cardiac defect at the 1-year examination and thereafter. Pre-selected maternal risk factors noted in the pregnancy records for the mothers of 392 children with definitely defined congenital heart anomalies are compared with control data matched for maternal age, race, date of LMP, and geographical location (institution).

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Neurological & Communicative Dis. & Stroke funds n.a.

3.1185,

NEUROBIOLOGY OF POPULATION ISOLATES - GROWTH, DEVELOPMENT, BEHAVIOR, LEARNING AND DISEASE PATTERNS IN PRIMITIVE CULTURES (ABBREV)

D.C. Gajdusek, U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Neurological & Communicative Dis. & Stroke, Laboratory of Central Nervous System Studies, *9000 Rockville Pike, Bethesda, Maryland* 20205 (Z01 NS 01282-16 CNSS)

Studies of human biology of vanishing primitive societies focus on neurological development and learning patterns in diverse cultural experiments in the human condition found in such isolated groups. Laboratory techniques of molecular biology, immunology, virology, endocrinology and biochemistry in these cultures and field epidemiological, genetic and clinical studies are aimed at problems more appropriately studied in small isolated prrmitive bands than in civilized societies. Data and specimens collected over years on expeditions to Micronesia, Polynesia, Solomon Islands, New Hebrides, New Guinea, Indonesia, S. America, Asia and Africa are used. Studies on nutrition, reproduction, fertility, neuroendocrine influences on age of sexual maturation and aging, genetic polymorphisms, genetic distance, unusual and odd employment of the higher cerebral CNS function of language learning, cognitive styles, computation (calculation without words or numbers), and culturally modified sexual behavior elucidate alternative forms of neurologic functioning for man which we would be unable to investigate once the natural cultural experiments in primitive human isolates were amalgamated into the cosmopolitan community of man. Foci of high incidence prevalence kuru, ALS/PD, epilepsy, other neurological degenerations, hysterical disorders, schizophrenia, neoplasms, goiter, cretinism, rheumatoid diseases, diabetes, goit, asthma, chronic lung disease, malaria, filariasis, leprosy, cysticercosis and other infections are investigated.

BIBLIOGRAPHIC REFERENCES: Baringer, J.R., Gajdusek, D.C., Gibbs, C.J. Jr., Masters, C.L., Stern, W.E., and Terry, R.D.: Transmissible dementias: current problems in tissue handling. Neurology, 1979. In press. Benfante, R., Hoffman, P.M., Garruto, R.M., and Gajdusek, D.C.: HLA phenotypes in the Chamorro population of the Mariana Islands. Human Biology 51: 201-212, 1979.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Neurological & Communicative Dis. & Stroke funds n.a.

3.1186,

AN EXAMINATION OF SPEECH AND HEARING PROBLEMS AS DETECTED IN HANES II

C.L. Ludlow, U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Neurological & Communicative Dis. & Stroke, Section on Surveys & Demographic Studies, *9000 Rockville Pike, Bethesda, Maryland* 20205 (Z01 NS 02402-02 OBFS)

The Communicative Disorders Program anticipates conducting a survey of speech disorders among 2-6 year olds. Current work is focusing on constructing a valid test instrument. Concurrently, our Office is assisting in examining similar work done by the HANES II. We intend to use the experience and results from the HANES to determine the feasibility of the survey and what problems should be avoided. We are also exploring the possibility of conducting the survey as part of a future phase of the HANES.

A review of the Hanes Project was undertaken. The investigators have determined that the NCHS methodology is not applicable to our work and that we will have to develop an independent approach. This project is therefore concluded.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Neurological & Communicative Dis. & Stroke funds n.a.

3.1187,

ANTENATAL INFLUENCES ON NEUROBIOLOGIC ABNORMALITIES

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It is proposed to use data from the Collaborative Perinatal Project of the NINDS to determine if abnormalities in the placenta can serve as predictors of long term neurologic, sensory and cognitive abnormalities in children. The study collected sequential

neurologic, cognative and sensory data on children from the newborn period to eight years of age. We examined nearly 35,000 placentas from this NINDS study to standardize the recognition and recording of specific abnormalities. In addition, more than 1000 pieces of clinical information were prospectively collected for most of the cases. Included were data on events of gestation, labor, delivery and the neonatal period.

We propose to correlate each of the long list of placental abnormalities with a battery of test data detailing children's psychomotor, cognitive and sensory abnormalities and development starting in the neonatal period. Several methods will be used to determine if the associations between placental findings and neurobiologic impairments revealed by the analyses are biologically valid or are the result of chance or of the interactions of more than 100 non-placental factors that can affect psychomotor and sensory development. These methods include: (a) log linear model analysis of 3-way contingency tables, (b) discordant sibling pairs, (c) longitudinal analyses of children with and without developmental abnormalities, (d) cross validation determined by analyzing half of the data base and then replicating the analyses on the second half of the data base.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Neurological & Communicative Dis. & Stroke $49,680

3.1188,
SENILE DEMENTIA - ALZHEIMER AND VASCULAR

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Several major aspects of senile dementia are to be investigated in this project: The Alzheimer type (SDAT) accounts for about 50%, and the munti-infarct type (MID) for another 25% of the cases of this disorder, of which there are more than one million severe examples in this country. Studies of possible etiological factors in SDAT will include analysis of the transmission and nature of the agent that induces intraneuronal paired helical filaments (PHF) in tissue culture of nervous system neurons treated with aqueous extracts of Alzheimer brain. The effects of infection caused by lymphocytic choriomeningitis virus (LCMV) in cultured neurons will be studied and a search made for evidence of LCMV infection in Alzheimer's disease. Neuropeptides in cortex and deep nuclei in autopsy brain specimens from patients with SDAT, MID, and age-matched normal (AMN) controls will be measured by radioimmunoassay and mapped, using immunocytochemical techniques. Morphometric studies involving both cell and lesion counts will focus upon differences between brain showing primarily senile plaques in cortex and those showing neurofibrillary tangles and plaques, and upon involvement of deep nuclei in SDAT, and will be correlated with analysis of choline acetyltransferase (ChAT) as well as neuropsychological data. Additional neuropsychological studies will seek to identify changes characteristic of SDAT and tests that will improve diagnostic accuracy of SDAT and MID. Mechanisms of learning and memory in groups of normal and demented elderly will be investigated. A large prospective study involving 450 elderly (age 75 to 85) volunteers will seek to identify risk factors that predispose to MID.

Thus this program involves studies on diagnosis, treatment, pathogenesis, and etiology of the two major forms of senile dementia.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Neurological & Communicative Dis. & Stroke $448,724

3.1189,
CLINICAL AND VIRAL STUDIES OF SUDDEN HEARING LOSS

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The goal of this proposal is to achieve an increased understanding of the etiology and treatment of idiopathic sudden hearing loss by the systematic collection and evaluation of clinical data.

Our objectives include the serologic evaluation of acute and convalescent sera for the purposes of identifying the principle virus(es) responsible for SHL, and the determination of the relationship between virally induced SHL, to other pathological, demographic, or environmental factors. In addition, we will continue a collaborative clinical study at MEEI, WVU, and K-P Oakland assessing the relationship of ISHL to hereditary, epidemiological, and occupational factors by means of statistical analysis of data obtained from ISHL patients. Also, we will assess the relationship between microvascular disease, diabetes mellitus, and sudden hearing loss. Finally we will determine the correlation between electronystagmography, Hallpike Caloric testing, vestibular or cochlear injury, and the etiology and the degree of loss and recovery from SHL.

The significance of these studies is to increase our understanding of the etiology, classification, and treatment of sudden hearing loss, as well as to lend further insight into the pathophysiologic mechanisms of sensorineural hearing loss in general.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Neurological & Communicative Dis. & Stroke $59,866

3.1190,
HEREDITARY ASPECTS OF THE EPILEPSIES

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The objective of this study is to facilitate investigations into the genetic etiology of the epilepsies with emphasis on the spike-wave epilepsies and, in particular, petit mal absence. We propose to study the genetic transmission of these disorders through intensive studies of kindreds ascertained through a proband with a verified epileptic condition.

The study utilizes two unique resources namely, (1) clinical records on 4,000 patients with a seizure disorder who were evaluated at the principal (and for a long time, only) neurological referral center in the Northwest during the period 1938 to 1963 and (2) EEG records on 8,000 individuals tested in the same period of time. Availability of these records permits the record linkage of clinical, laboratory (EEG) and genetic information.

Probands will be selected from individuals evaluated in the Child Neurology Clinic (Epilepsy Center of Oregon), the Genetics Clinic (UOHSC) or in private practice and from individuals evaluated in the Neurological Clinic between the years 1938 and 1963. Systematic collection of clinical, genetic and laboratory (EEG) data will be extended to first, second and third degree relatives of probands. Special emphasis will be placed on record linkage of families to insure completeness and accuracy of pedigree and clinical information. The body of data thus generated will be the basis of more extensive family/genetic studies and be subjected to rigorous genetic analyses and tests of goodness of fit to various genetic models (hypotheses) using recently developed, statistically powerful, computer-adaptable methods.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Neurological & Communicative Dis. & Stroke $86,700

3.1191,
MINNESOTA COMPREHENSIVE EPILEPSY PROGRAM

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To use the multispecialty team and resources that have already been developed to carry out a broad program of epilepsy studies at the University of Minnesota and the Mayo Clinic, emphasizing studies of immediate clinical relevance. To transmit this information so that it can be used effectively in the community to benefit patients with seizures.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Neurological & Communicative Dis. & Stroke $892,391

3.1192,
OTITIS MEDIA RESEARCH CENTER

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Otitis media (OM) is the most common diagnosis made by physicians who care for children, constituting a major health problem in this country. In addition, the state of the knowledge on the subject of OM is lacking in many respects. The epidemiology, natural history, pathogenesis, etiology, diagnosis, management and outcomes of OM are not well established and a significant amount of work lies ahead before these areas can be defined and understood. With this application the University of Pittsburgh -- specifically the Children's Hospital of Pittsburgh (CHP) -- is proposing to establish an Otitis Media Research Center. The core of the proposed center is a series of clinical research studies variously designed to study the efficacy of treatments of OM according to disease stage: acute, recurrent acute and chronic OM with effusion. Some of these clinical studies are currently in progress at CHP, while funding is being sought for others. In addition to these projects are twelve integrated but independent Center projects dealing with various aspects of OM. Preliminary work in these project areas has been well established by the investigators and will form the basis of each proposal. The proposed Center will allow: basic scientists to interact with clinician-scientists in a more intense and formal manner than possible in the past; important questions regarding OM to be answered in an organized manner; patients to flow smoothly from one study to the next depending upon disease stage; the research team to concentrate on research for a reasonable period with financial support; an opportunity to conduct studies, analyze data and publish findings, all leading to the next steps in the development of an organized research approach; this research to be accomplished at a funding level significantly lower than that required for individual research efforts. The presence in Pittsburgh of an experienced, committed research team coupled with the facts that the institutions involved have demonstrated support, adequate clinical and basic research facilities are available, a sufficient number of subjects is attainable, and that patient referral patterns are well established all clearly suggests that the proper time for establishing an Otitis Media Research Center is the present.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Neurological & Communicative Dis. & Stroke $1,148,881

3.1193,
AMINOGLYCOSIDE OTOTOXICITY DETERMINANTS

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Considering that one million patients per year are at risk, human aminoglycoside ototoxicity is not as well understood as it ought to be. This project seeks to develop rapid screening criteria to predict and prevent ototoxicity. In addition, it will determine how radioenzymatic serum aminoglycoside levels best correlate with development of toxicity, what clinical factors predispose to ototoxicity, to determine the incidence of ototoxicity in the various clinical infectious situations reflecting the use of this drug group, and to identify comparable patient groups by computer analysis in an effort to make comparative evaluation of the toxicities of the different aminoglycosides under similar clinical conditions.

Human subjects will undergo a detailed history and prospective determination of vestibular and cochlear function by electronystagmography and audiometry respectively. Renal function will be assessed utilizing creatinine clearances and serum BUN. Follow-up evaluation will be performmd in three months to determine development of delayed ototoxicity or recovery from ototoxicity.

Data analysis will be performed via the Stanford Center for Information Processing IBM 370/168 computer utilizing program language SPSS, version 7.0.

BIBLIOGRAPHIC REFERENCES: Fee, W., Vierra, V. and Lathrop, G.: Clinical evaluation of aminoglycoside toxicity: tobramycin versus gentamicin, a preliminary report. J. Antimicrobial Chemotherapy. 4(Suppl. A):31-36, 1978.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Neurological & Communicative Dis. & Stroke $45,323

3.1194,
EPIDEMIOLOGY OF PROLAPSED LUMBAR AND CERVICAL DISCS

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This is a case-control epidemiological study of prolapsed lumbar inter-vertebral disc and prolapsed cervical intervertebral disc. Demographic characteristics

and exposure to possible risk factors in surgical, probable, and possible cases of each of these conditions in the age range 20-64 years will be compared to demographic characteristics and exposure to possible risk factors in two control groups in the same age range. One control group will be composed of people without known spinal disorders and the second will comprise people with back and neck problems other than prolapsed discs. Information on demographic variables and exposure to possible risk factors is obtained by means of a structured questionnaire administered by trained interviewers. The questionnaire covers symptoms of current and previous back, neck, log, and arm problems; respiratory symptoms; exdemographic variables; pregnancy history; occupational history; driving motor vehicles on the job; driving other than on the job; use of other modes of transportation; participation in certain sports; handedness; height; weight; and disability and limitation of activity. The data collection is expected to be complete in the Fall of 1981.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Neurological & Communicative Dis. & Stroke $62,381

3.1195,
EPIDEMIOLOGIC STUDIES OF IMMUNE FACTORS IN MS

R. Detels, University of California, Los Angeles Campus, School of Public Health, Dept. of Epidemiology, *405 Hilgard Ave., Los Angeles, California* 90024 (R01 NS 10186-08S1)

The objective of this grant was to investigate the pathopoiesis of multiple sclerosis (MS) by conducting five studies using two populations of MS patients, one in a high prevalence area and one in a lower prevalence area. These studies include a cohort study of the natural history of MS in the two areas; an immunologic study of changes in immune status, clinical course and environmental exposures; a genetic study of families with multiple cases of MS; and a case-control study of patients and susceptibility matched siblings. Studies completed to date have suggested the existence of a multiple sclerosis susceptibility gene located on the sixth chromosome and a relationship between haplotype and mean measles titers in MS patients and their normal siblings. Data from the immunologic study suggest that patients have higher mean antibody titers and impaired cell-mediated immunity to measles.

The relationship of immune differences to changes in clinical status and the relationship between immune responses and genetic types will be further studied; the rate of progression to disability, mortality and other factors will be compared between the two cohorts; and analysis of the case-control study will determine factors which are associated with disease.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Neurological & Communicative Dis. & Stroke $72,854

3.1196,
ETIOLOGY AND PATHOGENESIS OF MULTIPLE SCLEROSIS

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We will attempt to establish the etiology and pathogenesis of multiple sclerosis using several interdependent approaches. This objective is divided into four areas: 1) the isolation of mammalian oligodendrocytes; 2) analysis of glial cell plasma membranes; 3) virus infection and demyelinating diseases; and 4) immunologic mechanisms of demyelinative CNS disease.

We will use immunologic techniques in an effort to determine the target antigen(s) in oligodendrocyte membrane which interacts with serum from patients with MS. We will characterize other circulating immunologic factors, including antibodies to lipid haptens and alterations in circulating immunocompetent cells. We will carry out similar studies in cells derived from cerebrospinal fluid of patients with MS as one approach to studies of the compartmentalization of the immune response in patients with MS. We will study the biosynthetic processes occurring in isolated oligodendrocytes and in glial cells and the factors which influence those processes.

We will attempt to repeat the successful induction of CNS disease in sub-human primates inoculated with material from patients with CNS disease and study viruses isolated from these primates. We will study the mechanisms of resistance and susceptibility to latent virus infections in the CNS. Mechanisms of humoral and cell-mediated immunological reactions in patients and in animal models will continue to be explored. Viruses isolated in the course of these experiments will be characterized by immunological and biochemical techniques.

BIBLIOGRAPHIC REFERENCES: Rorke, L.B., Iwasaki, Y., Koprowski, H., Wroblewska, Z., Gilden, D.H., Warren, K.G., Lief, F.S., Hoffman, S., Cummins, L.B., Rodrigues, A.R., and Kalter, S.S. 1979. Acute dehyelinating disease in a chimpanzee 3 years after inoculation of brain cells from a patient with MS. Ann. Neurol. 5:89. Santoli, D., and Koprowski, H. 1979. Mechanisms of activation of human natural killer cells against tumor and virus-infected cells. Immunological Reviews 44:125.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Neurological & Communicative Dis. & Stroke $899,030

3.1197,
EXTRACRANIAL/INTRACRANIAL ARTERIAL ANASTOMOSIS STUDY

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The above-named study is a multi-centre, randomized, prospective clinical trial to determine whether EC/IC (extracranial/intracranial) microsurgical arterial anastomosis is effective in prevention of first or recurrent stroke in patients with carotid distribution atherosclerotic cerebrovascular disease. This operation is well established as a technically successful procedure with low mortality morbidity. Approximately 1,000 patients from some 60 participating centres in the U.S., Canada, Western Europe and Japan will be entered during the first 3 years of the project. Criteria for entry are both (1) clinical (carotid distribution TIA, PRND, progressing stroke or completed stroke with mild deficit, occurring within past 3 months), and (2) radiological (appropriate MCA stenosis or occlusion, recognizable atherosclerotic lesions in surgically inaccessible portion of ICA, or ICA occlusion). Patients must be exempt from a number of exclusion categories and be able to provide informed consent. They are then randomly assigned to surgical or medical treatment groups, receive appropriate therapy, and are followed at 3-month intervals for 5 years or until an end-point has been reached.

The clinical aspects of the study are coordinated from the Central Office in London, Ontario, Canada and the epidemiological aspects are directed from the Methods Centre in Hamilton, Ontario. The Project Director is Dr. H.J.M. Barnett of London.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Neurological & Communicative Dis. & Stroke $880,363

3.1198,
CARDIAC ABNORMALITIES AFTER BRAIN DAMAGE IN HUMANS

J.H. Feibel, University of Rochester, School of Medicine & Dentistry, Dept. of Neurology, *601 Elmwood Ave., P.O. Box 607, Rochester, New York* 14642 (R01 NS 14178-03)

The systemic, particularly cardiovascular, manifestations of acute brain injury from any cause are important causes of morbidity and mortality and may be modifiable. Many workers have shown that the autonomic response to brain damage may be important in causing the cardiovascular manifestations and we seek to continue our investigations of this relationship. By simultaneously following the metabolic, specifically catecholamine, and cardiovascular changes following acute brain damage we hope to better define the incidence, clinical presentation and importance of the systemic alterations which do occur. In this way we will better understand the mechanisms relating to these manifestations and their possible modifications by appropriate agents.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Neurological & Communicative Dis. & Stroke $32,776

3.1199,
MAYO CEREBROVASCULAR CLINICAL RESEARCH CENTER

J.P. Whisnant, Mayo Foundation, Dept. of Neurology, *200 1st St. S.W., Rochester, Minnesota* 55901 (P50 NS 06663-15)

The general aims are (1) to maintain a group of clinical and laboratory investigators who can interrelate their research, (2) to investigate and resolve problems related to clinical cerebrovascular disease, (3) to study the natural history of stroke of various types by using the resources of the Rochester epidemiological facility and to determine whether various forms of management have altered the natural history, (4) to use in vitro and in vivo models of cerebral ischemia and anoxia to investigate temporal sequence of pathophysiologic changes and sequence of molecular alterations to determine the stage at which reversibility of ischemia is possible and to study what processes or agents may help to produce reversal of the ischmic process, and (5) to provide an environment for training individuals for careers of leadership in research, training, and clinical service in cerebrovascular diseases.

Clinical studies will include population studies of incidence and prevalence of stroke, mortality trends over a prolonged number of years, contribution of pre-existing cardiac disease to stroke and T.I.A. evaluation of prevalence and significance of asymptomatic carotid bruit, and evaluation of stroke in relation to mitral valve prolapse. An image analysis program will be used to study cerebral ischemia with computed tomography.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Neurological & Communicative Dis. & Stroke $493,855

3.1200,
A CENTER FOR ACUTE SPINAL CORD INJURY

W.F. Collins, Yale University, School of Medicine, Dept. of Surgery, *333 Cedar St., New Haven, Connecticut* 06510 (P50 NS 10174-09)

This program is a multidisciplinary approach to the problems of spinal cord injury (SCI). Included are: An epidemiological study of spinal cord injury in Connecticut with delineation of incidence, cause, evaluation of treatment, cost comparison of treatment in an organized SCI center and community hospitals in Connecticut, and determination of when stability of neurological function occurs; studies of animal models of spinal cord injury, evaluating various treatment modalities, effects of trauma on spinal cord blood flow and metabolism, determination of spinal column stability including computer models of primate spinal column; post-traumatic alteration in blood-spinal cord barrier; the effect of biogenic amines on the resulting neurological dysfunction and ultrastructural analysis of the effect of impact trauma, the development and study of a model system in the Larvil Lamprey (Petromyzon Marinus) for study of regeneration in the central nervous system, a study of the formation of peripheral neuroma and the factors controlling its size, and study of the olfactory bulb re-establishment of central synaptic connection following injury.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Neurological & Communicative Dis. & Stroke $939,843

3.1201,
SLOW INFECTION BY CONVENTIONAL/UNCONVENTIONAL VIRUSES

R.F. Marsh, University of Wisconsin, Madison Campus, School of Agriculture & Life Sciences, Dept. of Veterinary Science, *Agriculture Hall, Madison, Wisconsin* 53706 (R01 NS 14822-08)

We propose to (1) characterize the physiochemical nature of the unconventional agents producing spongiform encephalopathies in animals (scrapie and transmissible mink encephalopathy) and man (Creutzfeldt-Jakob disease), (2) to study the pathogenesis of these infections in suitable hosts, and (3) to investigate the epidemiologic interrelationships between the human and animal encephalopathies.

BIBLIOGRAPHIC REFERENCES: Malone, T.G., Marsh, R.F., Hanson, R.P., and J.S. Semancik. 1979. Evidence for the low molecular weight nature of scrapie agent. Nature 278:575-576. Marsh, R.F. and R.P. Hanson. 1979. On the Origin of Transmissible Mink Encephalopathy. In: Slow Transmissible Diseases of the Nervous System. (S. Prusiner and W.J. Hadlow, eds.), Vol. I, pp. 451-460. Academic Press, New York.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Neurological & Communicative Dis. & Stroke $133,355

3.1202,
DESIGN OF CONVULSIVE DISORDER QUESTIONNAIRES

F. Weinfeld, U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Neurological & Communicative Dis. & Stroke, Surveys & Demographic Studies Section, *9000 Rockville Pike, Bethesda, Maryland* 20205 (Z01 NS 02239-04 OBFS)

The design and field testing of questionnaires to be used as a supplement to the NCHS Health Interview Survey (HIS). The first was designed to determine the persons with some degree of stroke, diagnosed or underdiagnosed; and hospitalization. This questionnaire was included in the 1977 HIS. A second has been designed to measure those persons with convulsive disorder and is being proposed for a future HIS. The stroke questionnaire has been submitted to NCHS and is included in their current household interview survey.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service. National Inst. of Health, National Inst. of Neurological & Communicative Dis. & Stroke funds n.a.

3.1203,
EDUCATIONAL RESOURCES IN NEUROLOGICAL EPIDEMIOLOGY

B.S. Schoenberg, U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Neurological & Communicative Dis. & Stroke, Section on Neuroepidemiology, *9000 Rockville Pike, Bethesda, Maryland* 20205 (Z01 NS 02307-04 ODIR)

A series of four videotapes on the principles of neuroepidemiology were produced by the Section. A two-day international conference on neuroepidemiology was held in 1977; a one-day course was held in 1977; one-day symposium was held in 1979; a 1-1/2 day course will be held in Asia in 1980; a one-week course will be held in Europe in 1981; and a one-week course is planned for Africa in 1981. A textbook entitled Neurological Epidemiology: Principles and Clinical Applications was published during 1978.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Neurological & Communicative Dis. & Stroke funds n.a.

3.1204,
REVIEWS OF EPIDEMIOLOGIC ASPECTS OF NEUROLOGIC DISEASE

B.S. Schoenberg, U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Neurological & Communicative Dis. & Stroke, Section on Neuroepidemiology, *9000 Rockville Pike, Bethesda, Maryland* 20205 (Z01 NS 02299-04 ODIR)

Development of new neurologic studies requires thorough historic and methodologic reviews of prior investigations. These yield important unexplored etiologic clues that may be investigated using current technology. Major emphasis has been give to cerebrovascular disease, otitis media, inherited ataxias, Huntington's disease, and febrile seizures.

BIBLIOGRAPHIC REFERENCES: Schoenberg, D.G., and Schoenberg, B.S.: Eponym: Golgi, Cajal, Nissl, and Weigert. Southern Medical Journal 72: 44-46, 1979. Schoenberg, B.S.: Evaluating the quality of medical research. South. Med. J. 73: 1-2, 1980.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Neurological & Communicative Dis. & Stroke funds n.a.

3.1205,
ANALYSIS OF NCPP TWIN DATA

N.C. Myrianthopoulos, U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Neurological & Communicative Dis. & Stroke, Birth Defects & Genetic Disorders Section, *9000 Rockville Pike, Bethesda, Maryland* 20205 (Z01 NS 02332-02 DNB)

This is a secondary area within the program plan for analysis of NCPP data. The objectives of the project are to assess and interpret the influence of maternal, socioeconomic, neonatal, medical and other environmental factors on survival, growth and development, and on abnormal outcome of twins.

BIBLIOGRAPHIC REFERENCES: Melnick, M., Myrianthopoulos, N.C. and Christian, J.: The effects of chorion type on variation in IQ in the NCPP twin population. Am. J. Hum. Genet. 30:425-433, 1978. Havlik, R.J., Garrison, R.J., Katz, S.H., Ellison, R.C., Feinleib, M. and Myrianthopoulos, N.C.: Detection of genetic variance in blood pressure of seven year old twins. Am. J. Epidemiol. 109:512-516, 1979.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Neurological & Communicative Dis. & Stroke funds n.a.

3.1206,
CLINICAL DATABANKS AS A RESOURCE OF EPIDEMIOLOGIC RESEARCH

C. Gross, U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Neurological & Communicative Dis. & Stroke, Computer Applications Section, *9000 Rockville Pike, Bethesda, Maryland* 20205 (Z01 NS 02408-02 OBFS)

Much has been written on the use of observational studies in epidemiological research. It will be necessary to apply many of the same epidemiologic techniques used in conventional observational studies to the clinical data bank. Work on determining which epidemiologic approaches are most appropriate for use with clinical data banks has begun in conjunction with the Stroke and Traumatic Coma Databank Networks (NO1-NS-8-2396, 78, NO1-NS-9-2302, 6, 7, 8, 9).

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Neurological & Communicative Dis. & Stroke funds n.a.

3.1207,
CONVULSIVE DISORDERS DATA ANALYSIS GROUP

K.B. Nelson, U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Neurological & Communicative Dis. & Stroke, Section on Cerebral Palsy & Other Motor Disorders, *9000 Rockville Pike, Bethesda, Maryland* 20205 (Z01 NS 02058-08 DNB)

This study examines the relationship between perinatal factors and the occurrence of seizure disorders in childhood in a large, prospectively studied population. In addition to the central question of etiology, it investigates frequency, prognosis, demographic characteristics, and a number of other aspects of these disorders. Univariate screen of maternal, obstetric, and pediatric risk factors, and demographic analysis, have been completed. File creation for multivariate analysis is now complete, and regression analyses are in progress. Selected topics of particular clinical relevance are under examination.

BIBLIOGRAPHIC REFERENCES: Ellenberg, J.H. and NNelson, K.B.: Birthweight and gestational age in children with cerebral palsy or seizure disorders. Am. J. Dis. Ch. 133: 1044-1048, 1979. Nelson, K.B. and Ellenberg, J.H.: Seizures in early childhood (abstract). Develop. Med. Child Neurol. 22:261-262, 1980.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Neurological & Communicative Dis. & Stroke funds n.a.

3.1208,
SEQUENTIAL ASPECTS OF OCCURRENCE OF SPONTANEOUS ABORTION IN FAMILY HISTORIES

A.F. Naylor, U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Neurological & Communicative Dis. & Stroke, Birth Defects & Genetic Disorders Section, *9000 Rockville Pike, Bethesda, Maryland* 20205 (Z01 NS 01276-15 DNB)

The objective of this study has been to relate the risk of spontaneous abortion to maternal age and prior reproductive experience. Careful reconsideration of long available tabulations has shown convincingly that gravidity is a major correlate of spontaneous abortion and maternal age is of no importance. A paper making these points has been published by Fertility and Sterility.

BIBLIOGRAPHIC REFERENCES: Naylor, A.F. and Warburton, D.: Sequential aspects of spontaneous abortion. II. Collaborative Study data show that gravidity determines a very substantial rise in risk. Fertil. Steril. 31:282-286, 1979.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Neurological & Communicative Dis. & Stroke funds n.a.

3.1209,
MORTALITY FROM NEUROLOGIC DISORDERS - NATIONAL AND INTERNATIONAL COMPARISONS

B.S. Schoenberg, U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Neurological & Communicative Dis. & Stroke, Section on Neuroepidemiology, *9000 Rockville Pike, Bethesda, Maryland* 20205 (Z01 NS 02297-04 ODIR)

Although death certificate data are limited by possible misdiagnosis, incomplete case ascertainment, errors in coding, etc., detailed morbidity information on neurologic diseases for the entire U. S. and for other countries is not available. The Section has analyzed mortality data for selected neurologic disorders by country and by county in the U. S. The overall patterns which emerge may be useful in evaluating trends over time and in formulating etiologic hypotheses.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Neurological & Communicative Dis. & Stroke funds n.a.

3.1210,
TYPE-SPECIFIC STROKE MORTALITY TRENDS

H.M. Baum, U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Neurological & Communicative Dis. & Stroke, Section on Surveys & Demographic Studies, *9000 Rockville Pike, Bethesda, Maryland* 20205 (Z01 NS 02341-03 OBFS)

There is a need to examine stroke mortality trends by specific types of strokes. OBFS has obtained the mortality data tapes for 1968-1976, and will use these tapes to examine age-type specific stroke trends by race and sex. There are many problems inherent in such a study, but the results would be useful to health planners and administrators. Additionally, this study will be useful in generating hypotheses OBFS may be interested in examining at a later date.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Neurological & Communicative Dis. & Stroke funds n.a.

3.1211,
THE EPIDEMIOLOGY OF INTRACRANIAL NEOPLASMS

B.S. Schoenberg, U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Neurological & Communicative Dis. & Stroke, Section on Neuroepidemiology, *9000 Rockville Pike, Bethesda, Maryland* 20205 (Z01 NS 02305-04 ODIR)

The Section has conducted extensive investigations of the descriptive epidemiology of primary intracranial neoplasms using data derived from population-based registries worldwide. Analytic studies were carried out to investigate the relationship between intracranial neoplasms and tumors occurring at other sites. These studies included careful review of tumor nomenclature, disease definitions, and survey strategies.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Neurological & Communicative Dis. & Stroke funds n.a.

3.1212,
DEVELOPMENT AND DESIGN OF A PILOT STUDY FOR A NATIONAL SURVEY OF EPILEPSY

D. Anderson, U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Neurological & Communicative Dis. & Stroke, Section on Disease Statistics Surveys, *9000 Rockville Pike, Bethesda, Maryland* 20205 (Z01 NS 02237-04 OBFS)

This pilot was initiated to develop a new and untried method of ascertaining the incidence and prevalence of epilepsy. The previously used methods have serious deficiencies and this proposal seeks to remedy them. The goal is to use pharmacies filling anti-convulsive prescriptions to lead to the physicians providing care and thus to the epileptics. By using nationwide probability sampling techniques valid estimates of the U.S. epileptic population should be made.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Neurological & Communicative Dis. & Stroke funds n.a.

3.1213,

EPIDEMIOLOGY OF DEMENTIA

B.S. Schoenberg, U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Neurological & Communicative Dis. & Stroke, Neuroepidemiology Section, *9000 Rockville Pike, Bethesda, Maryland* 20205 (Z01 NS 02240-04 ODIR)

A number of different approaches are being utilized to estimate the mortality and morbidity of Alzheimer'S disease/senile dementia in several population groups in the U.S. and to measure the distribution of this disease in segments of the population.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Neurological & Communicative Dis. & Stroke funds n.a.

3.1214,

PEDIATRIC NEUROEPIDEMIOLOGY

B.S. Schoenberg, U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Neurological & Communicative Dis. & Stroke, Section on Neuroepidemiology, *9000 Rockville Pike, Bethesda, Maryland* 20205 (Z01 NS 02243-04 ODIR)

The project documented the frequency of primary intracranial neoplasms in the pediatric populations of Rochester, Minnesota, and the State of Connecticut. In addition, we investigated the magnitude and risk factors for cerebrovascular disease in infants and children in the Rochester, Minnesota, population. We have also initiated a study of the temporal trends in the incidence of cerebral palsy.

BIBLIOGRAPHIC REFERENCES: Schoenberg, B.S.: Risk Factors for Stroke in Infants and Children. In Goldstein, M., Bolis, L., Fieschi, C., Gorini, S., and Millikan, C.H. (Eds.): Cerebrovascular Disorders and Stroke. New York, Raven Press, 1979, pp. 313-324.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Neurological & Communicative Dis. & Stroke funds n.a.

3.1215,

HUNTINGTON'S CHOREA TWIN STUDY

N.C. Myrianthopoulos, U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Neurological & Communicative Dis. & Stroke, Birth Defects & Genetics Disorders Section, *9000 Rockville Pike, Bethesda, Maryland* 20205 (Z01 NS 02390-02 DNB)

Using the twin method, this study will investigate genetic and environmental factors which may be responsible for the considerable epidemiologic and clinical variability in Huntington's chorea, and determine the nature of gene-environment interaction in this disease.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Neurological & Communicative Dis. & Stroke funds n.a.

3.1216,

RACIAL DIFFERENTIALS IN THE PREVALENCE OF MAJOR NEUROLOGIC DISORDERS

B.S. Schoenberg, U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Neurological & Communicative Dis. & Stroke, Section on Neuroepidemiology, *9000 Rockville Pike, Bethesda, Maryland* 20205 (Z01 NS 02370-02 ODIR)

The purpose of this study is to accurately document possible racial differentials in the prevalence of major neurologic disorders by surveying an entire county, with a biracial population of approximately 25,000. The disorders investigated include cerebral palsy, dementia, psychomotor delay, epilepsy, Parkinson's disease, and cerebrovascular disease.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Neurological & Communicative Dis. & Stroke funds n.a.

3.1217,

NATIONAL HEADACHE SURVEY

T. Chen, U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Neurological & Communicative Dis. & Stroke, Section on Surveys & Demographic Studies, *9000 Rockville Pike, Bethesda, Maryland* 20205 (Z01 NS 02404-02 OBFS)

The purpose of this project is to measure the extent of the problem of chronic, severe and disabling headaches, the impact of headache disorders on society, and the headache population. In addition, it is planned to examine the present usage of health care by the headache population and to identify etiological and environmental factors which may be associated with various types of headache. The survey questionnaire which includes sections on demography, medical information and history, cost, work and financial loss, etc., is currently under development. A validaton study of the questionnaire and the algorithm for identification of major types of headaches are also being designed.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Neurological & Communicative Dis. & Stroke funds n.a.

3.1218,

FEASIBILITY OF A NATIONAL SURVEY OF SPEECH DEFECTS

H.M. Baum, U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Neurological & Communicative Dis. & Stroke, Section on Surveys & Demographic Studies, *9000 Rockville Pike, Bethesda, Maryland* 20205 (Z01 NS 02442-01 OBFS)

National data on communicative disorders is quite scarce. With instruments recently developed by the Institute, a valid test is now available. What needs further clarification is how these instruments could be used for a national study of communicative disorders.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Neurological & Communicative Dis. & Stroke funds n.a.

3.1219,

COMPREHENSIVE ANALYSIS OF THE NCPP DATA ON CONGENITAL MALFORMATIONS

N.C. Myrianthopoulos, U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Neurological & Communicative Dis. & Stroke, Birth Defects & Genetic Disorders Section, *9000 Rockville Pike, Bethesda, Maryland* 20205 (Z01 NS 02109-07 DNB)

This is a long-term project to study the epidemiologic characteristics of congenital malformations in singletons and twins; to assess and interpret the influence of maternal, socioeconomic, neonatal, medical and other environmental factors on the occurrence of congenital malformations; to determine the risk of familial occurrence and to elucidate the role of genetic factors and the mode of inheritance of certain malformations; to determine the severity and clinical significance of congenital malformations and their associations with neurological, physiological and sensory handicaps; and to assess the long-range effects of malformations on survival, growth and development.

BIBLIOGRAPHIC REFERENCES: Melnick M. and Myrianthopoulos, N.C.: External Ear Malformations: Epidemilogy, Genetics, and Natural History. New York, Alan R. Liss, 1979. Havlik, R.J., Garrison, R.J., Katz, S.H., Allison, R.C., Feinleib, M. and Myrianthopoulos, N.C.: Detection of genetic variance in blood pressure of seven-year-old twins. Am. J. Epidemiol. 109: 512-516, 1979.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Neurological & Communicative Dis. & Stroke funds n.a.

3.1220,

CEREBRAL PALSY DATA ANALYSIS GROUP

K.B. Nelson, U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Neurological & Communicative Dis. & Stroke, Section on Cerebral Palsy & Other Motor Disorders, *9000 Rockville Pike, Bethesda, Maryland* 20205 (Z01 NS 02059-08 DNB)

This large prospective study attempts to add to available knowledge of the perinatal factors associated with motor handicaps in childhood, the primary goal being to identify areas for possible preventive efforts. Study on the prevalence and on early recognition of cerebral palsy have been published. Data on demographic analysis and a univariate screen of maternal and pediatric factors associated with cerebral palsy are available. Multivariate analysis is nearing completion.

BIBLIOGRAPHIC REFERENCES: Ellenberg, J.H. and Nelson, K.B.: Birthweight and gestational age in children with cerebral palsy or seizure disorders. Am. J. Dis. Child., 133: 1044-1048, 1979.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Neurological & Communicative Dis. & Stroke funds n.a.

3.1221,

COLLABORATIVE STUDIES OF LESS COMMON OR LESS DEBILITATING NEUROLOGIC DISORDERS

B.S. Schoenberg, U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Neurological & Communicative Dis. & Stroke, Section on Neuroepidemiology, *9000 Rockville Pike, Bethesda, Maryland* 20205 (Z01 NS 02301-04 ODIR)

A number of collaborative efforts involve the investigation of the characteristics of unusual or less debilitating (e.g., headache) neurologic disease phenomena. Unusual associations or space/time clusters of neurologic disorders may provide leads to etiology or therapy. These may be tested through more formal approaches.

BIBLIOGRAPHIC REFERENCES: Hogg, J.E., Kobrin, D.E., and Schoenberg, B.S.: The Guillain Barre Syndrome; Epidemiologic and Clinical Features. J. Chronic Dis. 32: 227-231, 1979.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Neurological & Communicative Dis. & Stroke funds n.a.

3.1222,

DEVELOPMENT OF DATA RESOURCES FOR NEUROEPIDEMIOLOGY

B.S. Schoenberg, U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Neurological & Communicative Dis. & Stroke, Neuroepidemiology Section, *9000 Rockville Pike, Bethesda, Maryland* 20205 (Z01 NS 02423-01 ODIR)

To develop 1) a registry of hospitalized patients with neurologic diseases in a well-defined population of 30.5 million people, and 2) resources for case-control studies of multiple sclerosis and Alzheimer's disease using uniform methods of data collection.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Neurological & Communicative Dis. & Stroke funds n.a.

3.1223,

GENETIC EPIDEMIOLOGY STUDIES IN MS AND OTHER MULTIFACTORIAL NEUROLOGIC DISORDERS

R. Eldridge, U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Neurological & Communicative Dis. & Stroke, Neuroepidemiology Section, *9000 Rockville Pike, Bethesda, Maryland* 20205 (Z01 NS 02167-06 ODIR)

In this project we are coupling genetic study of selected families and twin pairs with epidemiologic, immunologic, serologic and neurochemical studies of disorders due to multiple factors such as multiple sclerosis and Parkinsonism. This approach should clarify the etiology of these diseases, indicate individuals or populations at high risk and suggest mechanisms for prevention and treatment.

To date, 18 presumptive 'Multiple Sclerosis' families and 97 twin pairs with this condition have been ascertained. Over 15 twin pairs with Parkinsonism have been ascertained.

BIBLIOGRAPHIC REFERENCES: Williams, A., McFarland, H., Eldridge, R., Houff, S., Krebs, H., and McFarlin, D.: Clinical and immunologic studies on selected twins with multiple sclerosis. Neurology 29: 573-574, 1979. Duvoisin, R.C., Eldridge, R., Williams, A.: A twin study of Parkinson disease. Neurology 29: 578-579, 1979.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Neurological & Communicative Dis. & Stroke funds n.a.

3.1224,

FEBRILE SEIZURES STUDY

K.B. Nelson, U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Neurological & Communicative Dis. & Stroke, Section on Cerebral Palsy and Other Motor Disorders, *9000 Rockville Pike, Bethesda, Maryland* 20205 (Z01 NS 02234-05 DNB)

The NINCDS Collaborative Perinatal Project has provided a large prospectively defined pediatric population, unselected for level of risk, in which to investigate the prevalence and natural history of the most common convulsive disorder of childhood, febrile seizures.

A series of papers has delineated the natural history of febrile seizures, and has identified risk factors for unfavorable outcome, and has reviewed the effect of sample selection on outcome. An NIH Consensus development meeting on Long-term Management of Children and Febrile Seizures was held. Results of the Consensus meeting, held in this year, are being prepared for publication in professional journals, and the papers are being edited for a monograph. A pilot study of cognitive and behavioral effects of anticonvulsant medication in children with febrile seizures is underway, and a major study planned which will evaluate the effects of medications and of recurrent seizures. A program announcement is planned to invite experiments on the effects of anticonvulsant agents on the developing nervous system.

BIBLIOGRAPHIC REFERENCES: Nelson, K.B., and Ellenberg, J.H.: Letters on febrile seizures. Pediatrics 65:677-680, 1980. Ellenberg, J.H. and Nelson, K.B.: Sample selection and the natural history of disease: studies of febrile seizures. JAMA 243: 1337-1340, 1980.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Neurological & Communicative Dis. & Stroke funds n.a.

3.1225,

THE EPIDEMIOLOGY OF CEREBROVASCULAR DISEASE IN ADULTS

B.S. Schoenberg, U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Neurological & Communicative Dis. & Stroke, Neuroepidemiology Section, *9000 Rockville Pike, Bethesda, Maryland* 20205 (Z01 NS 02241-04 ODIR)

This investigation is aimed (1) at evaluating the effect of heart disease and hypertension as potentially treatable precursors of completed stroke and transient ischemic attacks; (2) at documenting unusual patterns of cerebrovascular disease; (3) at determining the autopsy patterns for patients dying with cerebrovascular disease in a defined community; and (4) at examining if weather parameters have any effect on stroke incidence.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Neurological & Communicative Dis. & Stroke funds n.a.

3.1226,

EPIDEMIOLOGY OF DISABLING HEADACHE

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An extensive collection and review of the published literature and reports on various aspects of epidemiology of Headache has been carried out in FY 1980. Strengths and inadequacies of the published information about prevalence, the characteristics of the afflicted population and the identification of risk factors that may be associated with both the occurrence of the headache syndrome or with its acute exacerbations were summarized and evaluated. Research approaches which can provide improved data for approaching the clinical issues of etiology, prevention and therapy were suggested. An invited paper of the review work was presented at the International Headache symposium 1980 in Florence, Italy, in March, 1980.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. of Neurological & Communicative Dis. & Stroke funds n.a.

3.1227,

CLINICAL IMMUNE SURVEY OF THE LONGITUDINAL PROJECT PARTICIPANTS

W.H. Adler, U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. on Aging, Clinical Immunology Section, *Baltimore, Maryland* 21224 (Z01-AG-00104-04-CPB)

The immune function of an aging human population will be evaluated to determine the age associated changes and the possible effects on the incidence and types of disease. The individuals demonstrating decreased immune function will be evaluated closely in this regard. The eventual goals will be to determine which age related diseases are associated with a decrease in immune function and therefore can be modulated by augmenting the function. The accurate assessment of function of the human population will be a major goal with the development of newer assays and the refinement of existing assays.

BIBLIOGRAPHIC REFERENCES: Saxena, Q.B., Mezey, E., and Adler, W.H.: Regulation of Natural Killer Activity In Vivo II. The Effects of Alcohol Consumption on Human Peripheral Blood Natural Killer Activity. International Journal of Cancer, 1980, in press.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. on Aging funds n.a.

3.1228,

EPIDEMIOLOGICAL AND GENETIC STUDIES OF AMYOTROPHIC LATERAL SCLEROSIS/ PARKINSONISM DEMENTIA (ALS/PD) COMPLEX OF GUAM

C.C. Plato, U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. on Aging, Human Performance Section, *Baltimore, Maryland* 21224 (Z01-AG-00028-04-CPB)

The purpose of this study is: 1) to investigate the genetic and epidemiological factors contributing to the very high incidence of Amyotrophic Lateral Sclerosis and Parkinsonism Dementia (ALS/PD) on Guam, 2) to evaluate the distribution of the various established genetic and anthropological markers among the normal Guamanian population and compare them with those of the ALS/PD patients, and 3) to ascertain the effects of immobilization due to paralysis on bone density.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. on Aging funds n.a.

3.1229,

ENVIRONMENTAL IMPACT ON THE ELDERLY

C.H. Patrick, U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. on Aging, Epidemiology Demography & Biometry Program, *9000 Rockville Pike, Bethesda, Maryland* 20205 (Z01-AG-01190-02-EDBP)

An analysis of the environmental impact of pollutants generated in electric energy production was undertaken using county level data on type of facility and mortality rates of the elderly. No significant impact was found in the preliminary analysis of data from coal, oil, gas, and nuclear counties.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. on Aging funds n.a.

3.1230,

CATCHMENT AREA STUDY OF SENILE DEMENTIA

J. Cornoni Huntley, U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. on Aging, Epidemiology Demography & Biometry Program, *9000 Rockville Pike, Bethesda, Maryland* 20205 (Z01-AG-04010-02-EDBP)

In conjunction with the National Institute of Mental Health, NIA is completing a study of senile dementia in an adult community population. A contract has been awarded to Yale University to survey a sample of the New Haven, Connecticut adult population for this purpose. NIA is specifically interested in defining the occurrence of senile dementia in persons 65 years of age and older. The study will consist of a household interview and a follow-up of all subjects. A questionnaire has been developed by the investigators.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. on Aging funds n.a.

3.1231,

GENERAL ANALYSIS OF NATIONAL CENTER FOR HEALTH STATISTICS DATA SYSTEMS

J. Cornoni Huntley, U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. on Aging, Epidemiology Demography & Biometry Program, *9000 Rockville Pike, Bethesda, Maryland* 20205 (Z01 AG 02090-02-EDBP)

This contract allows the National Institute on Aging to work cooperatively with the National Center for Health Statistics in conducting analyses of appropriate data sets as the need for such analyses arises. By working in this joint manner pertinent questions can be answered more efficiently and the level of research is likely to be of higher quality than if either institute worked alone.

At the present time the research topics include: 1) the relationships between the existence of fluoride in drinking water and osteoporosis, 2) changes in incidence of stroke, 3) analysis of Family Data, 4) differences in lean body mass between the sexes and 5) mortality rates from accidents.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. on Aging funds n.a.

3.1232,

SENILE DEMENTIA - NATURAL HISTORY IN A NONINSTITUTIONALIZED POPULATION

J. Cornoni Huntley, U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. on Aging, Epidemiology Demography & Biometry Program, *9000 Rockville Pike, Bethesda, Maryland* 20205 (Z01-AG-04011-02-EDBP)

Epidemiologic studies of senile dementia are needed in order to determine if the disease occurs in specific patterns by age, sex, race or other demographic and social characteristics and if such patterns would provide etiologic clues. This project will characterize persons within a community based, non-institutionalized sample who appear to have senile dementia and/or depression or to be at high risk of having these disorders. This sample will be compared with an unaffected group. Both samples will be followed over a three year period to discover risk factors and etiologic events.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. on Aging funds n.a.

3.1233,

MORTALITY FOLLOW-BACK SURVEY

Y.Y. Palesch, U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. on Aging, Epidemiology Demography & Biometry Program, *9000 Rockville Pike, Bethesda, Maryland* 20205 (Z01-AG-01150-02-EDBP)

This project is designed to determine the demographic, social and economic characteristics of surviving members of cohorts relative to the deceased members. This information will be used to model and project future aged populations based on cohort characteristics. The study suggests that additional factors must be analyzed in order to determine the quantitative impacts of the environment on the health of the elderly.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. on Aging funds n.a.

3.1234,

DEMOGRAPHIC PATTERNS OF MORTALITY

C.H. Patrick, U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. on Aging, Epidemiology Demography & Biometry Program, *9000 Rockville Pike, Bethesda, Maryland* 20205 (Z01-AG-01100-02-EDBP)

Patterns of mortality of males and females of each race and age are being analyzed by major causes of death using standard demographic methodology and vital statistics of the U.S. major conditions afflicting the elderly are being identified by analysis of associated conditions present at time of death.

BIBLIOGRAPHIC REFERENCES: K.G. Manton, C.H. Patrick, and E. Stallard, The Impact of Elimination of Major Causes of Death on the Saved Population, International Journal of Epidemiology, June 1980.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. on Aging funds n.a.

3.1235,

SOCIOECONOMIC DETERMINANTS OF MORTALITY

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Two large nationwide samples of individuals will be used to estimate the effects of economic, demographic, and environmental characteristics on age-specific death rates and various measures of healthiness. The project will specify and estimate a model of the determinants of morbidity and mortality of men and women near the age of 60. An important emphasis of the model will be placed on health care. we will trace out the interaction of poor health and labor force activity among people on the verge of retirement. The variables to be studied include sex, race, education, occupation and industry of work, present and historical income levels, labor force participation, state of health, family status and factors associated with place of residence, including pollution, climate, urbanization and medical services. The use of micro data allows the effects of these factors on mortality to be studied jointly and avoids aggregation and interaction difficulties inherent in macro data which have been the basis of most previous studies. In addition, the data contain information on life-cycle developments in earnings and labor market activity which have never been studied before. Multivariate probit and related methods will be used to analyze the data. The data sets to be used are the Social Security Administration CPS Exact Match tape and the Retirement History Survey tape.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. on Aging $104,863

3.1236,

DATA ANALYSIS IN LONGITUDINAL STUDIES OF AGING

M.A. Woodbury, Duke University, School of Medicine, Dept. of Community & Family Medicine, *Box 3711, Durham, North Carolina* 27710 (R01 AG 01023-02)

The objective of analyzing and characterizing the multivariate and dynamic states of individuals as they age is being pursued. Data from the first Duke Longitudinal Study have been screened and a set relatively free from missing data has been selected. Data absent due to the death of individuals is not considered to be missing in this selection process. In addition, attention has been paid to changes in the definition of variables in selecting variables for the first analysis.

Two studies have been initiated to date. The first is concerned with the dynamics of risk variables known to contribute to mortality from vascular diseases. The variables used in this study are logged values of the physiological variables: diastolic blood pressure, pulse pressure, serum cholesterol and the performance component of the Wechsler Intelligence Tests. The calculations for this study are almost complete and the results, in part, assimilated. The second study concerns the mortality due to vascular disease as predicted by the risk variables whose dynamics were evaluated in the first study. Manuscripts describing the results of the analyses are in prepartion.

BIBLIOGRAPHIC REFERENCES: Manton, K.G., M.A. Woodbury and E. Stallard. Analysis of the Components of CHD Risk in the Framingham Study: New Multivariate Procedures for the Analysis of Chronic Disease Development. Computers and Biomedical Research 12, (1979), pp. 109-123. Woodbury, M.A., K.G. Manton and E. Stallard. Longitudinal Analysis of the Dynamics and Risk of Coronary Heart Disease in the Framingham Study. Biometrics 35, 3 (1979), pp. 575-585.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. on Aging $44,656

3.1237,

SPECIAL INITIATIVES RELATED TO DEMENTIA

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Senile dementia of the Alzheimer type (SDAT), the major cause of dementia among the elderly, is a growing health problem. Although much has been learned about the pathophysiology of this disease, little is known about etiological factors. We propose to seek information about specific genetic, environmental, and metabolic risk factors by carrying out a cross-cultural case control study of SDAT. We will utilize an epidemiological interview together with studies of serum haptoglobins as linked genetic markers; immunological changes manifested by lymphocyte responses and serum immunoglobulins; serum antibodies to choline acetyltransferase, and parathormone status. One aspect of the social impact of SDAT will be studied by investigating techniques adopted by families for coping with an afflicted family member.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. on Aging $110,774

3.1238,

AGING AND HETEROGENEITY IN MORTALITY RISKS

K.M. Weiss, University of Texas, Health Science Center at Houston, Graduate School of Biomedical Sciences, Center for Demographic Population Genetics, *P.O. Box 20334, Houston, Texas* 77025 (R01 AG 01028-03)

This study will examine risk heterogeneity in age patterns of mortality by cause at various levels of population. Risk of death from major causes of mortality, by age, will be parametrically described, taking account of competing causes. This will be related to the theory of human biological aging. Risk-rate parameters will be characterized statistically, including their sample variances, their geographic and temporal clustering, and their inter-cause correlations. This will first be done on subdivisions of nations using data from Chile and Texas to look for more local effects and variations. Finally, risk functions will be estimated for the Mexican-Americans of Laredo, Texas. Here risk assessment and studies of risk heterogeneity will be done on genealogical data so as to examine the genetics of longevity as they relate to specific causes of death and the age at which they occur, and cluster, in families.

BIBLIOGRAPHIC REFERENCES: Chakraborty, R, K.M. Weiss, and W.J. Schull A. test for the randomness of the occurrence of a disease trait in familial or other similar ordered sequences of epidemiological data. Proc. Nat. Acad. Sci., 77:2974-2978, 1980. Weiss, K.M., R. Chakraborty, D. Rossmann, S. Norton. Wherefore art thou, Romio? Name frequency patterns and their use in automated genealogy assembly. In: B. Dyke and W. Morrill, eds. Genealogical Demography, NY: Academic Press, pp. 41-61, 1980.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. on Aging $31,587

3.1239,

CASE-CONTROL STUDY OF PRESENILE AND SENILE DEMENTIA

A. Heyman, Duke University, School of Medicine, Dept. of Medicine, *Box 3711, Durham, North Carolina* 27710 (R21 AG 01186-03)

The present proposal is a collaborative case-control study of a small cohort of patients diagnosed as having, on the basis of carefully established clinical criteria, presenile or senile dementia of the Alzheimer's type. Information will be obtained regarding factors possibly related to the development of this illness from these patients and from matched control subjects by means of a structured epidemiologic interview, by analyses of serum and cerebrospinal fluid for viral antibodies and for increased concentrations of aluminum and other metallic ions and by detailed family history searching for evidence of genetic defects. The natural history of the disorder and the correlation between the progressive mental changes, the electroencephalographic abnormalities and the changes in computer tomography of the brain will also be studied.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. on Aging $74,186

3.1240,

DEPRESSION, INFORMATION PROCESSING AND AGE

P.M. Lewinsohn, Oregon State Higher Education System, University of Oregon, School of Liberal Arts, Dept. of Psychology, *1472 Kincaid St., Eugene, Oregon* 97401 (R21 AG 01449-02)

Two separate projects are proposed. Project 1 ('Epidemiology of Depression in the Elderly') is a longitudinal prospective study of a representative sample of 900 elderly persons. Subjects are assessed on a wide range of measures at point of entry into the study. They will be followed for two years during which time their depression level will be monitored on a monthly basis. Clinical assessments will be done on subjects who become depressed. Four types of hypotheses will be tested: 1) What are the distinguishing characteristics of elderly persons who become depressed? 2) What are the distinguishing characteristics of elderly persons who are depressed? 3) What are the distinguishing characteristics of elderly persons who are depressed and who recover? 4) What are the distinguishing characteristics of elderly persons who have a history of having been depressed earlier in life?

Project 2 has three objectives: 1) To adapt an existing conceptualization of the key ability factors underlying cognitive performance to the study of the aging. 2) To use the measurement devices constructed as per objective 1 to evaluate the effects of cardiovascular conditioning on the cognitive behavior of elderly depressed and elderly non-depressed Ss. 3) The measurement devices will be used to assess cognitive functioning as a function of age.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. on Aging $83,179

3.1241,

EPIDEMIOLOGIC STUDY OF ALZHEIMER'S DISEASE

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OBJECTIVES: To explore by a case-control study factors of possible etiologic significance to the occurrence of Alzheimer's disease. Variables relevant to viral, genetic and immunological hypotheses will be explored, and data on occupational and environmental exposures, drug use, psychological stress, smoking and alcohol consumption also will be collected.

METHODS: A total of 100 cases of Alzheimer's disease will be identified from patients at the Veteran's Administration Medical Center and the University of Minnesota Medical Center, both in Minneapolis. For each case a hospital control matched for age, sex, race and admission date, and a neighborhood control, matched for age, sex and race, will be selected. For each subject as informant will be identified and interviewed with a structured questionnaire about variables and data mentioned above in 'Objectives'. Data from existing records will also be abstracted and analyzed.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. on Aging $84,611

3.1242,

ACCURACY OF DEATH CERTIFICATE AGES FOR THE EXTREME AGED

I. Rosenwaike, University of Pennsylvania, School of Medicine, Dept. of Research Medicine, *36th & Hamilton Walk, Philadelphia, Pennsylvania* 19174 (R01 AG 01550-02)

This is a matched records study that will attempt to verify the accuracy of the reporting of age on the death certificate among persons in the extreme aged population. A sample of about four thousand decedents around 1970 will be selected from death certificates filed in the states of Pennsylvania and New Jersey. These records will be linked with the listing in the 1900 census, conducted when the decedent presumably was a youth or young adult. The motive to exaggerate age attributed to the elderly would not have been present at this early period.

Effort will be made to correct age on the death certificate on the basis of the 1900 census records. The 'adjusted' distribution of deaths by age around 1970 so derived, will permit the computation of corrected death rates and life tables. These data may then furnish a basis for improving mortality statistics at older ages, and for evaluating the quality of census data. In addition, they may provide a better appreciation of the basic causes of the anomaly of the cross-over of nonwhite mortality to lower levels than white mortality at the upper age range.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. on Aging $56,339

3.1243,

AGING AMONG THE MENNONITES OF KANSAS AND NEBRASKA

M.H. Crawford, University of Kansas, Lawrence Campus, School of Liberal Arts & Sciences, Dept. of Anthropology, *112 Bailey Hall, Lawrence, Kansas* 66045 (P01 AG 01646-02)

The purpose of the research project is to examine the interaction of genetic and environmental factors

which affect aging and longevity. A multidisciplinary approach has been adopted to deal with the various biological and environmental components which affect the aging process. The disciplines examining the components of aging are biological anthropology and genetics, medicine, physiology, cultural anthropology, sociology, and psychology. In addition to the partitioning of genetic and environmental factors, the effects of inbreeding on longevity will be examined, a method for determining biological vs chronological aging will be tested, historic trends in the life expectancy of the study population will be analyzed, cultural normative values and structures will be compared with the actual statistic patterns observed, and a theory of subjective competence will be developed regarding social aging processes. In addition, patterns of longevity and mortality in the historical Alexanderwohl congregation will be determined through the analysis of church and historical records. Records date back to the Seventeenth Century and document the migration of the Alexanderwohl community during their sojourns from Prussia to Russia to Kansas.

BIBLIOGRAPHIC REFERENCES: Crawford, M.H. and L. Rogers 1980 Population Genetics Models in the Study of Longevity in a Mennonite Community. American Journal of Physical Anthropology. 52:216.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. on Aging $141,129

3.1244,
PERSONAL PATTERNS PREDICTIVE OF DISEASE OR DEATH

C.B. Thomas, Johns Hopkins University, School of Medicine, Dept. of Medicine, *725 N. Wolfe St., Baltimore, Maryland* 21205 (R01 AG 01760-02)

Prospective studies carried out by the Precursors Study suggest the existence of psychological factors which precede the clinical appearance of premature disease or death by many years. We obtained an extensive, unique data base (psychological, psychosocial, physiological, medical and familial) on a cohort of 1,337 medical students and have followed them prospectively for 18 to 32 years. Now for the most part between the ages of 41 and 60, 68 of them have died, and more than 200 are living with serious disorders, including hypertension, coronary heart disease, cancer and mental illness.

It is our aim: a. to study the enlarging disorder group in detail in an attempt to substantiate the youthful psychological characteristics we have already found in this cohort which appear to be potential predictors of several disease states; b. to search prospectively for new potential predictors within the psychological and behavorial data; c. to determine whether special clusters of predictive variables appear to be associated with particular types of disease; and d. to bring together the substance of the Precursors Study's findings to date.

BIBLIOGRAPHIC REFERENCES: Betz BJ, Thomas CB: Individual temperament as a predictor of health or premature disease. Hopkins Med J 144: 81-89, 1979. Thomas CB, Santora PB, Shaffer JW: Health of physicians in midlife in relation to use of alcohol. Hopkins Med J 146: 1-10, 1980.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. on Aging $58,723

3.1245,
DETERMINANTS OF AGING AMONG SEVENTH-DAY ADVENTISTS

J.W. Kuzma, Loma Linda University, School of Health, Dept. of Biostatistics & Epidemiology, *Loma Linda, California* 92354 (R01 AG 01582-02)

Seventh-day Adventists are persons who neither drink nor smoke; over 40% are vegetarians. Their age distribution shows a significant proportion of older persons. In 1958, a longitudinal study of California Adventists was mounted to investigate the association of life habits with mortality and life expectancy. Results showed them to have a longer life expectancy than the general population and lower mortality rates for many chronic diseases. Since 1974, a larger group of Adventists has been studied to determine morbidity from major disease and to learn which factors in their lifestyle are associated with an extended longevity and reduced disease risk. The two separate studies have some 20,000 common enrollees but their records have not yet been linked.

Objectives of the research are fourfold; 1) to ascertain the vital status of persons originally enrolled and link their records with current enrollees, thus providing a 20-year mortalitiy followup; 2) to analyze long-term results in terms of the epidemiological correlates of aging; 3) to compare mortality data of the Adventist population with a comparable population from the general public; and 4) to learn whether Adventist's extended mortality is due to selective factors or results from the unique, if somewhat variable practices of group.

The methodology involves a computerized probability model to link data files of the two studies, along with trained field workers tracing church membership records.

Investigation into the longevity and quality of life of the oldest members of a long-lived group seems to be appropriate at a time of steady increase in the number of elderly persons in the general population.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. on Aging $98,859

3.1246,
MARITAL, SEXUAL AND SOCIAL FACTORS IN AGING

C. Martin, U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. on Aging, Human Performance Section, *Baltimore, Maryland* 21224 (Z01 AG 00018-14 CPB)

Systematic data concerning sexual, marital and social experience were obtained by structured interviews with males taking part in the Baltimore Longitudinal Study of Aging. In the course of the year, subjects aged 79 and younger at interview with a positive diagnosis of coronary heart disease (CHD) prior to July 1, 1979, were closely matched on age at interview to subjects negative for CHD. In over one hundred comparisons between CHD subjects and their controls, a remarkable correspondence between them was found in regard to wide range of personal and experiential attributes pertaining to marriage and sexual activity. In sum, present findings clearly suggest that these phenomena play no role in the etiology of CHD.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. on Aging funds n.a.

3.1247,
INVESTIGATIONS OF OSTEOARTHRITIS AND BONE LOSS

C.C. Plato, U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. on Aging, Human Performance Section, *Baltimore, Maryland* 21224 (Z01-AG-00022-04-CPB)

Osteoarthritis and bone loss are the two principal age related changes of the human skeleton. Even though these changes are considered inherent to aging, they may result in incapacitating ailments. The advanced cases of osteoarthritis (degenerative joint disease) produce severe restriction of movement associated with pain. Advanced bone loss may result in osteoporosis and frequent bone fractures. Most prominent are vertebral compression fractures and fractures of the femoral neck.

This project deals with the epidemiological, genetic and longitudinal aspects of osteoarthritis and bone loss among (1) the participants of the Baltimore Longitudinal Study, (2) in a sample of normal Guamanians (Chamorras), and (d) among patients afflicted with amyotrophic Lateral Sclerosis/Parkinsonism Dementia Complex of Guam. (4) Guamanian children of ages 7-17 who lived on Guam during periods of severe nutritional deprivation.

BIBLIOGRAPHIC REFERENCES: Plato, C.C., Wood, J., and Norris, A.H.: Bilateral asymmetry in bone measurements of the hand and lateral hand dominance. Am. J. Phys. Anthrop. 52:27-31, 1980. Plato, C.C. and Norris, A.H.: Bone Measurements of the second metacarpal and grip strength. Human Biology. 52:131-149, 1980.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. on Aging funds n.a.

3.1248,
ESTABLISH POPULATIONS FOR EPIDEMIOLOGICAL STUDIES

A.M. Ostefeld, Yale University, School of Medicine, Dept. of Epidemiology & Public Health, *333 Cedar St., New Haven, Connecticut* 06510

Conduct epidemiologic investigations in communities in order to develop new knowledge concerning the medical and social factors in health and diseases of the aged. This research program includes descriptive and analytical epidemiologic studies of existing problems and surveillance of newly developing problems all with an emphasis upon future interventionand prevention. This project will include case-controls, cross-sectional, and prospective studies in a carefully defined and accessible population using standard field and analytical techniques. An initial survey of the population is planned to obtain baseline data. Studies are to be completed on problems of pain, vision, learning, sleep, drug use,constipation, and social support. Time will be devoted to continual surveillance of the population, analysis of data, and development and completion of the specific problem-related studies.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. on Aging $242,762

3.1249,
ESTABLISH POPULATIONS FOR EPIDEMIOLOGICAL STUDIES

R.B. Wallace, University of Iowa, School of Medicine, Dept. of Preventive Medicine & Environmental Health, *Oakdale, Iowa* 52319

Conduct epidemiologic investigations in communities in order to develop new knowledge concerning the medical and social factors in health and diseases of the aged. This research program includes descriptive and analytical epidemiologic studies of existing problems and surveillance of newly developing problems all with an emphasis upon future intervention and prevention. This project will include case-controls, cross-sectional, and prospective studies in a carefully defined and accessible population using standard field and analytical techniques. An initial survey of the population is planned to obtain baseline data. Studies are to be completed on problems of pain, vision, learning, sleep, drug use,constipation, and social support. Time will be devoted to continual surveillance of the population, analysis of data, and development and completion of the specific problem-related studies.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. on Aging $454,455

3.1250,
ESTABLISH POPULATIONS FOR EPIDEMIOLOGICAL STUDIES

J.O. Taylor, Peter Bent Brigham Hospital, *721 Huntington Ave., Boston, Massachusetts* 02115

Conduct epidemiologic investigations in communities in order to develop new knowledge concerning the medical and social factors in health and diseases of the aged. This research program includes descriptive and analytical epidemiologic studies of existing problems and surveillance of newly developing problems all with an emphasis upon future intervention and prevention. This project will include case-controls, cross-sectional, and prospective studies in a carefully defined and accessible population using standard field and analytical techniques. An initial survey of the population is planned to obtain baseline data. Studies are to be completed on problems of pain, vision, learning, sleep, drug use,constipation, and social support. Time will be devoted to continual surveillance of the population, analysis of data, and development and completion of the specific problem-related studies.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. on Aging $293,421

3.1251,
PROSPECTIVE STUDY OF NUTRITION IN THE ELDERLY

J.S. Goodwin, University of New Mexico, School of Medicine, Dept. of Medicine, *University Hill N.E., Albuquerque, New Mexico* 87131 (R01 AG 02049-02)

The purpose of this study is to examine the effects of subclinical malnutrition on the physical health and life expectancy in 300 elderly people over a five year period. The nutritional status of these elderly individuals (65 years and older) is evaluated by yearly clinical exams, a three day diet history, and biochemical analysis of blood samples for total protein, albumin, transferrin, iron, total iron binding capacity, vitamins A, C, D, E, B6, B12, folate, riboflavin, thiamine, cholesterol, HDL cholesterol, triglycerides, copper and zinc. The results of these individual assessments will then be used to determine whether poor nutritional status predisposes subjects to increased morbidity and mortality during the five year follow-up period. These elderly individuals are also being evaluated immunologically with skin tests and in vitro mitogen responses to determine whether depressed immune

function correlates with subclinical malnutrition in this population.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. on Aging $97,455

3.1252,

EPIDEMIOLOGY OF OSTEOPOROSIS IN A JAPANESE POPULATION

R.D. Wasnich, Kuakini Medical Center, *347 N. Kuakini St., Honolulu, Hawaii* 96817 (R01 AG 02483-01)

The study is designed for longitudinal investigation of bone mineral loss and non-violent fractures in a homogeneous Japanese population in Hawaii, in conjunction with the Honolulu Heart Study and the Japan-Hawaii Cancer Study. This unique, well-studied population is one of exceptional stability and longevity, and also possesses unique social and cultural differences with regard to aging. Bone mineral loss will be assessed over a five-year period using photon absorptiometry, and non-violent fractures will be monitored. Loss of bone mineral will be correlated with multiple personal, social, and dietary characteristics, with special emphasis upon physical activity levels following menopause and retirement. Environmental and genetic factors will be studied by comparison of results with similar studies of Caucasians on the U.S. mainland. Osteoporotic subjects developing non-violent fractures will be compared to osteoporotic subject without fractures in an attempt to define pathologic versus physiologic bone mineral loss. This comparison will include extensive histopathologic examination at autopsy. A final aim is to identify a possible subgroup in a rapid, active stage of bone mineral loss who could prove valuable in a further study of the pathophysiologic mechanisms involved in osteoporosis.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. on Aging $265,975

3.1253,

SLEEP AND ITS DISORDERS IN THE FAMILY

W.C. Dement, Stanford University, School of Medicine, Dept. of Psychiatry & Behavioral Sciences, *300 Pasteur Dr., Stanford, California* 94305 (P01 AG 02504-01)

This is a program project proposal. It requests support for nine individual projects. Each project will address some aspect of sleep and sleep disorders as a function of the aging process. Two large projects involving clinical sleep disorders form the core of the program. The first includes a precise, comprehensive assessment of the prevalence of sleep-wake disorders in discrete populations of elderly individuals. The core project involves a broad-based longitudinal assessment of elderly persons with sleep apnea syndromes and matched control subjects. The longitudinal study will evaluate mortality, morbidity, cardiovascular-respiratory function, cognition, behavioral function, and daytime alertness. Essential to the efficient progress of the two core projects are the installation and refinement of a sleep disorders information system and a series of microcomputer-based ammbulatory monitors. Another clinical project involves two key issues in hypnotic safety and efficacy in elderly patients; the effect of sleeping pills in individuals with sleep apnea, and the effect of sleeping pills on daytime alertness. Four additional projects will address basic research issues concerning sleep and aging. Circadian rhythms and aging will be evaluated using life span recordings of sleep-wake and activity-inactivity in mice. Nocturnal determinants of daytime alertness in elderly humans will be evaluated in a series of sleep restriction, sleep loss, and napping studies. The precise relationship of respiratory function during sleep to aging will be evaluated using sophisticated invasive procedures in cats. Finally, the fourth project will focus on neurochemical processes during sleep in the aging brain, with in vivo studies of young and old cats and dogs. A planning group, including epidemiologists, statisticians, gerontologists, and others will direct the project and integrate the research findings.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. on Aging $627,101

3.1254,

THE U.S. MORTALITY DECLINE - EVIDENCE FROM CENSUS DATA

E.M. Crimmins, California Inst. of Technology, Graduate School, Dept. of Humanities & Social Sciences, *1201 E. California Blvd., Pasadena, California* 91109 (R01 AG 02699-01)

The purpose of the proposed research is to estimate levels and trends in U.S. mortality in the last half of the nineteenth century. In addition to estimating levels and trends at a national level the proposed project will estimate mortality differentials for regions of the country, rural and urban areas, and nativity groups. The project will also examine the determinants of mortality levels and change during this period. Data on nutritional levels and the provision of public health provisions will be related to mortality conditions. Mortality data available in the federal census will be used in this research. This research will add to current knowledge on the demographic transition by clarifying the American experience and by testing a number of theories of causation of the decline in mortality in the now developed world.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. on Aging $29,508

3.1255,

INTERNATIONAL DATA ON HEALTH RESEARCH ON THE ELDERLY

D.M. Macfadyen, World Health Org., *Copenhagen, Denmark* (R13 AG 02704-01)

The World Health Organization (WHO) through its Care of the Elderly Program will collect, review, and evaluate data on the behavioral, societal, economic, and organic aspects of aging in its member nations including the developing countries through industrial societies. The data collected will be information on various programs relating to health status, self-care, family care, and health education. The National Institute on Aging (NIA) is interested in developing the health and demographic data with the WHO. A conference composed of a small work group, international in membership, is to convene in December 1980 to review the epidemiological aspects of increased survivorship in order to guide preparations for the U.S. World Assembly on the Elderly to be held in 1982. Recognized experts in the field of health and social care for the elderly will be commissioned to prepare documents for the conference. A report will be produced including recommendations for social policy life enhancement of the elderly research, education, and technical cooperation among developing and developed countries.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. on Aging $90,000

3.1256,

DEPRESSION AND PARKINSON DISEASE - A MODEL IN AGING

R. Mayeux, Columbia University, College of Physicians & Surgeons, Dept. of Neurology, *630 W. 168th St., New York, New York* 10032 (R23 AG 02802-01)

The goal of this investigation is to evaluate biological factors in the depression of Parkinson Disease (PD) as a model of depression in the elderly. The prevalence and severity of depression will be determined and the associated intellectual changes will be documented. The relationship between the severity of PD, independence in daily activities, and depression will be analyzed. Metabolites of serotonin and norepinephrine in cerebrospinal fluid and urine will be studied. The functional integrity of the hypothalamus will be examined by provocative methods of stimulation and inhibition of anterior pituitary hormones, and by examining responses to thermal stress.

The long term objective of this study is to determine the role of the biogenic amines, serotonin and norepinephrine, in depression in PD, and to determine the relationship of degenerative changes within the hypothalamus in PD to depression. A longitudinal, prospective investigation is planned over three years. Hospitalization will be required in the General Clinical Research Center for purposes of withdrawing medication during the biochemical studies. The endeavor will cross several disciplines including Psychiatry, Neuropsychology, Neurochemistry, Neuroendocrinology and Neurology.

Depression and dementia constitute two major clinical features of PD that are poorly understood. These two disorders are also major health problems for the aged, and PD may serve as a model disease for the study of depression. Metabolic studies of primary depressive disorders implicate disturbances within the monoamine and hypothalamic-peptide systems, but are lacking in pathological verification. On the other hand, pathological changes in hypothalamus and loss of monoamines in PD are recognized, however, clinicopathological correlation is lacking. Should a relationship exist, it would broaden our understanding of the pathophysiological mechanisms underlying depression not only in PD but aging as well.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. on Aging $37,500

3.1257,

ANTECEDENTS OF PSYCHOLOGICAL HEALTH STATUS IN THE AGED

J.J. Conley, Wesleyan University, School of Liberal Arts & Sciences, Dept. of Psychology, *Middletown, Connecticut* 06457 (R23 AG 02837-01)

Psychological health status (emotional disorders, alcohol abuse, and life satisfaction) in the aged is assessed in a panel of subjects who have been under study for forty-five years. The antecedents of these aspects of psychological health status of the aged were measured in 1935-8 and 1954-5. These antecedents included familial, marital, occupational, health, and attitudinal factors as well as personality traits. The first data collection was undertaken by E. Lowell Kelly and involved the recruitment of 300 engaged couples for a longterm study of marital compatibility. Of these 600 subjects, seventy-four percent responded in the second data collection in the 1950's. As of June, 1980, 342 (fifty-seven percent) of the original subjects have responded in a third data collection. Another 109 of the original subjects are known to be deceased. The target number of responses is 400. The relationships of the antecedent variables to the three components of psychological health status in the aged and the interrelationships of the antecedents are studied by the statistical technique of path analysis. This analysis will permit causal inferences about psychological problems of the elderly and permit estimates of the relative contributions of early versus later determinants of psychological disturbances in older persons. The effects of biases in the original sample toward over-representations of better educated and more intelligent subjects and attrition biases toward marital stability, low geographical mobility and longevity will be assessed by means of stratified data analyses. The confirmed models involving antecedents and outcomes will permit estimates of the effectiveness of treatment and prevention efforts on the psychological health status of the aged. The relationships of physical and psychological health problems over time can be determined since physical symptom checklists and information from the research partner (fiance, later spouse) on physical health were gathered in all three data collections. The linkage of psychological stress and cardiovascular diseases and the social predictors of early senility can be assessed longitudinally with this data set.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. on Aging $24,295

3.1258,

EPIDEMIOLOGICAL INVESTIGATION OF THE MENOPAUSE

S.M. McKinlay, Beth Israel Hospital, *330 Brookline Ave., Boston, Massachusetts* 02215 (R01 AG 02905-01)

No summary has been provided to the Smithsonian Science Information Exchange.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. on Aging $202,682

3.1259,

AN EPIDEMIOLOGICAL INVESTIGATION OF THE MENOPAUSE

S.M. McKinlay, American Inst. for Research, *22 Hilliard St., Cambridge, Massachusetts* 02138 (R01 AG 03111-01)

No summary has been provided to the Smithsonian Science Information Exchange.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. on Aging $147,502

3.1260,

EPIDEMIOLOGY OF FRACTURES IN AGING WOMEN

N.S. Weiss, Fred Hutchinson Cancer Research Center, *1124 Columbia St., Seattle, Washington* 98104 (R01 AG 01764-03)

A case-control study is being proposed to determine to what extent exogenous estrogens protect against fractures among menopausal women. All women who (a) sustained a fracture of a hip or forearm during the interval April 1977-March 1979, (b) were 50-74 years of age and residents of King County, Washington, and (c) were treated by one of several dozen orthopedic surgeons participating in the study will be identified. They will be interviewed concerning use of estrogen preparations and related matters, and their answers compared to those of a random sample of women in the community.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Inst. on Aging $25,929

3.1261,

DEVELOPMENT OF GLOSSARY OF EPIDEMIOLOGIC TERMS

J. Amsel, University of Pennsylvania, School of Medicine, Dept. of Research Medicine, *36th & Hamilton Walk, Philadelphia, Pennsylvania* 19174 (R01 LM 03531-02)

The proposed research will utilize regional and international committees to construct a cooperative glossary of epidemiologic terms, sponsored by the International Epidemiologic Association. This glossary is designed to unify terminology currently being used in the field, and to provide a comprehensive compendium of definitions of epidemiologic terms for reference by workers in the field and in related fields. At present, the collection of terms being used in the field has proliferated to the point that a number of terms are frequently used for a single concept, and vice versa. The glossary will provide a forum for decision-making by a representative body of individuals in the field. The initial proposed collection and grouping of terms to be defined will be carried out by the investigators, and revisions will be made by a committee composed of members from North American institutions. Definitions of terms will be initially drafted by the investigators and will be revised by the North American committee. The final draft of the North American committee will then be submitted to an international committee of International Epidemiological Association regional representatives, who will review the definitions. Those for which a majority of regional representatives suggest a change will be revised, and a vote taken on suggested definitions. Checks will then be carried out by the prinicpal investigators to ensure that no internal inconsistencies among definitions exists. An index will then be prepared. The resulting glossary will represent a first edition, and it is expected that periodic updatings will occur under the auspices of the IEA.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Library of Medicine $32,397

3.1262,

MONOGRAPH - INFECTIOUS DISEASE - SIMULATION OF EPIDEMICS

E. Ackerman, University of Minnesota, Minneapolis Campus, School of Medicine, Dept. of Laboratory Medicine & Pathology, *1305 Mayo, Minneapolis, Minnesota* 55455 (R01 LM 03582-01)

A monograph, 'Infectious Disease: Simulation and Vaccination Strategies,' is proposed. This reorganization would make available in single document the results of studies by the investigators, extending over two decades. This information previously has been published in a variety of journals; the spread of the information makes it inconvenient for use in the teaching of the epidemiology of infectious diseases. The monograph should provide a valuable library aid as well as enabling other investigators to generate simulation routines of a similar or related nature.

An attempt will be made to divide each chapter into two parts. One would be aimed at an audience similar to the readership of the American Journal of Epidemiology. The other part of each chapter would discuss simulation algorithms and techniques in greater depth.

This monograph should be useful to research epidemiologists interested in infectious diseases, to public health officers concerned with vaccination strategies, to students in epidemiology, and to computer scientists and medical informatics specialists interested in applications of Monte Carlo simulation techniques. The primary consumers of such a monograph would be biomedical libraries. A number of additional copies might be purchased by individual research workers and University professors. Current estimate of number of copies desired is about 1,000.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Library of Medicine $28,658

3.1263,

COST EFFECTIVE METHODS FOR COLLECTING HEALTH DATA

S. Sudman, University of Illinois, Urbana Champaign Campus, Survey Research Lab., *414 David Kinley Hall, Urbana, Illinois* 61801 (R01 HS 03843-01A1)

The proposed study will assess the cost-effectiveness of mixed mode methods for collecting health data by combining diary mail-in procedures, which yield higher quality data, with telephone interviews, which are less expensive. The objective of the research is to determine how the cost of diary panel procedures could be reduced without unduly compromising the quality of the data obtained. The design calls for three rotating panels of 400 households each. At the conclusion of an initial interview, each respondent will be asked to maintain a monthly or bimonthly diary of household health events for a four-month period. Any respondent who fails to return a monthly diary will be interviewed by telephone. One year later each household will be asked to continue in the panel for a period of one, two, or four months. The following experimental treatments will be tested utilizing a 2 to the second power x 3 x 4 factorial design: 1) initial face-to-face vs. telephone interviews; 2) compensation for a completed diary or telephone interview vs. compensation contingent on completion of a diary; 4) one-month diary forms vs. two-month diary forms; 5) telephone vs. monthly mail vs. no scheduled contact with households.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Office of Health Research Statistics & Technology, National Center for Health Services Research $166,657

3.1264,

DRUG PRESCRIBING & EVALUATIONS BY PHARMACISTS IN SNFS

J.F. Thompson, University of Southern California, School of Pharmacy, Dept. of Pharmacy, *2025 Zonal Ave., Los Angeles, California* 90033 (R18 HS 03898-01)

To investigate two different interventions with the objective of improving the quality and economy of drug prescribing in nursing homes, a randomized control-group, pretest, post-test design will be implemented. Participating patients in various skilled nursing facilities (SNFs) will be randomly assigned in each SNF to three groups. Group I will receive drug prescribing by pharmacists with physicians responsible for the medical diagnoses and monthly physical reassessment of the patients. Group II will involve comprehensive drug therapy evaluations written monthly by pharmacists which can be utilized by the physician for prescribing decisions. Group III will be the control group receiving the normal physician prescribing and pharmacist monthly review in compliance with current SNF regulations. Process and outcome measures will be utilized to compare the ability of these experimental treatments to reduce the incidence of inappropriate therapy, reduce the incidence of adverse drug reactions, reduce the use of unnecessarily costly drug products and improve other factors related to the quality and economy of the patients care and drug therapy. Various descriptive and analytical statistical procedures will be used as appropriate to examine the data and results, including cross tabulations and analysis of variance.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Office of Health Research Statistics & Technology, National Center for Health Services Research $85,938

3.1265,

EVALUATION STUDY OF AN ALTERNATIVE BIRTHING CENTER

G. Baruffi, Johns Hopkins University, School of Hygiene & Public Health, Dept. of Maternal & Child Health, *615 N. Wolfe St., Baltimore, Maryland* 21205 (R01 HS 03762-02)

Over the past few years, increasing numbers of women have elected to deliver outside the hospital in maternity centers or at home. The objective of this study is to evaluate the physical safety of an 'out-of-hospital' maternity center. Two questions are addressed by this epidemiological prospective non-concurrent study: 1) Do maternal and neonatal outcomes of two populations comparable on sociodemographic and medical-obstetric risk differ in two institutions with different approaches to maternity care? 2) Does the process of transfer from one institution to another involve increases risk to sick pregnant women and newborns?

The study populations, selected from Booth Maternity Center and Thomas Jefferson University Hospital, both located in Philadelphia, Pennsylvania, will be matched by distribution for the investigation of the first question and by pair for the investigation of the second. Matching variables will be: race, maternal age, education, gravidity, and previous pregnancy loss. Pregnancy outcomes process of care, medical-obstetric risk and sociodemographic characteristics will be analyzed by univariate and multivariate statistical techniques.

SUPPORTED BY U.S. Dept. of Health & Human Services, Public Health Service, Office of Health Research Statistics & Technology, National Center for Health Services Research $128,560

3.1266,

INTERRELATIONSHIP BETWEEN LEAD IN THE DWELLING UNIT AND BODY LEAD BURDEN IN PRESCHOOL CHILDREN

Unknown, Ohio State University, Columbus Campus, Graduate School, *190 N. Oval Dr., Columbus, Ohio* 43210 (H-2897CA)

This project will compile, code, edit, and analyze health and housing data files from a local child screening program (Columbus, Ohio) to determine the relationships that exist between blood lead levels and housing, demographic and biochemical factors. Staff from Children's Hospital Research Foundation and Ohio State University will attempt to determine the nature and extent of the lead poisoning problem in Columbus, Ohio by a retrospective study of the existing data from HEW-sponsored screening program which has been underway since 1972.

SUPPORTED BY U.S. Dept. of Housing & Urban Development, Office of Policy Development & Research funds n.a.

3.1267,

AN ANALYSIS OF THE PHILADELPHIA LEAD POISONING DATA AND ENVIRONMENTAL LEAD LEVELS

Unknown, University of Pittsburgh, Graduate School, *1028H Cathedral of Learning, Pittsburgh, Pennsylvania* 15213 (H-5062CA)

This project will compile, code, verify and analyze data files from a local child screening program (Philadelphia, PA), air lead levels from sampling sites in the city and other environmental lead data which may be available. The variation of blood lead levels with paint, air-lead, demographic or population factors. Traffic density and time will be analyzed to determine significance of these variables.

SUPPORTED BY U.S. Dept. of Housing & Urban Development, Office of Policy Development & Research funds n.a.

3.1268,

AN ANALYSIS OF DATA FROM THE LOUISVILLE CHILDHOOD LEAD POISONING CONTROL PROGRAM

Unknown, Louisville & Jefferson City Dept. of Public Health, *400 E. Gray St., Box 1704, Louisville, Kentucky* 40201 (H-2550RG)

This is a continuation of a joint HUD/HEW demonstration project underway since 1976. In 1978 the tasks of establishing an operating model program were completed. The data from files of the 14,000 children screened since 1974 was coded and entered onto a computer data base. In this fiscal year an analysis of this data base will be continued to determine those characteristics (child, housing, air, plumbing) associated with higher lead-in-blood levels and whether long-range effects of these elevated levels are detectable.

SUPPORTED BY U.S. Dept. of Housing & Urban Development, Office of Policy Development & Research funds n.a.

3.1269,

SOCIAL SUPPORT FOR MEDIATING THE EFFECTS OF OCCUPATIONAL STRESS ON THE HEALTH OF INDUSTRIAL WORKERS

J.A. Wells, Duke University, Graduate School, *Durham, North Carolina* 27706 (91-37-76-53)

The effects of various types and sources of social support on the relationship between job-related psy-

chosocial stress and worker health are explored in this study. Since interpersonal relations are perhaps the most tractable aspect of the work environment, the results of this research will have direct policy implications for the improvement of worker health, a primary determinant of the quality of work. The results will also contribute to building an empirically based theory of social support. The data include: (1) Questionnaire measure of perceived stress, social support, and health collected in a large plant manufacturing rubber, tires, plastics, and chemicals; (2) physical examination measures gathered on a subsample of workers by the National Institute of Occupational Safety and Health (NIOSH) and OHSG; and (3) objective job-stress ratings by a panel of judges including members of the union, plant management, and members of the research team familiar with the plant.

SUPPORTED BY U.S. Dept. of Labor, Employment & Training Admin. funds n.a.

3.1270,

EPIDEMIOLOGICAL STUDY ON THE PREVALENCE OF MEDICAL AND DENTAL CONDITIONS AT JOB CORPS CENTERS

J.C. Probst, Kappa Systems Inc., *1501 Wilson Blvd., Arlington, Virginia* 22209

This demonstration study will investigate the health status of enrollees entering Job Corps and the health problems they develop at their centers. To do so, the project staff will collect health care data from a small representative sample consisting of enrollees at eight Job Corps centers, varying as to size, proportion of male and female corpsmembers, ethnic composition, geographical location, and other relevant characteristics. This information will permit Job Corps to improve its health care and health education programs and thereby enhance the employability of corpsmembers.

SUPPORTED BY U.S. Dept. of Labor, Employment & Training Admin. funds n.a.

3.1271,

ASBESTIFORM MINERALS

M. Ross, U.S. Dept. of the Interior, Geological Survey, Geologic Div., *12201 Sunrise Valley Dr., Reston, Virginia* 22092 (9710-01991)

OBJECTIVES: Assess the epidemiological, mineralogical, and petrological studies that have been made which can contribute to our knowledge of the role naturally occurring minerals play in the production of lung and intestinal cancer and mesothelioma in the U.S. population. Initiate mineralogic studies which may give an insight into the 'asbestos and health' problem.

SUPPORTED BY U.S. Dept. of the Interior, Geological Survey, Geologic Div. $80,600

3.1272,

CARBON MONOXIDE AND OTHER TOXIC GASES IN COMMERCIAL TRUCK CABS

Ziskind, Science Applications Inc., *1801 Ave. of the Stars, Suite 1205, Los Angeles, California* 90067

Determine the concentrations of potentially harmful emission pollutants in the driver's compartment of a sample of heavy-duty diesel trucks and assess the effects of the concentrations of driver health and performance.

Document provided to S.S.I.E. by the H.R.I.S.

SUPPORTED BY U.S. Dept. of Transportation, Federal Highway Admin., Office of Research & Development, Traffic Systems Div. funds n.a.

3.1273,

FATAL ACCIDENT RECORDS SYSTEM

H. Pember, State Div. of Highways, *3211 State St., P.O. Box 7129, Boise, Idaho* 83707

The objective of this effort is to establish a research oriented file of highway fatalities in support of the Alcohol Countermeasures Program. The contractor shall forward manually encoded cases of fatal accidents on a monthly basis. Data sources specified are: official enforcement officers' traffic accident reports, driver history files, death certificates, coroner's reports, hospital records, health department records.

Document provided to S.S.I.E. by the H.R.I.S.

SUPPORTED BY U.S. Dept. of Transportation, National Highway Traffic Safety Admin. funds n.a.

3.1274,

THE HEALTH EFFECTS OF AIR POLLUTION ABATEMENT

L.B. Lave, Carnegie Mellon University, Graduate School of Industrial Admin., Dept. of Economics, *Frew Ave. & Margaret Morrison, Pittsburgh, Pennsylvania* 15213 (R806365-01)

An epidemiological investigation of the effect of air pollution on mortality rates for the general population is the focus of this study; it seeks to isolate the qualitative and quantitative association between particular air pollutants and various mortality rates, controlling for other factors hypothesized to affect mortality. Statistical analysis of more than 100 US cities from 1960 through 1974 will be the basic method. Previous analyses will be replicated with the new data set and attempts will be made to investigate defects in earlier analyses. If forecasts from previously estimated models fail to predict mortality rates in cities or if there is evidence of misspecification of the relationship, additional functions will be investigated. Attempts will be made to isolate the effects of individual pollutants and to control for smoking habits. Finally, the best estimates of the effect of air pollution on mortality will be translated into estimates of the benefits of air pollution abatement.

SUPPORTED BY U.S. Environmental Protection Agency $12,901

3.1275,

HEALTH EFFECTS OF AIR POLLUTION IN THE TEXAS GULF COAST AREA

P.A. Buffler, University of Texas, Health Science Center at Houston, School of Public Health, Dept. of Epidemiology, *6515 Freeman, Houston, Texas* 77025 (R807108-01)

In order to assess the biomedical consequences of exposure to air pollution in the Texas Gulf Coast Area, three epidemiologic studies are proposed: (1) a two-phase study of environmental influences on lung cancer production in Harris County, where the city of Houston is located; (2) a longitudinal assessment of the degree to which daily variation in air pollution concentrations influences daily symptomatology and lung function in asthmatics; and (3) a longitudinal assessment of the degree to which air pollution concentrations shortly preceding and during exercise influence performance, physiology, and symptomatoloty in vigorously exercising healthy people.

This group of studies has been selected to achieve balance in four respects: 1) the studies will assess the influence of short-term, daily and chronic exposures, 2) the studies will consider a spectrum of health outcomes, 3) the studies consider variables ranging from those which could reflect an existing air pollution effect whose biological significance is difficult to quantify to those which may be difficult to associate with pollution exposure, but whose biological significance is unequivocal, and 4) all the studies are designed to address specific biomedical environmental aspects of the Texas Gulf Coast Area and to yield results which can be directly compared to other studies in the Southern California Area.

These investigations will be collaborative efforts of the University of Texas School of Public Health and the Population Studies Division of the Environmental Protection Agency. The study design specification for each investigation will be determined collaboratively during the first months of each study.

SUPPORTED BY U.S. Environmental Protection Agency $798,648

3.1276,

COOPERATIVE AGREEMENT FOR EPIDEMIOLOGY RESEARCH CENTER

E.P. Radford, University of Pittsburgh, Graduate School of Public Health, Dept. of Epidemiology, *4200 5th Ave., Pittsburgh, Pennsylvania* 15260 (R806815-01)

By a cooperative research center agreement between of the EPA and the University of Pittsburgh, an Environmental Epidemiology Center would be established at the University's Graduate School of Public Health. Its primary goals would be to: (1) bring together a wide range of school, university, community, regional, national, and even international resources to plan and perform research in the field of environmental epidemiology and contributory and related fields; (2) provide specialized assistance to the EPA; (3) provide means for scientists in these fields from outside the university to contribute to Center research, service, and educational activities; and (4) provide advanced graduate and post-graduate training in these fields. An executive committee, comprised of Dr. Edward P. Radford, Director and Professor of Epidemiology, Dr. Philip E. Enterline, Associate Director and Program Coordinator for Biometry, Program Coordinators for Environmental Epidemiology of Chronic Disease, Environmental Toxicology, Air and Water Pollutant Effects, and Environmental Radiation Effects (Drs. Lewis H. Kuller, Yves C.E. Alarie, Julian B. Andelman, and Neil Wald, respectively), Dean and Professor of Epidemiology Herschel E. Griffin, and Directors of EPA Health Effects Research Laboratories, would govern the Center with the assistance of a National Advisory Board having EPA, Center, and 'external' representation. A variety of mechanisms having optimal flexibility to respond to ever-changing needs and circumstances would be used to address needs of the EPA and field of environmental epidemiology and assistance needs of the EPA. In addition to research and service activities, Center Fellows, Visiting Scholars, EPA Visitors/Exchange, and Symposium Series Programs would be established. The Center would also provide graduate- and post-graduate-level training, and perhaps new courses and educational programs in environmental epidemiology would be established through the Center and School.

SUPPORTED BY U.S. Environmental Protection Agency $346,000

3.1277,

FATAL ACCIDENT REPORTING SYSTEM (FARS)

P.W. Haseltine, State Office of Highway Safety Planning, *7150 Harris Dr., General Office Bldg., Lansing, Michigan* 48913

Since 1972, the National Highway Traffic Safety Administration (NHTSA) with the cooperatioh of the States has been developing the Fatal Accident Reporting System (FARS). The FARS is a national computerized data collection system which contains reports of current data on all motor vehicle traffic accidents in which there is a fatality. The FARS definition of a fatality is one which occurs within thirty (30) days of a motor vehicle traffic accident and as a result of the accident. The FARS is a primary tool which can be used by the NHTSA, the States, and the highway safety community to quantify the national and State fatal accident picture, to identify problem areas, to evaluate highway safety countermeasure programs, and to enhance operation at both State and Federal levels. The FARS data is used to produce official NHTSA fatality statistics and reports to make the public aware of changing trends in highway fatalities. Special data on particular accidents such as airbag accidents, air brake truck accidents, etc. can be helpful to the DOT in making sensitive policy decisions regarding implementation or evaluation of Federal Motor Vehicle Safety Standards. Included in the system are data describing the accident, vehicles, drivers, occupants and non-occupants. Primarily, data elements are extracted from the police officer's traffic accident report and from special supplementary reports which may be placed in the State's police report file. In addition, data is extracted as needed from other sources which include but are not limited to the driver license files, vehicle registration files, death certificates, coroner's reports, hospital records, autopsy reports, Vital Statistics files, Emergency Medical Service records, and State Highway Department records.

Document provided to S.S.I.E. by the H.R.I.S.

SUPPORTED BY U.S. Environmental Protection Agency, Office of Air Quality Planning & Standards funds n.a.

3.1278,

DEVELOPMENT AND EVALUATION OF AN ENVIRONMENTAL DATA ANALYSIS SYSTEM

L. Milask, Sigma Data Computing Corp., *12730 Twinbrook Pkwy., Rockville, Maryland* 20852 (79-0655)

OBJECTIVE: The objective of the IAG is to provide for collaboration in the development and application of the UPGRADE System to support analysis in the area of environmental health.

APPROACH: Databases dealing with such environmental health areas as populations at risk to air polluton, morbidity and mortality rates, and/or health care utilization will be investigated and appropriate variables added to existing databases. These data will be analyzed using the UPGRADE System and reports prepared.

PROGRESS: Investigation of databases has begun. Enhancements to the UPGRADE/EXTRACT System to allow for increased data capabilities are underway. Information on the SMSA level is being collected and morbidity rates are being calculated in preparation for a new database. New release 4.0 has been com-

pleted and is in operation. User's manual will be available by January 1980.
SUPPORTED BY U.S. Environmental Protection Agency, Office of Monitoring & Technical Support $70,000

3.1279,

EPIDEMIOLOGICAL STUDY OF WOMEN EXPOSED TO STYRENE AND REPRODUCTIVE DYSFUNCTION

G. Lemasters, University of Cincinnati, College of Medicine, *Eden & Bethesda Aves., Cincinnati, Ohio* 45221 (R806669-02)

OBJECTIVE: The objectives are to determine whether or not women occupationally exposed to styrene experience any reproductive dysfunction when compared with a similar working unexposed control group, and to determine if measuring reproductive dysfunction is a useful methodology for monitoring populations exposed to toxic chemicals.

APPROACH: The approach is through the use of an historical cohort epidemiological study of women aged 18-30 who have worked in the styrene manufacturing industry. A questionnaire will be administered via telephone to the exposed and unexposed workers to measure spontaneous abortion, menstrual dysfunction, stillbirth, prematurity, infertility and congenital malformation.

SUPPORTED BY U.S. Environmental Protection Agency, Office of Research & Development, Health Effects Research Lab. $170,000

3.1280,

DEVELOPMENT OF CHRONOEPIDEMIOLOGIC METHODS WITH REFERENCE TO CARDIOPULMONARY CONDITIONS

F. Halberg, University of Minnesota, Minneapolis Campus, School of Medicine, Dept. of Laboratory Medicine & Pathology, *1305 Mayo, Minneapolis, Minnesota* 55455 (R804512)

Data from studies of cardiopulmonary conditions will be analyzed by methods containing both biological and environmental periodicities. Methods will be developed for epidemiologic studies so that biologic variability can be separated from effects of environmental factors.

SUPPORTED BY U.S. Environmental Protection Agency, Office of Research & Development, Health Effects Research Lab. funds n.a.

3.1281,

THE EFFECT OF LOW LEVELS OF SULFURIC ACID MIST EXPOSURE ON HUMAN PULMONARY FUNCTION

Horvath, University of California, Riverside Campus, Graduate School, *Riverside, California* 92502 (R804853)

The aim of this investigation is to examine the effects of acute exposure to H_2SO_4 mist in humans and some of the factors affecting toxicity temperature, humidity and duration of exposure.

SUPPORTED BY U.S. Environmental Protection Agency, Office of Research & Development, Health Effects Research Lab. funds n.a.

3.1282,

THE EFFECTS OF OXIDANT AIR POLLUTANTS ON HUMAN RESISTANCE TO VIRAL INFECTION

Unknown, University of North Carolina, Chapel Hill Campus, Graduate School, *Chapel Hill, North Carolina* 27514 (68-02-3403)

Epidemiologic and animal studies show that oxidant air pollutants contribute to an increase in the number and/or severity of respiratory tract infections in man are caused by respiratory viruses, and therefore, the effect of an air pollutant on the host-virus interaction should be examined. The objective of this project is to determine in human subjects whether the host response to respiratory viral infections is decreased and to define the mechanisms of altered resistance related to the air pollutant exposure. The ultimate objective is to develop a human infectivity model using a nasally administered influenza virus vaccine with which to examine the effects of concurrent exposures. The effects of the pollutant on nasal virus levels, on the duration of virus shedding on local interferon production, and on influenza virus specific secretory antibody levels will be studied using this human infectivity model.

SUPPORTED BY U.S. Environmental Protection Agency, Office of Research & Development, Health Effects Research Lab. funds n.a.

3.1283,

DETERMINE IMPACT OF PROXIMAL LIVING TO LEAD, COPPER AND ZINC SMELTERS ON TRACE METAL BURDEN

R. Handy, Research Triangle Inst., *P.O. Box 12194, Research Triangle Park, North Carolina* 27709 (68-02-2442)

Trace metal absorption study of 1680 persons of different ages will be conducted in 2 zinc - 2 copper smelter communities. Demographic data/blood/hair/urine specimens/housedust/tap water/air samples will be obtained. Samples will be analyzed for Pb/Zn/Cu/As/Cd/Mn. Conclusion of chemical analyses at end of February. Review of draft final report. Final report on first 3 sites and pretest site expected at end of March.

SUPPORTED BY U.S. Environmental Protection Agency, Office of Research & Development, Health Effects Research Lab. funds n.a.

3.1284,

CANCER MORTALITY & BIRTH DEFECTS IN A POPULATION LIVING NEAR POLYVINYL CHLORIDE MANUFACTURING PLANT

G. Theriault, Universite Laval, *2705 Boul. Laurier, c/o Le Centre Hosp. de l'Univ., Quebec City, Quebec, Canada* G1V 4G2 (68-02-2780)

To ascertain if the vinyl chloride monomer-VCM-in the environment of Shawinigan-Quebec is above detection limits. The complete study assessing exposure of the community to VCM will be designed on the basis of the preliminary findings on VCM detectability. Cancer mortality and birth defects will be correlated to VCM measurements. Data collection and analyses are continuing. Annual report is overdue.

SUPPORTED BY U.S. Environmental Protection Agency, Office of Research & Development, Health Effects Research Lab. funds n.a.

3.1285,

A STUDY OF CANCER AND THE PUBLIC DRINKING WATER SUPPLIES IN MISSOURI

C.J. Marienfeld, University of Missouri, Columbia Campus, School of Medicine, Dept. of Environmental Health, *M228 Medical Sciences, Columbia, Missouri* 65201 (R805297-03)

OBJECTIVE: To determine if drinking water contaminants are contributing causes for observed variations in cancer rates among counties and water service areas in Missouri.

APPROACH: Cancer mortality rates are computed for, and compared among, geographic areas defined by occurrence of drinking water contaminants, water treatment practices, etc.

PROGRESS: Some interesting relationships have been observed in the cancer death rates in Missouri and water supply characteristics. Supplies have been classified as to impact of coal mining and burning. Results from the epidemiological studies seem promising enough to continue. If more consistent relations are developed some more chemistry and bioassay would seem warranted.

SUPPORTED BY U.S. Environmental Protection Agency, Office of Research & Development, Health Effects Research Lab. $150,000

3.1286,

EVALUATION OF HEALTH RISKS ASSOCIATED WITH WASTEWATER TREATMENT, SLUDGE COMPOSTING AND HAZARDOUS WASTES DISPOSAL

C.S. Clark, University of Cincinnati, College of Medicine, Dept. of Environmental Health, *Eden & Bethesda Aves., Cincinnati, Ohio* 45221 (R807357-01)

OBJECTIVE: To evaluate the health effects, if any, of workers involved in composting municipal sludge. To examine serum from new activated sludge plant workers at various times for specific antibody for evidence of infection (blood obtained under another project and is already in storage).

APPROACH: Workers with high exposure from composting or exposure to wastewater at sites in several cities will be compared to workers with low exposure to compost. Both environmental and clinical evaluations will be made and statistical evaluations made of differences between groups.

SUPPORTED BY U.S. Environmental Protection Agency, Office of Research & Development, Health Effects Research Lab. $240,000

3.1287,

PERFORMANCE OF LITERATURE SURVEY AND ASSESSMENT OF CHEMICAL CONTAMINANTS FOUND IN HUMAN TISSUE

A.S. Hammons, U.S. Dept. of Energy, Oak Ridge National Lab., Biology Div., *P.O. Box X, Oak Ridge, Tennessee* 37830 (78-D-X0205)

Preparation of a list of all known chemical contaminants resulting from environmental pollution and found in human tissue in the U.S. and the assessment of the pathways and transformation process by which said contaminants are transmitted to man.

SUPPORTED BY U.S. Environmental Protection Agency, Office of Research & Development, Health Effects Research Lab. funds n.a.

3.1288,

CANCER INCIDENCE IN RELATION TO ASBESTOS IN DRINKING WATER IN THE PUGET SOUND AREA

L. Polissar, Fred Hutchinson Cancer Research Center, *1124 Columbia St., Seattle, Washington* 98104 (R805846-02)

OBJECTIVE: Study the possible relation between ingested asbestos and cancer.

APPROACH: Use epidemiology studies of geographical and case control types.

PROGESS: Preliminary data on the geographic study showed sites with sex-consistent and significant positive risks for colon, rectum and digestive organs. There is apparently no strong effect showing up.

SUPPORTED BY U.S. Environmental Protection Agency, Office of Research & Development, Health Effects Research Lab. $217,000

3.1289,

ANALYSIS OF EPIDEMIOLOGICAL STUDIES OF COMMUNITY HEALTH AND AIR POLLUTION EXPOSURE

C.M. Shy, University of North Carolina, Chapel Hill Campus, School of Public Health, Dept. of Epidemiology, *Rosenau Hall, 201H, Chapel Hill, North Carolina* 27514 (68-02-2763)

During the period 1970 to 1975 EPA collected some 82 data sets relating health to air pollution. The overall project was given the acronym CHESS. During the next several years only 19 of these data sets were published. A congressional investigation demanded that the remaining data sets be reviewed - and those of higher quality be reported in the peer reviewed literature. Because there was insufficient inhouse manpower to complete this task, a contract was let with UNC to analyze and publish some of these data sets. 36 data sets were selected and furnished to UNC. The contract calls for 12 to 21 reports covering these 36 data sets. The contractor has had 3 reports reviewed by an external committee. We have received no reports for our review.

SUPPORTED BY U.S. Environmental Protection Agency, Office of Research & Development, Health Effects Research Lab. funds n.a.

3.1290,

HEALTH EFFECTS IN CHILDREN EXPOSED TO VINYL CHLORIDE

R. Zizkind, Science Applications Inc., *1200 Prospect St., P.O. Box 2351, La Jolla, California* 92037 (68-02-2986)

Investigate the health effects of vinyl chloride in a population exposed during childhood. Data collection is continuing. Annual report is overdue.

SUPPORTED BY U.S. Environmental Protection Agency, Office of Research & Development, Health Effects Research Lab. funds n.a.

3.1291,

ASSESSMENT OF THE CONTRIBUTIONS OF ENVIRONMENTAL CARCINOGENS TO CANCER INCIDENCE IN THE GENERAL PUBLIC

Unknown, Geomet Inc., *15 Firstfield Rd., Gaithersburg, Maryland* 20760 (68-03-2504)

Prepare a list of potentially significant environmental carcinogens. Conduct case-control studies in 2 geographic areas. Identify relevant federally funded research. Recommend research program to close identified gaps. All data collection and analysis has been completed. Approximately two-thirds of the task reports have been submitted. The southeast Ohio pilot study report indicates that the originally identified 'exposed' population is marginally adequate in size for a cancer study. Monitoring efforts are currently underway to determine the extent to

which the geographic area (and study population) can be expanded.
SUPPORTED BY U.S. Environmental Protection Agency, Office of Research & Development, Health Effects Research Lab. funds n.a.

3.1292,

EPIDEMIOLOGICAL STUDY OF FARM FAMILIES UTILIZING MUNICIPAL SLUDGE

V.V. Hamparian, Ohio State University, Columbus Campus, School of Medicine, Dept. of Medical Microbiology, *370 W. 9th Ave., Columbus, Ohio* 43212 (S805189)
OBJECTIVE: Health effects in humans and animals resulting from the application of municipal sewage sludge to farms in Ohio will be evaluated. Subjects covered include: (1) Monitoring of pathogens in stools, sludge, and soil. (2) Monitoring farm family health status and serology. (3) Relating sludge virus to viral infections. (4) Investigating viability of soil pathogens. (5) Monitoring health status of farm animals. (6) Monitor trace element accumulation of cattle. (7) Measure parasite survival and infection rate of cattle. (8) Monitor animals for tuberculosis and Salmonella infection. 9. Monitor cadmium content in stools and relate to cadmium intake.
SUPPORTED BY U.S. Environmental Protection Agency, Office of Research & Development, Health Effects Research Lab. $203,000

3.1293,

THE RELATIONSHIP BETWEEN CANCER MORTALITY AND POPULATION EXPOSURE TO ENVIRONMENTAL FACTORS

P.W. Preuss, State Dept. of Environmental Protection, *P.O. Box 1390, Trenton, New Jersey* 08625 (R805526)
To establish whether a computerized data base on manufacture/use/storage/processing/formation/ release/disposal and repackaging in N.J. of carcinogenic substance is feasible. Identify area of state and population group subject to increase cancer risk from environmental exposure. Accepted. Final report filed with HERL/RTP. No publication.
SUPPORTED BY U.S. Environmental Protection Agency, Office of Research & Development, Health Effects Research Lab. funds n.a.

3.1294,

EPIDEMIOLOGICAL STUDY OF INCIDENCE OF CANCER RELATED TO INDUSTRIAL EMISSIONS IN CONTRA COSTA COUNTY

D.F. Austin, State Dept. of Health Services, *714 P St., Sacramento, California* 95814 (R806396)
Establish relationship between site and type of cancer mortality and morbidity as related to environmental exposure in the heavily industrialized part of Contra Costa County for the years 1974-1976. This 130-page progress report describes eight topics--namely, summary, task analysis, advisory committee meeting, occupational monitoring meeting, occupational monitoring county profile, air emission studies, and literature review. Selected accomplishments are: Completion of the air emission collections. Technical advisory committee meeting. Occupational monitoring meeting. Extension of the occupational monitoring.
SUPPORTED BY U.S. Environmental Protection Agency, Office of Research & Development, Health Effects Research Lab. funds n.a.

3.1295,

SIMS THREE-YEAR STUDY ON STATISTICS AND ENVIRONMENTAL FACTORS IN HEALTH

D. Thomsen, S.I.A.M., *33 S. 17th St., 1405 Architects Bldg., Philadelphia, Pennsylvania* 19103 (R804932)
SIAM Institute for Mathematics and Society (SIMS) is directing the statistical research personnel at Columbia and Stanford Universities. The investigators are developing more sophisticated techniques for the analysis of environmental and health data. Whittemore has developed a model for the combined effects of cigarette smoke and asbestos exposure on cellular atypia in sputum. A statistical program is being written for the application of the model. This research will elucidate the role of both factors in the development of lung cancer. She has also addressed the problem of estimating human cancer risk at low doses of environmental carcinogens, in particular the sensitivity of risk estimates to implicit assumptions in the mathematical model, preparing survey article on air pollution and health for the Annual Review of Public Health. Steele completed SIMS working paper number 14 entitled 'Red Flags on the Houston Study.' This was a review requested by EPA of the 'Study of Health-Related Responses to Air Pollution of Persons with Chronic Obstructive Pulmonary Disease in Houston, Texas.' Switzer has been investigating the problem of areal mapping using remotely sensed observations. The usual discriminant analysis techniques do not take into account spatial continuity. Foo has studied the hourly and daily variations of ozone concentrations. Her statistical model was used to estimate the frequency distribution of the duration of elevated concentrations - an important question for exposure modeling in epidemiological studies and in the setting of standards. One should be able to see how this duration distribution is affected by changes in mean levels. Galfond has examined the problem of estimating waiting times between pollution episodes. With commonly used extreme value models such waiting time estimates can be very unstable statistically as well as noticeably biased unless care is taken in the estimation of the model parameters.
SUPPORTED BY U.S. Environmental Protection Agency, Office of Research & Development, Health Effects Research Lab. funds n.a.

3.1296,

HUMAN CADMIUM EXPOSURE AND CANCER

T. Kjellstrom, University of Auckland, *P.O. Box 2175, Auckland, New Zealand* (R806036)
OBJECTIVE: To evaluate the occurrence of chronic illness (particularly cancer) in population groups with exposure to high levels of cadmium compounds.
SUPPORTED BY U.S. Environmental Protection Agency, Office of Research & Development, Health Effects Research Lab. funds n.a.

3.1297,

ASSESSMENT OF HEALTH IMPACT OF FILTERING ASBESTIFORM FIBERS IN DULUTH

E. Sigurdsen, State Dept. of Health, *717 Delaware St. S.E., Minneapolis, Minnesota* 55440 (R805428-02)
OBJECTIVE: Determine the relationship - or document the lack of one - between asbestiform fibers in the water supply and cancer.
APPROACH: Gather incidence data on cancer in the population of Duluth, Minnesota and compare with cancer rates in the Minneapolis-St. Paul component of the National Cancer Survey to test whether exposure to asbestiform fibers in the drinking water may contribute to the cancer rate.
PROGRESS: Data collection in progress, analysis of 1969-1974 gastrointestinal cancer incidence data did not show any definite relationship between ingesting asbestiform fibers and cancer. The long latency period between exposure and cancer for asbestos necessitates ongoing surveillance.
SUPPORTED BY U.S. Environmental Protection Agency, Office of Research & Development, Health Effects Research Lab. $48,000

3.1298,

EPIDEMIOLOGICAL IMPACT OF GROUNDWATER RECHARGE

M. Nellor, Los Angeles County Sanitation District, *1955 Workman Mill Rd., P.O. Box 4998, Whittier, California* 90607 (R806399-01)
OBJECTIVE: To assess the potential health effects associated with the long-term use of drinking water which has been recharged in part with reclaimed water.
APPROACH: An epidemiology study will be done using existing data to determine if residents of an area which has been supplied with recycled water differ in patterns of morbidity and mortality from residents in the same area prior to implementing recycling and from residents from similar communities drinking non-recharged water.
SUPPORTED BY U.S. Environmental Protection Agency, Office of Research & Development, Health Effects Research Lab. $212,000

3.1299,

SELECTION/CHARACTERIZATION OF AREAS FOR PARTICULATE EPIDEMIOLOGIC STUDIES DETERMINED IN INHALABLE PARTICULATE PROBLEM DEFINITION STUDY

Unknown, U.S. Environmental Protection Agency, Office of Research & Development, Health Effects Research Lab., *Research Triangle Park, North Carolina* 27711
Selection of communities to be studied is an important part of epidemiologic research. Proper evaluation of socioeconomic, demographic, and exposure parameters help identify communities that satisfy the needs of study and thus help insure that studies provide valuable data for the agency. This task is a major in-house effort to select appropriate communities for future studies of particulates. Communities will be identified by levels of particulates and other pollutants and characterized with respect to demographic, socioeconomic, industry type, climatic and other selected parameters. This will allow the selection of communities to be monitored in the coordinated task. Based upon the data acquired above, communities will be selected that best fulfill the research needs of the studies determined by the inhalable particulates problem definition study.
SUPPORTED BY U.S. Environmental Protection Agency, Office of Research & Development, Health Effects Research Lab. $112,000

3.1300,

OPERATION OF AN INTRA AND INTERLABORATORY QUALITY ASSURANCE PROGRAM IN PESTICIDE MEASUREMENTS

Unknown, U.S. Environmental Protection Agency, Office of Research & Development, Health Effects Research Lab., *Research Triangle Park, North Carolina* 27711
Develop and furnish SPRM's to field labs for quality control. Performance evaluation continue semi-annual SPRM's of blood, adipose, water or other appropriate media to support OPP and associated programs. Continuous ongoing function of coordinating a QA program for 12 epidemiology/human monitoring labs under contract to EPA-OPTS. Conduct similar program for approximately 15 state health labs requesting QA support. (A) Develop new SPRM's. (B) Conduct inter-lab check sample studies. (C) Provide SPRM materials for intra-lab QA programs. (D) Prepare quarterly reports of contract lab activities for OPP field coordinator in EPA headquarters. Significant results (A) Ongoing investigations for development of new SPRM's for urine, milk and soil. (B) Completed December check sample study for residues in adipose tissue. (C) Mailed intra-lab QA SPRM's on Dec. 03, 1979. (D) Reviewed quarterly reports from the epidemiologic studies labs and prepared a summary report for all projects and project coordinators.
SUPPORTED BY U.S. Environmental Protection Agency, Office of Research & Development, Health Effects Research Lab. $87,000

3.1301,

MONITORING OF CONTRACTS, GRANTS AND IAG'S

Unknown, U.S. Environmental Protection Agency, Office of Research & Development, Health Effects Research Lab., *Research Triangle Park, North Carolina* 27711
Provide the intramural effort required for procurement preparation/ proposal review and contract monitoring for the extramural tasks related to epidemiologic studies on health effects on exposure to photochemical oxidants and ozone.
SUPPORTED BY U.S. Environmental Protection Agency, Office of Research & Development, Health Effects Research Lab. $44,000

3.1302,

EVALUATE CLINICAL CHEMICAL EFFECTS IN HUMANS EXPOSED TO INHALED PARTICULATE MATTER

Unknown, U.S. Environmental Protection Agency, Office of Research & Development, Health Effects Research Lab., *Research Triangle Park, North Carolina* 27711
This research will address the question whether inhalable sulfur containing particles in combination with gaseous airborne pollutants (O2, SO2, NO2) presents a health hazard at the concentration studied. This study will result in clincal biochemical tests that can be used as indicators in epidemiology studies of inhalable particulate matter and provide a data base that can be used in development of criteria. No progress.
SUPPORTED BY U.S. Environmental Protection Agency, Office of Research & Development, Health Effects Research Lab. $100,000

3.1303,

TIME SERIES ANALYSIS OF THE EFFECTS OF SHORT-TERM EXPOSURE TO OXIDIZING AIR POLLUTANTS

Unknown, U.S. Environmental Protection Agency, Office of Research & Development, Health Effects Research Lab., *Research Triangle Park, North Carolina* 27711

Determine the association of acute respiratory disease symptoms and exposure to varying patterns and levels of a single or combination of pollutants. Attempt to separate the short-term and long-term effects of exposure to ambient pollutants. Daily and symptom diaries kept by 300 families in each of four communities will be used in the analysis.

SUPPORTED BY U.S. Environmental Protection Agency, Office of Research & Development, Health Effects Research Lab. $44,000

3.1304,

MONITORING CONTRACTS/GRANTS & IAG'S

Unknown, U.S. Environmental Protection Agency, Office of Research & Development, Health Effects Research Lab., *Research Triangle Park, North Carolina* 27711

Provide the intramural effort required for procurement preparation/proposal review and contract monitoring for the extramural tasks related to epidemiologic studies on health effects of exposure to inhaled particulate matter.

SUPPORTED BY U.S. Environmental Protection Agency, Office of Research & Development, Health Effects Research Lab. $31,000

3.1305,

INTRAMURAL STUDIES OF ENVIRONMENTAL FACTORS ASSOCIATED WITH CANCER CLUSTERS

Unknown, U.S. Environmental Protection Agency, Office of Research & Development, Health Effects Research Lab., *Research Triangle Park, North Carolina* 27711

Coordination of cancer research activities within EPA and with other governmental agencies. Investigate the usefulness of cancer studies of social security data. Follow the development of autopsy data bank for possible use in cancer research. Examine potential relationships between sources of environmental pollution and cancer rates. In-house report on air pollution and survival from cancer has been completed. Paper on cancer mortality in asbestos mining counties was presented at APMA meetings in place of in-house report. Final report on cancer mortality and mortality from hypertensive heart disease has been received.

SUPPORTED BY U.S. Environmental Protection Agency, Office of Research & Development, Health Effects Research Lab. $10,000

3.1306,

INTRAMURAL STUDIES OF ENVIRONMENTAL FACTORS ASSOCIATED WITH CANCER CLUSTERS

Unknown, U.S. Environmental Protection Agency, Office of Research & Development, Health Effects Research Lab., *Research Triangle Park, North Carolina* 27711

Coordination of cancer research activities within EPA and with other governmental agencies. Investigate the usefulness in cancer studies of Social Security Data. Follow the Development of Autopsy Data Bank for possible use in cancer research. Examine potential relationships between sources of environmental pollution & cancer rates. Final report undergoing review. Analyses and data collection are continuing.

SUPPORTED BY U.S. Environmental Protection Agency, Office of Research & Development, Health Effects Research Lab. $11,882

3.1307,

ANALYSIS AND REPORTING OF 1976 CRD-LRD SALT LAKE BASIN DATA

Unknown, U.S. Environmental Protection Agency, Office of Research & Development, Health Effects Research Lab., *Research Triangle Park, North Carolina* 27711

Compare 1976 CRD prevalence and LRD incidence rates in four Utah communities representing a gradient of SO2 pollution with the rates determined in 1970 in the same communities. Final report preparation is underway.

SUPPORTED BY U.S. Environmental Protection Agency, Office of Research & Development, Health Effects Research Lab. $25,500

3.1308,

EVALUATE CLINICAL CHEMICAL EFFECTS IN HUMANS EXPOSED TO INHALED PARTICULATE MATTER - PLAN 55K

Unknown, U.S. Environmental Protection Agency, Office of Research & Development, Health Effects Research Lab., *Research Triangle Park, North Carolina* 27711

This research will address the question whether inhalable sulfur containing particles in combination with gaseous airborne pollutants (O3, SO2, NO2) presents a health hazard at the concentration studied. This study will result in clinical biochemical tests that can be used as indicators in epidemiology studies of inhalable particulate matter and provide a data base that can be used in development of criteria.

SUPPORTED BY U.S. Environmental Protection Agency, Office of Research & Development, Health Effects Research Lab. funds n.a.

3.1309,

PROGRAM MANAGEMENT OF HEALTH EFFECTS REGARDING WASTEWATER

H.R. Pahren, U.S. Environmental Protection Agency, Office of Research & Development, Health Effects Research Lab., *5555 Ridge Ave., Cincinnati, Ohio* 45268

Manage extramural program on land application of treated wastewater and associated health effects. A number of new starts were accomplished and many others continued.

SUPPORTED BY U.S. Environmental Protection Agency, Office of Research & Development, Health Effects Research Lab. $0

3.1310,

INORGANIC ANALYSES TO SUPPORT EPIDEMIOLOGIC STUDIES

K. Kelty, U.S. Environmental Protection Agency, Office of Research & Development, Health Effects Research Lab., Field Studies Div., Water Analysis Group, *5555 Ridge Ave., Cincinnati, Ohio* 45268

OBJECTIVE/APPROACH: To provide inorganic analyses for epidemiological studies. Samples of drinking water are being analyzed for a variety of parameters, including pH, conductivity, hardness, alkalinity, fluoride, nitrates, Na, Mg, Li, Be, Si, Pb, Cd, Cu, Zn, and Fe.

OUTPUTS: Analysis of 1,000 Boston drinking water samples (4,092 elemental determinations). Analysis of 630 Boston tissue samples (2,520 elemental determinations).

SIGNIFICANT RESULTS: A new method for the determination of Pb and Cd has been evaluated and successfully applied. It consists of a modification of Middleton's digestion procedure (Analyst: 79, p. 138-147) and an adaptation of Henn's atomic absorption method (ASTM STP, pp 54-64).

PROGRESS: Approximately 700 analyses of drinking water samples for 3 studies (2 cardiovascular and 1 asbestos pipe) have been completed. The analyses for the second phase of the Boston Body Burden Study are being initiated. 2200 elemental determinations of phase 2 Boston drinking water samples completed.

SUPPORTED BY U.S. Environmental Protection Agency, Office of Research & Development, Health Effects Research Lab. $40,000

3.1311,

DETECTION OF UNCULTURABLE ENTERIC VIRUSES

E.W. Akin, U.S. Environmental Protection Agency, Office of Research & Development, Health Effects Research Lab., *5555 Ridge Ave., Cincinnati, Ohio* 45268

OBJECTIVE: To detect in human specimens the viral etiological agents (and specific antibody) of waterborne gastroenteritis and hepatitis A that cannot be cultivated, and thereby identified, in vitro.

APPROACH: Establish serological tests such as RIA, ELISA and IEM and then apply these tests to specimen collected in HERL-supported waterborne outbreak investigations.

PROGRESS: IEM of rotavirus in infant diarrheal stools has been accomplished. Small viral particles have been observed in stools of humans associated with waterborne enteritis outbreak. In vitro cultivation has been unsuccessful.

SUPPORTED BY U.S. Environmental Protection Agency, Office of Research & Development, Health Effects Research Lab. $46,000

3.1312,

EFFECTS OF ELEVATED LEVELS OF DRINKING WATER SODIUM ON BLOOD PRESSURES OF SCHOOL CHILDREN IN TEXAS AND OKLAHOMA

C. Sonich, U.S. Environmental Protection Agency, Office of Research & Development, Health Effects Research Lab., Epidemiology Branch, *5555 Ridge Ave., Cincinnati, Ohio* 45268

OBJECTIVE: To replicate, under identical circumstances, a recent study reported by the University of Massachusetts, Amherst, Massachusetts. In that study, the distribution of blood pressures of school children in a high sodium (108 mg/L) community was significantly skewed upward when compared to the children of a low sodium (8 mg/L) community. The current study will compare two communities with high and low sodium levels, 286 mg/L and 22 mg/L respectively. This will be done to replicate the earlier findings and to ascertain a dose/response relationship.

APPROACH: The blood pressures of 7th grade students will be taken by standardized individuals in the schools of both communities. The same standardized individuals will be used in both communities. All students will complete a questionnaire. For a subset of approximately 100 children in each community a 24-hour diet diary will be completed and home water samples and first morning urine samples will be collected and analyzed for sodium and potassium content. They will also be sent to Purdue University for 40 elemental analysis.

PROGRESS: No significant results to report, however, the data must be 'cleaned'. Frequency distributions were the body of the preliminary report which show some differences in blood pressures between communities. Differences were also found within the high sodium community. This is due to varying water sources within the community.

SUPPORTED BY U.S. Environmental Protection Agency, Office of Research & Development, Health Effects Research Lab. $20,000

3.1313,

NEOPLASIA DISTRIBUTIONS AND RADIO-EMISSIONS DENSITY IN THE PORTLAND METRO AREA

W.E. Morton, Oregon State Higher Education System, University of Oregon Health Sciences Center, School of Medicine, Dept. of Environmental Medicine, *3181 S.W. Sam Jackson Park Rd., Portland, Oregon* 97201 (R805832)

Determination of correlation between frequency/specific radio-emission densities and selected neoplasm incidence and mortality rates by census tract in the counties comprising the Portland metropolitan area. Data collection is continuing.

SUPPORTED BY U.S. Environmental Protection Agency, Office of Research & Development, Health Effects Research Lab. funds n.a.

3.1314,

EFFECTS OF SHORT-TERM INTERMITTENT EXPOSURE TO OXIDIZING AIR POLLUTION

D. Flesh, Copley International Corp., *7817 Herschel Ave., La Jolla, California* 92037 (68-02-2749)

To quantify the acute health response as measured by respiratory disease from varying patterns of exposure to NO2-O3-suspended sulfates and suspended nitrates. A group of 300 families in each community will be followed daily for symptom reporting of acute respiratory disease. Summarizing aerometric data. Analyses of health data, demographic, and aerometric data programs and plans are being finalized. Analyses to begin as soon as the summary and edit process for aerometric data has been completed and merged with health data.

SUPPORTED BY U.S. Environmental Protection Agency, Office of Research & Development, Health Effects Research Lab. funds n.a.

3.1315,

REVIEW ANNUAL LITERATURE ON HEALTH EFFECTS ASSOCIATED WITH LAND APPLICATION OF WASTEWATER

N.E. Kowal, U.S. Environmental Protection Agency, Office of Research & Development, Health Effects Research Lab., *5555 Ridge Ave., Cincinnati, Ohio* 45268

OBJECTIVE: To prepare the annual summary, 'Health Effects Associated with Wastewater Treatment and Disposal,' for the annual June Literature Review issue of Journal Water Pollution Control Federation.

APPROACH: Monitor current literature, abstract relevant papers as they appear, and summarize into brief paper for publication. Repeat annually.

PROGRESS: Project completed, and manuscript sent to JWPCF.

SUPPORTED BY U.S. Environmental Protection Agency, Office of Research & Development, Health Effects Research Lab. $0

3.1316,

APPRAISAL OF HEALTH ASPECTS OF LAND APPLICATION OF WASTEWATER

N.E. Kowal, U.S. Environmental Protection Agency, Office of Research & Development, Health Effects Research Lab., *5555 Ridge Ave., Cincinnati, Ohio* 45268

OBJECTIVE: To prepare an appraisal of the potential health effects of the land treatment of wastewater.

APPROACH: Organize by agents of concern and routes of human exposure, select relevant information from recent literature, and synthesize into a health appraisal. Revise every 2-3 years as new research results come in.

PROGRESS: Organization has been prepared, and literature review began.

SUPPORTED BY U.S. Environmental Protection Agency, Office of Research & Development, Health Effects Research Lab. $0

3.1317,

DISEASE TRANSMISSION ASSOCIATED WITH LAND APPLICATION OF WASTEWATER

H.I. Shuval, Hebrew University of Jerusalem, Hadassah Medical School, *P.O. Box 1172, Jerusalem 91000, Israel* (R806416-01)

OBJECTIVE: 1) To determine and measure if there is a degree of added risk of communicable disease incidence associated with wastewater land application and irrigation in agricultural communities (kibbutzim). 2) To determine the relationship between routes of transmission and disease incidence in the study population.

APPROACH: A prospective epidemiological study will be carried out in 30 kibbutzim in Israel which practice wastewater irrigation and in control groups not irrigating with wastewater. Health records of the various population groups will be studied and epidemiologic follow-ups of highly susceptible groups will be made (visiting volunteers, etc). Serologic and other lab tests will be used to compare infection rates of exposed and control groups. Air monitoring studies for aerosolized bacteria and viruses will be carried out.

SUPPORTED BY U.S. Environmental Protection Agency, Office of Research & Development, Health Effects Research Lab., Field Studies Div. $0

3.1318,

A STUDY OF THE DISTRIBUTION AND HEALTH EFFECTS OF GIARDIA LAMBLIA IN DOMESTIC WATER SUPPLY

F. Frost, State Health Div., *Olympia, Washington* 98504 (R805809)

OBJECTIVE: Determine the occurrence of giardiasis in human populations and the occurrence of Giardia in watershed animal populations in Washington State; determine the extent to which water supplies may act as the vehicle for transmission of giardiasis.

APPROACH: Contacts will be made with all physicians and diagnostic laboratories in the state to improve case reporting; 5-year retrospective data will be analyzed to determine seasonality; a case-control study will be completed to determine association of cases with drinking water; specimens of animal intestinal contents will be solicited from trappers; filtered water samples will be examined for the organism.

PROGRESS: A widespread distribution of human cases of giardiasis has been revealed in Washington State. Infected beaver and muskrat were found in 20 counties. Giardiasis occurs in many small outbreaks, among travelers, persons with backcountry exposures, children and in isolated cases with no obvious source.

SUPPORTED BY U.S. Environmental Protection Agency, Office of Research & Development, Health Effects Research Lab., Field Studies Div. $0

3.1319,

INVESTIGATION OF WATERBORNE DISEASE OUTBREAKS

R.E. Stetler, U.S. Environmental Protection Agency, Office of Research & Development, Health Effects Research Lab., *5555 Ridge Ave., Cincinnati, Ohio* 45268

OBJECTIVE: Identify causative agent in outbreaks and determine how contaminant entered system so corrective measures can be implemented.

APPROACH: Microbiological agents are isolated by large volume sampling techniques for laboratory identification using culture and nonculture methodology. In-depth investigation of the water system identifies route-of-entry and provides basis for corrective measures.

PROGRESS: Investigate 4-6 outbreaks annually. Continue to improve techniques and methodology so agent isolation is improved from current 50% detection rate. Publicize deficiencies in water systems that permit outbreaks to occur so similar conditions in other systems can be corrected.

SUPPORTED BY U.S. Environmental Protection Agency, Office of Research & Development, Health Effects Research Lab., Field Studies Div. $24,000

3.1320,

SCREEN SERA FROM AEROSOL EPIDEMIOLOGICAL STUDIES FOR ANTIBODY TO LEGIONNAIRES' DISEASE BACTERIUM

T.H. Ericksen, U.S. Environmental Protection Agency, Office of Research & Development, Health Effects Research Lab., Field Studies Div., Epidemiology Branch, *5555 Ridge Ave., Cincinnati, Ohio* 45268

OBJECTIVE: To determine if sewage and/or its treatment is a possible route of exposure for persons to Legionnaires' Disease Bacteria (Legionella pneumophila).

APPROACH: Sera already obtained from sewer workers and persons living in the neighborhood of sewage plants, will be tested for antibodies to LDB using the IFA method developed by Center for Disease Control, Atlanta, Georgia. These results will be compared to those obtained from the sera of control groups. The results obtained from this study could determine the role of sewage as a possible source of LDB in the environment, thereby contributing to its spread and exposure to susceptible populations.

PROGRESS: Training of personnel in the methodology to be used is complete. Arrangement for transfer of the necessary equipment under revocable license is in progress. Some of the reagents necessary for testing have been obtained from Center for Disease Control. Several hundred serum samples have been obtained as part of other studies of persons associated with sewage, sewage plants or residing in the vicinity of such facilities. The fluorescent microscope has been repaired and alloy the necessary reagents for testing by indirect fluorescent antibody methods have been obtained.

SUPPORTED BY U.S. Environmental Protection Agency, Office of Research & Development, Health Effects Research Lab., Field Studies Div. $15,000

3.1321,

HEALTH EFFECTS STUDY FOR THE LUBBOCK LAND TREATMENT PROJECT

D.E. Johnson, Southwest Research Inst., *8500 Culebra Rd., P.O. Drawer 28510, San Antonio, Texas* 78228 (R807501-01)

OBJECTIVE: Determine if there is an increased risk of infectious disease in a human population as a result of spray irrigation of municipal wastewater.

APPROACH: People living on or near the wastewater application site will be monitored through a health watch for disease incidence and serologic evidence of infection. Environmental samples of wastewater, ground water, and air will be monitored for pathogens. Exposure indices will be developed by correlating environmental results with meteorologic data. Disease incidence and serology results will be correlated with exposure indices.

SUPPORTED BY U.S. Environmental Protection Agency, Office of Research & Development, Health Effects Research Lab., Field Studies Div. $0

3.1322,

AN EPIDEMIOLOGICAL STUDY OF PRESQUE ISLAND STATE PARK BEACHES ON LAKE ERIE, ERIE, PENNSYLVANIA

S.J. Zagorski, Gannon College, Undergraduate School, Dept. of Biology, *109 W. 6th, Erie, Pennsylvania* 16501 (R806791 01)

OBJECTIVE: The objective of this proposal is to correlate the incidence of illness among bathers with the quality of water as indicated by results of bacteriological assays obtained from fresh recreational water sites on Lake Erie, Erie, Pennsylvania. The sites selected are expected to differ substantially in water quality, one known to be impacted by contamination and the other relatively clean. Computer assisted analysis of the data will employ a SAS program already developed. Objectives of original study have been expanded to include second summer of bacteriological and epidemiological investigations.

APPROACH: Conduct bacteriological and epidemiological surveys at the beaches and by telephone follow-ups. Microbial assays include those for Escherichia coli, Clostridium perfringens, and enterococci. Results of these studies should amplify the development of fresh recreational water quality criteria.

PROGRESS: Bacteriological surveys pinpoint the source of contamination impacting one of the test beach areas and show no impact on the other site selected. All assay procedures, survey forms, and statistical analyses procedures to be employed have been used successfully in other research programs.

SUPPORTED BY U.S. Environmental Protection Agency, Office of Research & Development, Health Effects Research Lab., Marine Field Station $80,100

3.1323,

DEVELOPMENT OF CRITERIA FOR FRESH RECREATIONAL WATERS

J.M. Robertson, University of Oklahoma, Norman Campus, Office of Research Admin., *1000 Asp Ave., Room 314, Norman, Oklahoma* 73069 (R806712-01)

OBJECTIVE: The objective of this proposal is to correlate the incidence of illness among bathers with the quality of water as indicated by results of bacteriological assays obtained from fresh recreational water sites near Tulsa Oklahoma. The sites selected are expected to differ substantially in water quality, one being impacted by a known source of contamination and the other relatively clean. Computer assisted analysis of the data will employ a SAS program already developed.

APPROACH: Conduct bacteriological and epidemiological surveys at the beaches and by telephone follow-ups. Microbial assays include those for Escherichia coli, Clostridium perfringens, and enterococci. Results of these studies should amplify the development of fresh recreational water quality criteria.

PROGRESS: Bacteriological surveys pinpoint the source of contamination impacting one of the test beach areas and show no impact on the other site selected. All assay procedures, survey forms, and statistical analyses procedures to be employed have been used successfully in other research programs.

SUPPORTED BY U.S. Environmental Protection Agency, Office of Research & Development, Health Effects Research Lab., Marine Field Station $68,600

3.1324,

DEVELOPMENT OF PEST MANAGEMENT FOR SOIL INSECTS ON CORN

M.L. Fairchild, University of Missouri, Columbia Campus, School of Agriculture, Dept. of Entomology, *130 Jesse Hall, Columbia, Missouri* 65201 (R8054290-03)

OBJECTIVE: The project goals seek to improve corn soil insect population assessment and damage prediction capability and develop insect pest management strategies. The specific objectives seek to improve the ability to detect potentially damaging Arthropods (cut worms, corn rootworms and wire worms); refine corn soil insect population assessment techniques; refine soil arthropod damage thresholds; identify, evaluate and optimize control alternatives; utilize modeling techniques to assess corn insect population dynamics, host-crop interactions, and insect-host dynamics resulting in a management decision model; and to develop a pest management strategy for implementation.

APPROACH: The work is done by a six-institution consortium: the University of Missouri (head institution), Purdue University, Illinois Natural History Survey, Iowa State University, University of Nebraska, the Ohio Agricultural Research and Development

Center. The work includes field and laboratory study. Several technical models - larval dynamics, parasite efficiency, larval migrations and a soil insectacide model - are under study. From these an overall farm level decision model is being developed that will assist the corn growers with on-farm control decisions.

PROGRESS: Quarterly Reports - First Annual Report 1978 - Second Annual Report 1979 Corn Ecosystem Publications (EPA/IPM Library). Detection of populations has improved but still lacks precision. New trapping methods using pheromones have been highly evaluated. Corn root and plant models have been nearly completed. Economic and management models are being structured and adjusted.

SUPPORTED BY U.S. Environmental Protection Agency, Office of Research & Development, Office of Environmental Processes & Effects Research $300,000

3.1325,

GRANT SUPPORT FOR A RESEARCH PROGRAM ENTITLED DETERMINANTS OF FERTILITY CHILD MORTALITY AND POPULATION GROWTH

Unknown, Rand Corp., *1700 Main St., Santa Monica, California* 90406 (930006800)

No summary has been provided to the Smithsonian Science Information Exchange.

SUPPORTED BY U.S. International Development Cooperation Agency, Agency for International Development $372,578

3.1326,

VIRAL ETIOLOGY AND EPIDEMIOLOGY OF RESPIRATORY INFARCTION IN AN ISOLATED ANTARCTIC STATION

G. Benton, University of Wisconsin, Madison Campus, Medical School, Dept. of Preventive Medicine, *450 N. Randall Ave., Madison, Wisconsin* 53706 (NSG 2104)

No summary has been provided to the Smithsonian Science Information Exchange.

SUPPORTED BY U.S. National Aeronautics & Space Admin., Ames Research Center $30,000

3.1327,

VIRUS SHEDDING AND IMMUNITY DURING ISOLATION IN THE ANTARCTIC

H.G. Muchmore, Oklahoma Medical Research Foundation, *825 N.E. 13th St., Oklahoma City, Oklahoma* 73104 (DPP80-19528)

The research objectives of this project are to carry out virus-specific immunoassays on frozen specimens, to obtain information confirming and extending the remarkable and unexpected frequency of parainfluenzavirus shedding which was encountered during the winter of 1978. These frozen specimens (serum, nasopharyngeal secretions, etc.) have been obtained serially from men spending the winter in isolation at the South Pole.

Radioimmunoassay (RIA) and enzyme-linked immunosorbent assay (ELISA) will be utilized for virus specific serum assays, and for measurement of virus-specific secretory Immunoglobulin A (sIgA) in nasopharyngeal secretions. The sensitive RIA and ELISA methods will be further refined and extended to achieve direct detection of the virus antigen(s) in the still-frozen original W/O 78 nasopharyngeal secretions.

If successful, these immunoassays should provide direct confirmatory evidence for persistent parainfluenzavirus shedding we observed during the winter of 1978 at the South Pole and for the winter of 1976 and earlier years for which we so far have only serological evidence for persistent virus shedding.

Confirmation of respiratory virus persistence and shedding into the nasopharynx will further the understanding of the epidemiology of these infections and provide clues which may prove helpful in unraveling the problems of immune response patterns in these ubiquitous infections. The results will guide the way for the planning of subsequent isolation studies at the South Pole.

SUPPORTED BY U.S. National Science Foundation, Directorate for Astronomical Atmospheric Earth & Ocean Scis., Div. of Polar Programs $76,600

3.1328,

A STUDY OF RESPIRATORY VIRUS TRANSMISSION AMONG THE PERSONNEL AT MCMURDO STATION, ANTARCTICA, DURING THE 'WINDFLY' ISOLATION PERIOD

E.C. Dick, University of Wisconsin, Madison Campus, Medical School, Dept. of Preventive Medicine, *450 N. Randall Ave., Madison, Wisconsin* 53706 (DPP80-15486)

The University of Wisconsin proposes to continue studies on the transmission, etiology and control of upper respiratory viral infections among members of a small and isolated population of persons winteringover in Antarctica, following exposure to viruses carried by new arrivals at the end of the winter. An attempt will be made to repeat the work of 1979 when virus transmission was apparently interrupted through the ritualized use of virucidal handkerchiefs. Studies will also be made of the effectiveness of less ritualized use of the handkerchiefs and to extend the experiments to other groups as appropriate. Another goal of this program is to increase knowledge of the etiology of respiratory illness outbreaks in Antarctica using electron microscopy, tissue culture, and other techniques until the agents causing the diseases are identified. These studies build on the rich results of prior years and will include extensive analysis of the new and earlier data.

SUPPORTED BY U.S. National Science Foundation, Directorate for Astronomical Atmospheric Earth & Ocean Scis., Div. of Polar Programs $95,185

3.1329,

A STUDY OF RESPIRATORY VIRUS TRANSMISSION AMONG PERSONNEL IN ISOLATION IN ANTARCTICA

E.C. Dick, University of Wisconsin, Madison Campus, Medical School, Dept. of Preventive Medicine, *450 N. Randall Ave., Madison, Wisconsin* 53706 (DPP76-83918)

The University of Wisconsin proposes an investigation of person-to-person transmission of common cold viruses in an isolated population of 200 at McMurdo Station, Antarctica. This population is unique in that it consists of normal American citizens (primarily United States Naval personnel) with their normal complement of colds who will suddenly be completely isolated for about 5 weeks. It should be possible during this period to follow the movement of common cold viruses through this population without 'outside viruses' entering the chain of infection. Careful study of the characteristics of each person's illness and the inter-personnel methods by which person-to-person transmission can be interrupted. This approach seems promising, as prior studies in open populations and in human volunteers suggest that colds may be more difficult to transmit than previously supposed.

Analysis of data detained during the 77/78 field season will be carried out at the University of Wisconsin, Madison.

This research represents a continuation of that currently supported by DPP-7683918.

SUPPORTED BY U.S. National Science Foundation, Directorate for Astronomical Atmospheric Earth & Ocean Scis., Div. of Polar Programs $11,560

3.1330,

SOCIOECONOMIC DETERMINANTS OF CHANGES IN MORTALITY RATES

A. Palloni, University of Wisconsin, Madison Campus, School of Letters & Science, Dept. of Sociology, *500 Lincoln Dr., Madison, Wisconsin* 53706 (SES80-21410)

Latin America has experienced long term increases in life expectancy and decreases in mortality rates that exceed the change rates for the transition period in Europe. Yet, recent signs indicate a slowdown in change rates for Latin America that may still keep the continent below the pace-setting standards of Europe. This research seeks to provide a more detailed specification of the Latin American change rates and an explanation for them over the last seventy years. Among factors affecting mortality decline, the study considers the impact of endogenous developments (i.e., rising standard of living) and exogenous developments (introduction of new and low-cost medical technology). The study will trace the separate and joint effects of these developments on overall mortality and changing variation in the cause and rates of mortality by levels of socioeconomic status. The research employs available documentary data from death registrations, population censuses, and other records. This research should help extend basic knowledge of empirical regularities in trends and causes of human deaths, leading to the day when general theories of mortality change can be more confidently advanced.

SUPPORTED BY U.S. National Science Foundation, Directorate for Biological Behavioral & Social Sciences, Div. of Social & Economic Sciences $41,000

3.1331,

THE SIMULATION OF INFLUENZA DIFFUSION

G.F. Pyle, University of North Carolina, Charlotte Campus, Graduate School, Dept. of Geography, *Hwy. 49 N., Charlotte, North Carolina* 28205 (SES80-06637)

From past experience it is known that the spread of a new strain of influenza virus throughout the country into a nonimmune population can have serious consequences. While a number of hypotheses exist that help to explain the spread, little is known of the actual process by which an influenza virus diffuses throughout geographic space. In part, this is because the origin locations of viruses tend to differ with different strains. In part also, it is because geographic changes occur from one time to another in the factors involved in the diffusion process: population size, travel patterns and transport infrastructure linkages, for example. The purpose of this research is to modify and apply current methodologies used to describe and explain the temporal-spatial diffusion of other phenomena to simulate the spread of influenza. Such methods take into account various propositions hypothesized to be associated with the spread of diseases and include simulation techniques employed in hierarchical, linear and radial diffusion processes.

The research will perform several simulation experiments using different hypothesized variables to replicate the 1946 and 1957 influenza diffusion patterns. The relationships between each simulated pattern will be statistically tested against the actual pattern for specific penetration periods of the influenza season. Using the results of this research, the 1968 pattern will be simulated and the relationship to the actual pattern tested statistically.

The knowledge obtained from the research can be used to simulate the spread of new influenza viruses for which barriers can be created to hinder its progress. The knowledge would be applicable to other disease agents known to diffuse in a geographic fashion.

SUPPORTED BY U.S. National Science Foundation, Directorate for Biological Behavioral & Social Sciences, Div. of Social & Economic Sciences $59,890

3.1332,

VALUING THE HEALTH EFFECTS OF AIR POLLUTION

M.L. Cropper, University of Southern California, School of Letters Arts & Sciences, Dept. of Economics, *3551 University Ave., Los Angeles, California* 90007 (DAR79-24990)

The research will measure the dollar amount an indivdual would pay for a decrease in air pollution by focusing on willingness to pay and on acute illness. The research differs in two ways from the conventional method of valuing air quality. The traditional approach calculates the effect of changes in pollution of life expectancy and then values changes in life expectancy using foregone earnings. This traditional method is likely to understate willingness to pay by ignoring the value of leisure time and by ignoring the health effects of pollution while the individual is alive.

To remedy these shortcomings this research will develop a model of acute illness which follows the human capital approach to health economics. The essence of the model is that the individual makes choices regarding his health, taking into account the health effects of pollution. The model will be used to define willingness to pay for a change in air quality and an equation suitable for estimating willingness to pay will be derived from the model. The model will thus provide a technique for valuing the acute health effects of air pollution.

SUPPORTED BY U.S. National Science Foundation, Directorate for Engineering, Div. of Applied Research $43,811

3.1333,

STATISTICS AND ENVIRONMENTAL FACTORS IN HEALTH

D.L. Thomsen, S.I.A.M., *33 S. 17th St., 1405 Architects Bldg., Philadelphia, Pennsylvania* 19103 (MCS79-07549)

Dr. Thomsen will coordinate an effort in which research statisticians at Stanford University (specifical-

ly, Professors Switzer, Mittal, and Faith, in the first year) will work on a variety of theoretical problems in statistics necessary to the development of new methodology for evaluating air pollution data. Some specific statistical areas involved are as follows: 1) Design of experiments for assessing the relationship between station network data and the distribution of exposures in a population. (Switzer) 2. Problems of selection of variables for relating meteorology to air pollution in a statistical framework. (Switzer) 3. Statistical validation of air pollution simulation models and the analysis of forecasting errors. (Switzer and Faith) 4) Problems of network design for measurement of a random field applied to air pollution. (Faith) 5) Analysis of the distribution of maximum concentrations from averaged air pollution data. (Mittal) 6) Sampling theory for estimation of maximum concentrations with sampling rates depending on preceding data. (Mittal)

SUPPORTED BY U.S. National Science Foundation, Directorate for Mathematical & Physical Sciences, Div. of Mathematical & Computer Sciences $32,465

3.1334,

PROBLEMS IN FUNCTIONAL DIFFERENTIAL EQUATIONS WITH APPLICATIONS IN BIOLOGY

K.L. Cooke, Claremont Colleges, Pomona College, Undergraduate School, Dept. of Mathematics, *Claremont, California* 91711 (MCS79-03497 A01)

This is a continuation of work supported by MCS-79-03497.

Investigations will be carried out which will extend and continue work on differential, difference and functional differential equations. By-products of these efforts are applications to ecology, epidemiology and the physical sciences.

Of particular interest are classes of functional differential equations which arise in the modeling of the transmission of disease. Emphasis will be placed on understanding the interactions between periodicities induced by seasonal variations of the coefficients and those due to nonlinearities in the equations.

Work will also be done on classes of equations arising from ecological and epidemic models which take into account age dependence and spatial dispersal, on stability of linear delay equations and on the analysis of models of vertically transmitted diseases.

SUPPORTED BY U.S. National Science Foundation, Directorate for Mathematical & Physical Sciences, Div. of Mathematical & Computer Sciences $20,000

3.1335,

MEDICAL AND PHYSICAL STUDIES OF MERCURY IN THE ENVIRONMENT AT ALMADEN, C.R., SPAIN

R. Wilson, University of Rochester, School of Medicine & Dentistry, Dept. of Radiation Biology & Biophysics, *601 Elmwood Ave., P.O. Box 607, Rochester, New York* 14642 (INT78-19907)

Mercury has been mined from the region of Almaden, Spain for two thousand years. Even today, the mines produce over one quarter of the world's mercury supply. The miners, residents and general environment of Almaden have thus been exposed to mercury at unusual levels for an extensive period of time.

This multi-faceted project involvng U.S. and Spanish scientists is directed at gaining a better understanding of the impact of mercury in the environment in and around the mining area. Studies are being carried out on the levels of airborne mercury in the town and the mines and on the occupational exposure of underground and refinery workers. Also, methods are being developed for assessing body burdens of mercury and for quantifying various diagnostic, therapeutic and prophylactic measures such as chelating agents.

SUPPORTED BY U.S. National Science Foundation, Directorate for Scientific Technological & Internat. Affairs, Div. of International Programs $0

3.1336,

FOLLOW-UP STUDY OF PERSONS WHO HAD I 131 AND OTHER DIAGNOSTIC PROCEDURES DURING CHILDHOOD

P.M. Hamilton, U.S. Dept. of Health & Human Services, Public Health Service, Food & Drug Admin., Bureau of Radiological Health, *5600 Fishers Ln., Rockville, Maryland* 20857 (160166 TICNO)

The objective is to assess the risk of development of thyroid neoplasms following exposure to I 131 by evaluating the thyroid neoplasm experience in young adults who received diagnostic I 131 during childhood, compared to the experience in a similar group of unexposed young adults and a group of unexposed siblings.

SUPPORTED BY U.S. Nuclear Regulatory Commission $100,000

3.1337,

HEALTH EFFECTS ASSESSMENT - EXPOSURE TO RADIATION AND NON-RADIATION POLLUTANTS

Unknown, U.S. Dept. of Energy, Argonne National Lab., *9700 S. Cass Ave., Argonne, Illinois* 60439 (160089 TICNO)

The objective is to assess the potential health effects and life-shortening resulting from exposure to effluents from the uranium and coal fuel cycles. NRR will use the DEMPAK code to calculate deaths and illness resulting from exposure to radioactive and nonradioactive pollutants.

SUPPORTED BY U.S. Nuclear Regulatory Commission, Office of Nuclear Regulatory Research $104,000

3.1338,

PROJECTION MODELS FOR HEALTH EFFECTS ASSESSMENT IN POPULATIONS EXPOSED TO RADIOACTIVE AND NON-RADIOACTIVE POLLUTANTS

D. Grahn, Argonne National Lab., *9700 S. Cass Ave., Argonne, Illinois* 60439

OBJECTIVE: The objective is to assess the potential health effects and life-shortening resulting from exposure to effluents from the uranium and coal fuel cycles. This requires development of a demographically correct projection model to predict mortality for any population of specified age, race, and sex composition.

SCOPE: The project consists of five tasks: 1. Basic Demographic Model. This stage provides the demographic framework into which the other stages fit. The basic demographic projection model will predict deaths by age, sex, and cause as well as predicting the population structure by age and sex. 2. Simple Dose-Response Functions. Dose-response coefficients for several types of cancer as a function of exposure in rem without consideration of dose-rate will be obtained from BEIR-III. Total mortality and specific causes of death for exposure to air pollutants will be made using the cigarette model. 3. Morbidity Projections. Models will be developed to derive person-years lived while in states of ill health from the causes of death treated by the mortality analyses. 4. Advanced Dose-Response Functions. More sophisticated and realistic dose-response models will be developed to incorporate dose-rate effects and nonlinear responses into estimates of both the total effect and the duration of latency for all pollutant types. 5. Interactions among Short- and Long-Term Effects. Short-term radiation effects for acute exposures are well known and will be incorporated into the models. The effects of short-term fluctuations in air poliutants are superimposed on health impairments that may have accrued from previous exposure.

SCOPE OF WORK FOR FY 1980: Task 1. The adequacy of the Poisson probability density function for numbers of births will be investigated. Monte Carlo techniques will be used to develop error bounds for all dose-response functions. Task 3. Estimates of the incidence of diseases will be made based on probability distributions for the time between diagnosis and death. Age-specific morbidity projections will be derived. Task 4. Nonlinear and rate-dependent radiation dose-response models will be completed and indices for different radiation types will be attempted. The model for chemical carcinogenesis will be initiated.

SUPPORTED BY U.S. Nuclear Regulatory Commission, Office of Nuclear Regulatory Research $104,000

3.1339,

DETERMINATION OF FEASIBILITY OF CONDUCTING EPIDEMIOLOGIC STUDIES OF HUMAN HEALTH EFFECTS OF LOW LEVEL IONIZING RADIATION

N. Dreyer, Health Systems Inc., *100 Main St., Reading, Massachusetts* 01867 (160175 TICNO)

The major objective is determination of the feasibility of conducting epidemiologic studies of human health effect of low-level ionizing radiation. This is a project in two phases. Phase I presents suitable epidemiologic approaches to be used in determining health effects from exposure to low-level ionizing radiation. In addition, Phase I includes the selection of suitable exposed population which may be used for human epidemiologic studies. Phase II examines the quality of actual field data on the population selected in Phase I. In addition, those populations, if any, most suitable for further study will be selected. Such things as cost, time needed for followup studies, and how data bases need to be improved are also part of Phase II.

SUPPORTED BY U.S. Nuclear Regulatory Commission, Office of Standards Development funds n.a.

3.1340,

REANALYSIS OF THE TRI-STATE LEUKEMIA SURVEY DATA

M.E. Ginevan, U.S. Dept. of Energy, Argonne National Lab., *9700 S. Cass Ave., Argonne, Illinois* 60439 (160127 TICNO)

The objective is to perform a re-analysis of the adult portion of the tri-state data, accomplishing the following specific tasks: (1) calculate age-standardized relative risks of adult leukemia for non-overlapping x-ray exposure categories and develop absolute risk estimates which can be related to existing absolute risk estimates for low-level low-LET radiation leukemogenesis; (2) investigate possible relationships between radiation exposure, disease, and leukemogenesis in adults and discuss these findings in the context of susceptible subgroups for radiation leukemogenesis; (3) investigate the possible influence of other variables, e.g., temporal aspects of exposure, ethnic, socioeconomic on the relationship between diagnostic x-ray exposure and leukemogenesis; and (4) develop explanatory models and generate testable hypotheses to account for the tri-state data.

SUPPORTED BY U.S. Nuclear Regulatory Commission, Office of Standards Development $61,000

3.1341,

THORIUM-230 IN URANIUM MILL WORKERS

D. Fisher, U.S. Dept. of Energy, Battelle Pacific Northwest Lab., *P.O. Box 999, Richland, Washington* 99352 (160167 TICNO)

The contractor will collect and interpret data concerning the degree of accumulation of 238-U and 230-Th in the tissues of uranium mill workers. The specific purpose is to determine whether 230-Th may be present in higher concentrations than 238-U in the tissues of long-term workers and to compare these and other measurements to the predictions of ICRP's models of human physiology. The contractor will identify a population of approximately 30 workers who have at least 5 years work experience in crushing operations at approximately 5 uranium mills. The contractor will measure the 238-U and 230-Th in the urine and feces of each worker on the first day following a work interruption of at least days. Retired employees will be included in the study if possible. Exposure histories will be recorded.

SUPPORTED BY U.S. Nuclear Regulatory Commission, Office of Standards Development funds n.a.

3.1342,

FOREIGN BODY TUMORIGENESIS AMONG WAR VETERANS

R.J. Struba, University of North Carolina, Chapel Hill Campus, School of Public Health, Dept. of Epidemiology, *Rosenau Hall, 201H, Chapel Hill, North Carolina* 27514

OBJECTIVE: Considerable laboratory evidence and scattered clinical reports have implicated chronic exposures to foreign bodies (FB) in the induction of soft tissue tumors - principally the sarcomas. Latencies are thought to be long here (more than 30 years) and the chemistry of the FB does not appear to be important - glass beads, metal and plastic chips all lead to increase in incidence of these tumors.

APPROACH: This hypothesis of FB tumorigenesis is being evaluated in a population of war veterans. Using a case-control design, U.S. Veterans Administration sarcoma patients and matched non-sarcoma controls are being compared on past exposure to any FB and, particularly, to combat-related metal fragments in wounds or implants. Matching factors and other potential confounders are being examined in the analysis. Data are being gathered by review of medical records and by personal interviews with study subjects.

SUPPORTED BY U.S. Veterans Admin., Dept. of Medicine & Surgery funds n.a.

3.1343,

CANCER IN LA. - A CASE-CONTROL STUDY OF LUNG, STOMACH AND PANCREAS CANCER

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The aim of this investigation is to identify factors associated with the high cancer rates that Louisiana has been shown to have. The study is designed to determine whether the excess in lung cancer mortality is due to smoking alone or to smoking in combination with other evironmental factors. An assessment will be made of the independent actions of various factors as well as their interactive and synergistic effects. Diet and occupational history will be especially important in assessing risk of cancers of the stomach and pancreas.

The study is a case-control design with noncancer controls matched to cancer cases on the basis of race, sex, hospital and age within five years. Additionally, certain medical conditions that have been strongly associated with smoking have been excluded as controls for lung cancer cases. The effect of this selection of controls should be to sharpen the contrast between the cases and the controls with respect to cigarette smoking and bring the other factors which are operating in lung cancer more sharply into focus.

Data will be gathered in face-to-face interviews by highly trained interviewers in the hospital or in the patient's home if a hospital interview is not possible. The interview contains residential, occupational, smoking and drinking water histories as well as information on diet, exposure to irritants and other questions.

Patients with cancer will be found in the files of the Pathology Department and Tumor Registry. Control patients will be found in admission records.

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3.1344,

AN EPIDEMIOLOGICAL STUDY OF DIABETIC RETINOPATHY

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OBJECTIVE: To study the prevalence and severity of diabetic retinopathy in a group of 2400 diabetic patients in their home communities.

RESEARCH PLAN: First year we will ascertain diabetics living in 11 county area. In the second and third year we will examine patients. In the fourth year we will analyze the data.

METHODOLOGY: We will objectively record retinopathy by use of stereoscopic fundus photographs combined with a standarized protocol for grading retinopathy. The association between the prevalence severity of retinopathy and risk factors such as smoking and high blood pressure level will be examined utilizing analysis of variance and other statistical techniques for multiple variables.

RESULTS: During the first year of the study over 450 physicans participated (representing 98.6%) of all primary care physicians treating diabetic patients in an eleven county area. The names of 9,700 participants were ascertained and information regarding prevalence rates, age of the onset duration types of treatment and indices of control are being determined. Currently participants are being examined in a mobile van. The examination consists of refraction and best corrected visual acuity, intraocular pressure check, fundus photography, ophthalmoscopy, blood pressure determination, height, weight and glycosolated hemoglobin determination.

SUPPORTED BY U.S. Veterans Admin., Dept. of Medicine & Surgery funds n.a.

3.1345,

ASSESSMENT OF CADMIUM EXPOSURE AND TOXICITY RISK IN AN AMERICAN VEGETARIAN POPULATION

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A 72-hour food and stool sample, a 24-hour urine sample, and a fasting blood sample have been collected in 50 lacto-ovo-vegetarians and 50 matching meat eaters from enrollees in the Adventist Health Study (AHS) in Southern California (Santa Barbara to San Diego counties). An epidemiologist supervised the collection. These samples are stored frozen and are in process of analysis. From an initial pool of several hundred subjects listed in the AHS study as pure vegetarians, we found 32 who were such. Nineteen have been recruited for the study and either have or shall collect the food, stool and urine samples as above. We were disappointed that so many who considered themselves to be pure vegetarians were in actuality lacto-ovo-vegetarians. It appears at this point impossible to accumulate 50 total vegetarians, unless we look outside Southern California. Technical aspects of tooling up the system for tissue digestion have been essentially completed. We find that a microwave oven arrangement is capable of wet digestion of the samples at a much faster rate (ten fold) in comparison with the conventional wet and sand heating baths. We find that location of the samples in the microwave, adjustment of power level, and adequate hydrogen peroxide are all important factors in proper sample digestion. Hair sample collection has proved impractical in live subjects in spite of incentives of a free hair styling, but we do not consider this an important loss in view of known technical inaccuracy of hair analysis. Preliminary results indicate that urinary beta-2-microglobulin concentrations are greater in lacto-ovo-vegetarians than their matched non-vegetarian controls (N equals 23 first 30 pairs).

SUPPORTED BY U.S. Veterans Admin., Dept. of Medicine & Surgery funds n.a.

3.1346,

A BASIC RESEARCH PROGRAM TO STUDY THE ETIOLOGY OF ALCOHOLISM

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This project tests the possibility that biological mediators of a genetic propensity in alcoholism could include personality factors and/or unique aspects of the metabolism of ethanol and/or unique attributes of the acute reaction to moderate alcohol doses. The study is carried out by comparing these factors in pairs of men aged 21-25 matched on demography, height/weight ratio and drinking history, half of whom have an alcoholic first degree family member (the family history positive of FHP group) and half of whom have no such family history (the family history negative of FHN group). Individuals are tested under baseline conditions and after the administration of 0.75 ml of absolute ethanol per kilogram which is administered as a 20% solution and consumed over 5 minutes. To date over 2,000 young men have been screened from whom 118 individuals were tested in the laboratory. Differences between FHP and FHN groups have included the finding that FHP men demonstrate higher levels of acetaldehyde after an ethanol load. The FHP group has also consistently demonstrated less intense subjective, physiological, and psychomotor changes after drinking. The final year of study will involve a continuation of intensive testing of these parameters.

SUPPORTED BY U.S. Veterans Admin., Dept. of Medicine & Surgery funds n.a.

3.1347,

VIRAL HEPATITIS AND DENTAL PRACTICE

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Dental personnel and dental patients are at risk to develop viral hepatitis. The identification and subsequent refinement of serological parameters for type B virus allows for more definitive epidemiological studies of viral B hepatitis. The purpose of this study on hepatitis and dentistry is to examine the development of hepatitis among VA dental personnel, and to determine the magnitude of potentially infectious dental personnel who chronically carry type B virus. The study deals with the prospective passive screening of dental personnel for type B infection, either a chronic state or acute viral hepatitis. If this initial study generates a significant number of chronic carriers with serological evidence of infectivity, a protocol will be submitted for second study designed to characterize the risk of transmission of type hepatitis from such carriers to susceptible patients. Preliminary results show that the dental group at the highest risk are the oral surgeons, but dental hygenists are also at an equal risk to develop hepatitis as general dentists are. The attack rate of hepatitis during the period of the study is quite low, therefore it appears that most of the hepatitis has been acquired during the period of training.

SUPPORTED BY U.S. Veterans Admin., Dept. of Medicine & Surgery funds n.a.

3.1348,

PROSPECTIVE STUDY OF THE PREVALENCE OF LEGIONNAIRES' DISEASE IN VETERANS WITH PNEUMONIA

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More progress has been made with the clinical microbiology and serology of L. pneumophila. Sixty-one strains of L. pneumophila have been isolated from clinical specimens, a third of which were sputum specimens. The development and use of a semiselective medium has facilitated the recovery of L. pneumophila from contaminated clinical specimens. Almost half of all clinical isolates have been recovered using only a newly developed semiselective medium. The average time for isolation and identification of the organism has been shortened from five to three days. An additional new serogroup of L. pneumophila has been isolated and characterized in this laboratory. More isolates have been obtained from blood as well. Further definition of the reliability of these diagnostic tests has been shown to cross-react with the direct FA reagents. Fourteen manuscripts have been published, or are in press as a result of such work. Several more have been submitted for publication.

SUPPORTED BY U.S. Veterans Admin., Dept. of Medicine & Surgery funds n.a.

3.1349,

ORIGIN AND SIGNIFICANCE OF MYCOBACTERIUM XENOPI IN CLINICAL SPECIMENS

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Various aspects of this study have been reported over the past several years at national and international meetings and in scientific literature. A complete report of the clinical & roentgenographic features of Mycobacterium xenopi disease in 19 patients at the West Haven VAMC will be published in the Jan. 1981, issue of the Am. Rev. Respir. Dis. (A. Costrini, D. Mahler, W. Gross, J. Hawkins, R. Yesner, N. D'Esopo). The findings were summarized as follows: 'this report strongly suggests that (1) nosocomial pulmonary disease resulted from the presence of M. xenopi in the hospital water system from an unknown source; (2) antecedent lung disease and prolonged environmental patterns were observed: nodular or mass shadows, cavities, and multiple nodular densities; and (4) disease due to M. xenopi was generally successfully treated with standard antituberculosis drugs.

Studies conducted in our laboratory provided information on the chemical and thermal stability of the specific strain of xenopi contaminating the hospital water. Through the cooperation of the Engineering Service, a regular schedule of cleaning and heating water tanks and the maintenance of generators at a slightly higher temperature have resulted in a reduction in viable organisms in the system which appear to be continuing to decline. Although M. xenopi has not as yet been completely eliminated from the water lines, problems of colonization of patients and repeated isolations from clinical material have significantly diminished.

Since the basic objectives of this investigation have been accomplished, it is being terminated as an official, but non-funded, research project. The laboratory will, however, continue to monitor isolates of xenopi from patients as well as to test the hospital water on a regular basis.

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3.1350,

ALCOHOL DRINKING PATTERNS IN VETERANS

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OBJECTIVE: This project is designed to evaluate the patterns of alcohol consumption present in several veteran populations.

PLAN: A questionnaire is used to provide a self report of monthly alcohol consumption. This report produces a quantity-frequency index for comparison purposes.

METHOD: The groups of veterans to be compared are: diagnosed alcoholics under treatment in the VA Medical Center; veterans diagnosed as having cirrohsis of the liver without a primary or secondary

diagnosis of the liver and a random sample of other veteran with neither set of diagnosis.

CLINICAL RELATIONSHIP: A strong similarity existing in the alcoholic and liver disease groups in the absence of similarity with the random group will suggest recommendations for treatment.

SUPPORTED BY U.S. Veterans Admin., Dept. of Medicine & Surgery funds n.a.

3.1351,
THIRTY-YEAR CLINICAL FOLLOW-UP OF SELECTED DEMYELINATING DISEASES

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This study was designed to assess the late course of 762 elisted men diagnosed as MS and 183 diagnosed as optic neuritis (ON) in US Army hospitals during World War II.

Prior assessment of the ON group to the mid-1960s indicated only 12% of them had developed MS, with a projected lifetime expectation of 15% plus or minus 5%.

The ON cases have been reviewed, to include the bases for the original diagnosis. On preliminary assessment, about 10 cases have been discarded from the 183 as erroneous diagnoses, and only some 24 cases of MS have been ascertained from World War II to July 1977. This provides a provisional rate of about 14% for progression to MS over the ensuing 30 plus years since ON onset. Further work is in process to provide precise life table analyses, to search for prognostic features of progression to MS, and to assess recurrent ON.

SUPPORTED BY U.S. Veterans Admin., Dept. of Medicine & Surgery funds n.a.

3.1352,
HUMAN IMMUNE RESPONSE DURING BIO-ISOLATION

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This project involves the study of human immune changes which occur during isolation at the South Pole. Our research objectives are to carry out virus-specific immunoassays on frozen specimens, to obtain information confirming and extending the unexpected frequency of parainfluenzavirus shedding which was encountered during the winter of 1978. These frozen specimens (serum, nasopharyngeal secretions, etc.) have been obtained serially from men spending the winter in isolation at the South Pole. Radioimmunoassay (RIA) and enzyme-linked immunosorbent assay (ELISA) are being utilized for virus specific serum assays, and for measurement of virus-specific secretory Immunoglobulin A (sIgA) in nasopharyngeal secretions. The RIA and ELISA methods will be further refined and extended to achieve direct detection of the virus antigen(s) in the still-frozen original W/O 78 nasopharyngeal secretions.

If successful, these immunoassays should provide direct confirmatory evidence for persistent parainfluenzavirus shedding we observed during the winter of 1978 at the South Pole and for the winter of 1976 and earlier years for which we so far have only serological evidence for persistent virus shedding. Confirmation of respiratory virus persistence and shedding into the nasopharynx will further the understanding of the epidemiolcgy of these infections and provide clues which may prove helpful in unraveling the problems of immune response patterns in these ubiquitous infections.

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3.1353,
HEARING PROFILES OF A DOMICILED VETERAN POPULATION

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Evaluation of the data from audiologic test batteries, administered consecutively to 358 Domiciliary patient-members at the time of their annual physical examination, revealed a steady decline in pure tone thresholds, speech reception thresholds, and speech discrimination ability with an increase in age. This finding is consistent with other published studies which have been concerned with the relationship between reduced auditory acuity and advancing age. Comparison of mean pure tone thresholds for the total population studied (N equals 358, x age 60 years) with those reported in a Public Health Survey (1962) suggests increased severity of hearing loss in a domiciled veteran population. The significance of noise exposure in a veteran population is discussed. Of the 358 patient-members tested, 7% (or 25) had speech reception thresholds of 30 decibels or poorer in the better ear; 12% (or 45) had discrimination ability of 80% or poorer in the better ear.

The final report on this project was not presented last year because it was hoped to finalize the findings in the form of a paper at a scientific meeting. However, this was not accomplished. Therefore, the above results which were also reported in April 1979, constitute the final report on this project.

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3.1354,
PROSPECTIVE GENETIC STUDIES OF COLON AND LUNG CANCER

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Purpose of this investigation was to study all new patients with carcinoma of the lung at the Omaha Veterans Administration Hospital in order to identify genetic factors by an interview technique. The study was part of a larger review by the Department of Medicine of Creighton University which was funded by the Council of Therapeutic Research. In May 1980 the project at Omaha Veterans Administration Hospital was admitted to cover other tumors including cancer of the oral cavity, pancreas and bladder. Under the antecedent protocol approximately twenty patients of carcinoma of the lung were studied. With the appending protocol approximately fifteen additional patients were interviewed by December 1980. At the present time under the appending protocol no results have yet been obtained. It is anticipated that the interview study will be continued for this coming year.

SUPPORTED BY U.S. Veterans Admin., Dept. of Medicine & Surgery funds n.a.

3.1355,
TRI-COUNTY STUDY OF CANCER OF THE MOUTH, ESOPHAGUS, LARYNX, STOMACH, COLON, RECTUM, LUNG AND BLADDER

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PROJECT OBJECTIVES: (1) To study the epidemiology of cancer of the gastrointestinal tract, lung and bladder, and (2) to study the possible relationship between dietary factors and cancer at the aforementioned sites.

PLAN AND METHODS: We are attempting to interview all patients in Erie, Niagara and Monroe Counties who develop histologically confirmed neoplasms of the gastrointestinal tract, lung and bladder. Fifteen patients at the Veterans Administration Medical Center have been entered in the study since the last report.

The major emphasis in the interview is on dietary habits. Questions are asked about time and frequency of eating meals, types and amounts of food eaten, and methods of food storage and preparation. In addition, questions are asked about alcohol consumption and use of tobacco. Certain data such as age, occupation and marital status are gathered.

In addition to interviewing cases, we are also interviewing neighborhood controls matched on age (plus or minus 5 yrs.) and sex.

FINDINGS, RESULTS: We have not undertaken any definitive analyses of our data since the numbers at various sites are still too small. We have, however, completed a methodological study based on this series which examines degree of agreement between case-spouse and control-spouse pairs with regard to food frequency. We presented our findings on this at the meeting of the Society for Epidemiologic Research on June 14, 1979.

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3.1356,
NATIONAL COOPERATIVE EVALUATION OF HYDROCORTISONE

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The present study, using a placebo and being double-blind in its evaluation of patients, it is intended to answer the following questions: (1) does hydrocortisone in large doses improve survival in acute hepatic encephalopathy? (2) does hydrocortisone given for encephalopathy decrease survival in the immediately post-encephalopathy period because of steroid-induced complications?, (3) does hydrocortisone given for encephalopathy influence the incidence of subsequent chronic hepatitis among survivors?

This study is a national multicenter effort because of the scarcity of suitable subjects. Consequently, since fulminant hepatic failure is a very rare disease, we have not entered any patients into this study in the past 12 months.

SUPPORTED BY U.S. Veterans Admin., Dept. of Medicine & Surgery funds n.a.

3.1357,
STUDY ON THE PSYCHODYNAMICS OF CANCER II

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OBJECTIVE: (1) To determine childhood psychosocial factors that contrbute to the susceptibility of certain adults for giving up hope when deprived of what is their single specific reason for life. The sequential hopelessness has been cited as a precipitating factor in malignancies' onsets. (2) To discriminate this parameter from tobacco in each respective role in the genesis of lung cancer.

PLAN: A structured questionnaire was submitted by an oral interviewer to 658 patients on appropriate wards at VAMC Shreveport. These were separated into lung cancer (LC), alcoholic (Alc), continuing smokers (CS), ex-smokers (XS), never smoking (NS) groups.

METHOD: 81 items were submitted to t or X2 analyses. The 20 significant items were then analyzed via the SPSS multiple regression subprogram. Randomized cross validation studies (RCVS) were performed on second half-samples, after determining an optimum function on the first half.

RESULTS: Correcting for age, RCVS distinguished the LC from the Alc at less than .01 level (X2 equals 7.611: df equals 1) with sensitivity of 67%, specificity of 65%. Continuing LC smokers could not be distinguished from CS, nor CS from NS or XS from NS, though CS discriminated from XS at less than .05 level.

Factors separating LC from Alc included less rebellion, less overnight stays away from parents, less relatives near, more mothers working, greater age difference Proband and next older male, yet less age difference between him and next older sibling and more parents smoking.

Cardiac diagnoses are now being coded for similar analyses. Yearly review of new cancers among non-cancers is planned to determine if RCVS has prospective worth.

SUPPORTED BY U.S. Veterans Admin., Dept. of Medicine & Surgery funds n.a.

3.1358,
LIFE EVENTS AND PSYCHIATRIC DISTURBANCE

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Life Events and Psychiatric Disturbance was a controlled prospective study of changes in these two phenomena among groups of psychiatric outpatients and normals. Results indicated that undesirable events were substantially related to somatic and dysphoric symptoms. Desirable events were inversely related. Fourier analyses showed little coherency between events and symptoms. Markovian analyses determined that event or symptom characteristics of subjects were best predicted by their state in a measurement period immediately prior to the one being considered. More historical data added little to predictive power. These analyses and other studies strongly suggest that the Schedule of Recent Events as currently used is unreliable, with little predictive validity in longitudinal studies of life change and illness.

The current project, Life Events, Coping Skills and Health Status in the Elderly, is derived from the above investigation. This prospective study will describe the relationship between life event and health changes among 200 elderly persons in the community. The temporal relationship between life events and health will be studied through consideration of the moderating variables of coping skills, personality, social support, age and social position. Given that the elderly population is increasing in our county and given that these elderly are more vulnerable to health changes, especially chronic disease, it becomes important to determine whether there any 'controllable' and/or predictable aspects to illness onset and recrudescence.

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3.1359,
FAMILIAL INCIDENCE AND MULTIPLE MANIFESTATIONS OF MEDULLARY CARCINOMA OF THE THYROID

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The purpose of this study continues to be to evaluate all family members of patients with diagnosed medullary carcinoma of the thyroid. This evaluation includes a) clinical evaluation, b) serum calcitonin by radioimmunoassay before and after calcium infusion, c) serum parathyroid hormone by radioimmunoassay, d) urinary catecholamine determination. In any patients in whom abnormalities are found, appropriate therapy will be carried out. In those subjects in whom the studies are normal, repeat studies will be done at 6 to 12 month intervals. In this way, this study should a) lead to early diagnosis and treatment of patients with medullary carcinoma of the thyroid before clinical manifestations are apparent, and b) yield additional information about the incidence, inheritance and natural history of this disease.

During the past year, 8 additional new patients suspected of medullary carcinoma of the thyroid have been evaluated, but the studies were normal in all of these patients. The one patient who was identified as a strong suspect for medullary carcinoma of the thyroid last year is in Europe and is not yet available for reevaluation. This patient will be more thoroughly investigated and family members will be evaluated as soon as she returns to this area.

This study continues.

SUPPORTED BY U.S. Veterans Admin., Dept. of Medicine & Surgery funds n.a.

3.1360,
CELL-MEDIATED IMMUNITY IN LIVER DISEASES

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Studies have continued on the liver specificity of the cell membrane lipoprotein 'LSP' (liver specific protein) and the importance of antibodies to LSP in chronic liver disease. Contrary to other reports, our study gave evidence that LSP is not organ-specific and that it shares antigenic determinants with its kidney equivalent KSP, as well as with another soluble liver antigen, LP-2, and with saline-insoluble liver cell membrane proteins. We are now attempting to isolate pure liver-specific antigens and to produce monospecific antibodies against these components. We are planning to achieve this goal by producing monoclonal antibodies by the cell fusion technique and by isolation of pure antigens by affinity chromatography.

The leukocyte adherence technique (LAT) has been utilized to assess cell-mediated immunity (CMI) to HBcAg and HBsAg in patients with chronic (CH) and acute viral (AVH) hepatitis. All patients with AVH type B and 91.6% of patients with HBV-related CH displayed reactivity to both HBcAg and HBsAg, whereas healthy controls and patients with liver disease not related to HBV failed to show reactivity to these antigens. Four of 6 laboratory workers who had been exposed to HBsAg and had no signs of hepatitis and 2 of 17 patients with CH unrelated to HBV who received multiple tranfusions exhibited reactivity to HBsAg but not to HBcAg. These results suggest that according to the LAT, reactivity to HBcAg is present in patients with active HBV replication, whereas, reactivity to HBsAg alone indicates previous exposure to HBV.

SUPPORTED BY U.S. Veterans Admin., Dept. of Medicine & Surgery funds n.a.

3.1361,
MORBIDITY AND EFFICACY OF INFLUENZA VIRUS VACCINE IN HIGH RISK INDIVIDUALS

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Three hundred four volunteers were enrolled from amongst the patient-members of the Domiciliary and the patients of the Medical Service at the VA Medical Center in Martinsburg. Ninety-four have since been eliminated from the study, leaving a total study population of two hundred ten. One hundred sixty-five high risk patients accepted vaccination with commercially obtained, inactivated influenza vaccine (1975-76 bivalent vaccine) and constituted the final experimntal Group I. Group II is comprised of thirty high risk subjects who refused vaccination. Groups I and II were shown to be of comparable composition by age and indices of disease. There was no significant difference between the vaccinated and unvaccinated groups in the frequency of acute respiratory illness as determined by the 'new respiratory illness' reports completed by the physician assistants. There are no scientific conclusions available at this time because the serologic data have not been released by the Bureau of Biologics, Food and Drug Administration.

SUPPORTED BY U.S. Veterans Admin., Dept. of Medicine & Surgery funds n.a.

3.1362,
THE CONTROL OF MAMMALIAN PROTEIN SYNTHESIS AT A MOLECULAR LEVEL

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Plasma high density lipoprotein (HDL) has been shown to be the main source of cholesterol used by the rat adrenal cortical cell for the synthesis of steroid hormones. HDL is bound at a high affinity receptor site on the adrenal cortical cell membrane. HDL binding and uptake is stimulated by ACTH. HDL is transported from the cell surface to the lysosomes where the protein is degraded and cholesterol released. Cholesterol is then transported to the mitochondria where it is converted by the cytochrome P-450 cholesterol side chain cleavage system to pregnenolone, the first steroid. Pregnenolone by multiple enzyme systems is converted to corticosteroids. It was observed by us that HDL, when incubated alone with adrenal cortical cells, induces a two-fold increase in corticosterone production. In the presence of both 3'5'-cyclic adenosine monophosphate (cAMP) and HDL, corticosterone production was stimulated 100 fold. Both in the presence and absence of cAMP, large amounts of cholesterol derived from HDL are taken up by the adrenal cell.

Apparently in the cell which is not stimulated by cAMP, cholesterol though taken up by the cell, is either not transported into the mitochondria, or if it is, is not bound to the cholesterol side chain cleavage system, and therefore not converted to steroids. It will be our next task to study the translocation of cholesterol from the cell membrane through the lysosomes to various other intracellular fractions. The intracellular fractions of the adrenal cells will be homogenized and separated centrifugally using the appropriate marker enzymes to determine the purity of these fractions. They will then be analysed for free and esterified cholesterol. This work will take about two years.

SUPPORTED BY U.S. Veterans Admin., Dept. of Medicine & Surgery funds n.a.

3.1363,
NOTES ON THE ETIOLOGY OF MULTIPLE SCLEROSIS

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Other aspects of MS epidemiology are covered in active projects #08, 11, 12. Period cumulative risk estimates for MS by age at entry and sex have been calculated. For an unaffected population, all ages, only some 1/8 of expected cases will begin within five years and only about 1/2 the total within 20 years of follow-up. In the US there is no relation of the distribution of MS with that of canine distemper or dog-bites. In Iceland, there as at least one epidemic of MS: from 1945-54 the average annual incidence rate of 3.2 per 100,000 was twice that of preceding or following periods.

BIBLIOGRAPHIC REFERENCES: Kurtzke JF: Epidemiologic contributions to multiple sclerosis: An overview. Neurology 30 (Part 2): 61-79, 1980. Kurtzke, JF, Gudmundsson KR, Bergmann S: Multiple sclerosis in Ireland: A postwar epidemic. Neurology 30: 437, 1980 (abstr).

SUPPORTED BY U.S. Veterans Admin., Dept. of Medicine & Surgery funds n.a.

3.1364,
GEOGRAPHIC NEUROPATHOLOGY

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This continues as a multifaceted project in neuroepidemiology covering aspects within other projects in progress, and its content and progress are best defined from the publications. In addition to the cited works, the chapter 'The Epidemiology of Neurologic Disease' in Baker & Baker 'Clinical Neurology' is being updated. Study continues.

BIBLIOGRAPHIC REFERENCES: Malmgren, R., Kurland, L., Mokri, B., Kurtzke, J.: The epidemiology of Creutzfeldt-Jakob disease. In: Prusiner, S.B., Hadlow, W.J., (ed): Slow Transmissible Diseases of the Nervous System, volume 1. Academic Press, N.Y., 1979, pp 92-112. Current practice of clinical electroencephalography. Ann. Int. Med. 92:582-583, 1980. Masucci, E.F., Kurtzke, J.F.: Diebetic superior branch palsy of the oculomotor nerve. Ann. Neurol. 7: 493, 1980.

SUPPORTED BY U.S. Veterans Admin., Dept. of Medicine & Surgery funds n.a.

3.1365,
FUNCTION-STRUCTURE CORRELATION IN PULMONARY DISEASE

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PROGRESS REPORT: Three major projects are in progress at this time.

Experimental exposures to asbestos dust in rats. This is a joint project with the NIEHS. Exposures and animal sacrificings are carried out at the Research Triangle. Tests are designed to reveal the relative importance of short vs long fibers of asbestosis. This is a disease of increasing importance because of the wide use of asbestos in many industries and especially in the U.S. Navy. Better understanding of mechanisms involved is urgently needed. Experimental findings indicate that long asbestos fibers are more toxic than short fibers or particles.

Morphology and epidemiology of pulmonary lesions in human Byssinosis. This study involves special preparations of lungs obtained at autopsy in patients dying in this hospital. The inflated lungs are subjected to morphometric determination of extent of various lesions (emphysema, bronchitis) thought to be associated with cotton dust exposure. Results suggest that bronchitis is related to this occupation but emphysema is not. The study is continuing, with efforts to obtain greater details as to work history and symptoms among the cotton workers, most of whom are in this hospital because of other intercurrent diseases.

Studies of Cystic Fibrosis. This is a joint study with clinical workers at Duke. Autopsies are done at Duke and specially prepared lungs are studied in the laboratory using techniques similar to those in the Byssinosis project.

BIBLIOGRAPHIC REFERENCES: Pratt, P.C., Vollmer, R.T., and Miller, J.A. Epidemiology of pulmonary lesions in non-textile and cotton-textile workers: A retrospective autopsy analysis. Arch. Environ. Health., 35:133-138, 1980.

SUPPORTED BY U.S. Veterans Admin., Dept. of Medicine & Surgery funds n.a.

3.1366,
AN EPIDEMIOLOGICAL SURVEY OF SYMPTOMS IN DEPRESSION

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PURPOSE: Depression as a psychiatric disorder consists of signs and symptoms, which if based on organic changes in the central nervous system should manifest similar psychopathology regardless of country or culture. In addition, depression has been frequently observed to occur concomitantly with anxiety. Often, it is difficult to be able to distinguish on the initial examination as to whether the patient is depressed only, anxious only, or has both anxiety

and depression. In order to increase the accuracy of the epidemiological survey of depression, we have surveyed the symptoms of anxiety as well, using the previously published, validated and standardized self-rating scale for anxiety.

METHODS & RESULTS: The self-rating anxiety scale was translated into various foreign languages by collaborating investigators, and administered along with the depression scale. Each collaborator worked within their own practice setting, and provided data for the data analysis performed. Data gathered in Nigeria, Korea, and Taiwan was compared to data obtained in the USA. As much as possible, patient populations were matched, and patients were divided into diagnostic categories.

Results of the data analyses demonstrated that normal subjects in the USA, Nigeria, Korea and Taiwan did not differ on their anxiety ratings, and were not significantly different from each other. Patients with diagnosis of anxiety states all rated significantly higher than normals, and were not different from each other.

PRESENTATION: How normal is anxiety? Am. Psychopath. Assoc., Washington, DC, March 6, 80.

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3.1367,

AN EPIDEMIOLOGIC STUDY OF AMYOTROPHIC LATERAL SCLEROSIS AND OTHER MOTOR NEURON DISEASES

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For 504 male veterans of World War II who died of ALS between 1963 and 1967, comparisons with 504 matched controls from the military showed a significant excess of trauma and operations.

Preservice injuries number 38 in the ALS and 16 in the controls. Injuries of upper and/or lower extremities were 32 ALS vs 12 controls. Preservice operations were 29 ALS vs 14 controls.

Injuries during service also predominated in the ALS: fractures were 40 vs 18, lacerations 42 vs 26, contusions 20 vs 11 as the major groups. Sprains and strains were equivalent (22 vs 24). Extremity fractures were particularly discrepant at 27 ALS vs 12 controls; skull fractures were 9 vs 3. The causes of injury (combat, vehicular, falls, sports) were all equally in excess among the ALS.

One hypothesis is that direct muscle trauma long before clinical onset is a predisposing factor in ALS; this may also explain the known male predilection for the disease.

BIBLIOGRAPHIC REFERENCES: Kurtzke, JF, Beebe GW: Epidemiology of amyotrophic lateral sclerosis. 1. A case-control comparison based on ALS deaths. Neurology 30: 453-462, 1980.

SUPPORTED BY U.S. Veterans Admin., Dept. of Medicine & Surgery funds n.a.

3.1368,

A LONGITUDINAL AND CROSS-SECTIONAL STUDY OF ORAL HEALTH IN HEALTHY VETERANS

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PROJECT OBJECTIVES: The specific aim of this investigation is to determine the incidence, distribution, changes, and interrelationships of oral variables used to indicate oral health. Information is obtained during periodic examination, performed at three-year intervals, of more that 1,200 DLS participants.

PLAN: This oro-facial study includes six series of examinations or procedures: 1) interim health history; 2) oro-facial examinations; 3) tests of masticatory function and survey of dietary habits; 4) biochemical analyses of stimulated whole and parotid saliva; 5) intra-oral and cephalometric radiographs, standardized photographs and study models of the teeth; 6) oral cytological examination.

METHOD: These comprehensive oral examinations permit a detailed description and analysis of the effect of age on oral tissues and functions and elucidate the natural history of oral diseases.

CLINICAL RELATIONSHIP: The DLS determined the prevalence of oral leukoplakic lesions in 'nonsmokers' and persons who smoked either cigarettes, cigars, pipes or cigars plus a pipe. The data indicated that the prevalence of oral leukoplakia was associated with smoking and differed according to the type of product used. Individuals smoking a 'pipe' or 'cigars plus a pipe' exhibited the highest overall prevalence rate, especially for the palate.

Changes in masticatory ability with age were primarily due to the loss of natural dentition with subsequent replacement by a removable prosthesis. Approximately 1,200 men were classified by denture status. A plot of masticatory performance vs. mean perceived chewing ease, for thirteen food items, separated out the dentition groups by degree of impairment. A clustering of the dentition groups occurred. The robustness of the clusters suggested that characteristic food selection patterns can be formulated according to degree of impairment.

SUPPORTED BY U.S. Veterans Admin., Dept. of Medicine & Surgery funds n.a.

3.1369,

HLA B27 RELATED ARTHROPATHIES - GENETICS VERSUS ENVIRONMENT

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We have now identified 150 patients with ankylosing spondylitis and their first degree relatives. Likewise, 130 patients with Reiter's Syndrome have been evaluated. These individuals have formed part of a presentation and publication (CALIN A, FOX, Gerber: The natural history of Reiter's Syndrome. Arthritis Rheum 21:548-549, 1978)

We have identified patients with a reactive arthropathy following salmonella and shigella epidemics. We have determined that Shigella sonnei does not cause Reiter's disease in contrast to flexneri 1 and 2a, both arthritogenic agents. (CALIN A, Simon, Kaslow, et al: Seroepidemiology of shigella and Reiter's Syndrome. Ann Rheum Dis, in press, 1979)

We are beginning to identify immune complexes and other evidence of immunological activity in our patient population.

Specific family units consisting of probands with psoriatic arthropathy and identical twin member have been studies. (Gottlieb, Calin: Discordance for psoriatic Arthropathy in phenotyypically identical (monzygotic) twins. Arthritis Rheum, in press, 1979)

SUPPORTED BY U.S. Veterans Admin., Dept. of Medicine & Surgery funds n.a.

3.1370,

EPIDEMIOLOGICAL & BIOCHEMICAL STUDIES ON MYCOBACTERIA & THEIR VIRUSES

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We have made considerable progress in our efforts to develop a phage typing scheme for M. avium-intracellulare. Over 20 phage strains that infect these organisms have been identified. Sixty strains of M. avium-intracellulare were typed using 12 phages, and 28 strains were found to be sensitive to at least one of the phages. Most importantly, pairs of strains of the same serotype generally had the same phage senstivity. Our current work is directed towards isolating additional phages, determining the precise conditions which yield the highest reproducibility of typing, and determining the affect of colony variability on phage type. In several months we will begin to screen fresh clinical isolates of M. avium-intracellulare to determine the general applicability of our typing phages.

We have extended our studies of plasmids (extrachromosomal genetic elements) of M. avium-intracellulare. Having previously demonstrated that strain LR25 carries three plasmids, we observed that this strain has a restriction-modification (RM) system. This was demonstrated by its resistance to phage JF2 grown in M. smegmatis but sensitivity to JF2 grown in LR25. We have succeeded in eliminating the plasmids from LR25. This 'cured' strain no longer exhibits RM and is sensitive to a number of phages. We are currently attempting to determine which of the three plasmids codes for RM and what other functions are plasmid-coded.

Five other strains that carry plasmids were found to be resistant to all of our phages, and the results indicate that this resistance is not due to restriction of phage DNA. Additional studies on the relationship between plasmids and phage sensitivity are underway.

BIBLIOGRAPHIC REFERENCES: Crawford, J.T. and Bates, J.H.: Isolation of plasmids from mycobacteria. Infect. Immunol. 24: 979, 1979.

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3.1371,

GENETIC HETEROGENEITY OF HYPERURICEMIA

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This project is designed to assess the contribution of single major genes to the common adult male phenotype hyperuricemia using the newer techniques of quantitative genetics. Previously identified major gene mutations in pathways of urate homeostasis can be detected in less than 5% of patients with common adult hyperuricemia. A multifactorial model for inheritance of this phenotype has been postulated. We are determining serum urate and urate excretion under strictly controlled conditions designed to minimize environmental effects on urate homeostasis in entire pedigrees chosen through an index case male with longstanding hyperuricemia (serum urate greater than 8.0mg%). Studies on 94 such pedigrees are nearing completion. When all living first degree relatives have been studied, segregation analysis will be done using computer techniques developed for study of quantitative phenotypes (MAXLIK-Morton and GENSEG-Elston). A quantitative urate phenotype is being developed using a single bivariant analysis of serum and urine data since we postulate a two locus model of inheritance of the phenotype serum urate. Computer simulations for such data analysis are being run. Preliminary analyses of each variable individually have been undertaken. Analyses on pooled data from incomplete families show within sibship variance ratios and present-offspring correlations suggestive of the contribution of major genes of large effect to the inheritance of serum urate in older sibships. Analyses of completed nuclear families by the methods of Carmelli and Karlin using Major Gene Index and Offspring Between Parent analysis as a measure of major gene segregation, show asymmetry of inheritance with a greater maternal contribution for serum urate and results compatible with major autosomal gene segregation for fractional urate excretion (MGI 1.059-1.141). These results in urine data analysis have necessitated further study of urate excretion in a control population. In May 1980, we began a control study in a stratified random population sample of 2500 persons in collaboration with the Stanford Lipid Research Center.

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3.1372,

AUTOMATIC CARDIOVASCULAR DATA PROCESSING

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Trend analysis of electrocardiograms from a prospective study on 1,600 normal middle-aged and elderly men from Albany, N.Y., was continued. Since the study was started in the early fifties, the age of the subjects in the study has now advanced to the point that the number of yearly cardiac events (infarcts and/or cardiac death) is increasing rapidly. ECG records from patients with events were compared with those without events. Highly significant differences were found (P less than 0.001) particularly in the ST segment of the vertical lead y. The ECG parameters which were identified are now being tested as risk indicators for future events.

The ECG record collection from children has been terminated. The number of tracings from normal children is 4,055 and from abnormals with cardiac catheterization 2,268. The records are being divided into subgroups according to diagnosis and are being prepared for publication.

Three different ECG lead systems, the standard 12-lead ECG, Frank's orthogonal ECG and body surface maps consisting of 126 leads were correlated in 139 patients with left ventricular mass determined by biplane ventriculograms. Correlation coefficents were 0.61, 0.78 and 0.89 respectively. Even with total body surface maps, the error of estimate was too large for practical application.

Compression of digital ECG records is desirable for economic use of storage space and for transmission of multiple leads by telephone. Various compression methods were tested. Interpolation was found most efficient and a compression ratio of 9:1 could be achieved.

The high frequency content of the electrocardiogram has been considered by many as contributing diagnostic information which cannot be obtained from low frequency components. This hypothesis was tested in 542 records from cases with autopsy confir-

mation of the diagnosis. The gain in information through high frequency components was found negligible.

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3.1373,
CLINICAL AND INFECTIVITY CORRELATES OF E ANTIGEN

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This project had as its major aim to determine if the presence of hepatitis B e antigen and elevated DNA polymerase activity in the serum of chronic hepatitis B surface antigen carriers indicate increased contagiousness in a household setting. The household contacts of 74 carriers were prospectively evaluated for serologic evidence of hepatitis B infection. Both household contacts of HBe antigen-positive and anti-HBe-positive carriers demonstrated serologic evidence of infection, but infection was significantly more frequent among spouses and sexual partners of carriers who had either HBeAg or elevated DNA polymerase activity (P less than 0.001). Thus, the data indicate that particular subpopulation of spouses and sexual partners of hepatitis B carriers are at significantly greater risk for acquiring infection. This data was published in a manuscript form in Gastroenterology vol. 76: 1319, 1979.

SUPPORTED BY U.S. Veterans Admin., Dept. of Medicine & Surgery funds n.a.

3.1374,
HEPATITIS B VIRUS INFECTION IN AN ONCOLOGY UNIT

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The intent of this study is to define the incidence and prevalence of Hepatitis B Virus markers in the staff assigned to the Oncology ward. Other scientific studies have already identified Oncology ward staff and patients as being in a high risk area. We would like to show evidence of type B hepatitis and to take steps toward limiting the transmission of the virus. All staff have been assured that their right of confidentiality will be protected. This is necessary to protect individuals against unreasonable actions such as endangering their jobs and/or preventing upward mobility. There are 86 persons entered into the study which is proceeding without complications. All testing has been completed except HBeAg and anti-HBe which is commercially unavailable. We expect to be able to perform these tests shortly using test materials designated for research purposes only. There are no preliminary conclusions to be drawn because the nature and design of the study must be continued until completion before an analysis of the data can be made.

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3.1375,
INCIDENCE OF AVASCULAR NECROSIS IN PATIENTS ADMITTED TO AN ACUTE ALCOHOLIC TREATMENT CENTER

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OBJECTIVES: To determine the incidence of avascular necrosis in patients admitted to an acute alcoholic treatment unit.

RESEARCH PLAN: Patients were asked to fill out a brief questionnaire dealing with possible hip pathology and were given a brief hip examination upon admission.

METHODOLOGY: A routine frog leg lateral to the pelvis with all admissions was instituted along with the questionnaire.

RESULTS: The initial 200 patients involved in this study showed a surprisingly low incidence of avascular necrosis. One man with avascular necrosis had already had total hip surgery on the opposite side so he was known to have had avascular necrosis. The second man with some limitation upon physical examination had questionable avascular necrosis.

CLINICAL RELATIONSHIP: This study may show whether alcoholism in some way predisposes patients to this particular disease.

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3.1376,
INVESTIGATIONS ON LEGIONNAIRES' DISEASE

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The Wadsworth outbreak of Legionnaires' disease is now the longest on record (over two years and still active). We have documented the disease in 104 patients; this makes ours the largest hospital-associated outbreak.

Preliminary analysis of autopsy material from prior to opening of the new hospital indicates that the disease is related to opening of the new facility. Legionella pneumophila was recovered from our cooling tower water, but hyperchlorination (which eliminated the organism) had not modified the outbreak. Additional efforts are underway to attempt to end the outbreak; these involve ground cover, air control, and air filtration.

We have reported (Lancet) the first in vitro recovery of L. pneumophila from blood culture and we have two additional blood culture recoveries now. A new serogroup (IV) of the organism was recovered from a patient at Wadsworth; it is designated serogroup Los Angeles. Our clinical experience with Legionnaires' disease has been documented in an article in Lancet (renal transplant cases), one in Annals of Internal Medicine (our first 24 cases), and one accepted by Medicine (65 cases and a literature review). The Faine silver impregnation stain was found to stain Legionella well in tissues. A semiselective medium has been developed to facilitate recovery of the organism from specimens containing other organisms. We have the greatest experience of any group with documentation of the disease by direct fluorescent antibody staining and cultivation of the organism.

SUPPORTED BY U.S. Veterans Admin., Dept. of Medicine & Surgery funds n.a.

3.1377,
RELATIONSHIPS BETWEEN LEAD IN HOME DRINKING WATER, CARDIOVASCULAR RISK FACTORS AND OTHER HEALTH INDICES

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PROJECT OBJECTIVES: To examine relationships between lead and other trace metals found in home drinking water and indices of health, with particular emphasis on cardiovascular health.

PLAN: The study is being performed in collaboration with the National Heart, Lung and Blood Institute (NHLBI) and the Environmental Protection Agency (EPA). Samples of home drinking water and nail clippings were collected from 325 Normative Aging Study (NAS) subjects in 1976-1977 and analyzed for metallic contents by the EPA in Cincinnati. A follow-up collection of water and nail clippings was completed on the same subjects in August 1979. The 1979 data have been analyzed by the EPA. Health data are regularly collected as part of subjects' NAS physical examinations.

METHOD: A data set linking trace metal data from the 1976-1977 water samples to NAS health data is currently being analyzed by both NAS and NHLBI. Analyses relating hypertension to trace metal exposure controlling for age, education, town of residence and other confounder variables have been performed.

FINDINGS: Analyses to date have not found significant relationships of lead, zinc, and copper to hypertension. Elevated levels of cadmium, however, have been found to be associated with lower diastolic blood pressures.

SUPPORTED BY U.S. Veterans Admin., Dept. of Medicine & Surgery funds n.a.

3.1378,
TO DETERMINE THE INCIDENCE OF SECOND PRIMARY MALIGNANCIES FROM THE PATIENTS' CHARTS AT WEST HAVEN VA HOSPITAL

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The purpose of this study was to examine retrospectively, from medical record room indexing, the occurrence of second primary malignancies in this hospital.

It is postulated that second malignancies are increasing, as a consequence of more affective tumor therapy with longer survival and also a consequence of treatment modalities which are carcinogenic.

For purposes of this assessment, data on patients with differing histology as well as site were to be considered criteria for second primaries. This would exclude patients with multiple skin malignancies, and patients with multiple head and neck tumors.

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3.1379,
EPIDEMIOLOGY OF LEGIONNAIRE'S DISEASE IN A VETERAN POPULATION EXPOSED TO A MAJOR CONSTRUCTION PROJECT

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Serology testing commenced in earnest toward the end of 1979. The laboratory technician started in October, and with training time and awaiting the arrival from CDC of polyvalent antigen for L. pneumophilia serogroups 1 through 4, some delay occurred. The polyvalent antigen is to be replaced shortly by an improved preparation.

Long-term patients in the North Little Rock Division, VAMC, tested in January 1979. Fifty-three sera have been re-run against polyvalent antigen and a further seven sera were positive at greater than or equal to 1:128. This infers a prevalence of 23% rather than 10%. The new positives included some to serogroups 2-4.

A sample of hospital personnel, construction site workers, and nursing students from out of town, revealed positive serology (greater than 1:128) in 4.5% of personnel, and in less than 1% of the other two groups. Ambulant day care ex-patients from Building 105 revealed six positive in 23 volunteers (26%). Retesting sera of American Legion volunteers from the area confirmed the initial positive rate of 2%.

Since October 1979, four new clinical cases have been proven, by serology or direct staining of sputum or tissue. Three arose at the North Little Rock Division and one at the Little Rock Division. Two had recent therapy for malignancy. Two died of the disease, and one succumbed several weeks later.

A number of 'suspect' cases have been observed, but not proven.

Linda Dickinson, Ph.D. (Division of Biometry) has used the initial prevalence survey as a pilot model to determine the information needed in the long-term study. A structured analysis specification has been drawn up to define interphases between various aspects, laboratory data, patient profiles, and statistical analysis. The data collection system is based on a daily gains and losses log, with quality control checks. Computerization is underway to include files of data base, and ability to process, retrieve, and edit information.

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3.1380,
INVESTIGATION OF A CHANGING CLINICAL PRESENTATION OF PNEUMOCOCCAL PNEUMONIA

S.I. Ort, U.S. Veterans Admin., Dept. of Medicine & Surgery, Medical Center, *W. Spring St., West Haven, Connecticut* 06516 (314-36-1889)

A twenty month retrospective and prospective study of one hundred and ninety-four subjects admitted to or residing in a community hospital and a Veterans Administration Hospital, in whom pneumococci were isolated from sputum and/or blood cultures, was analyzed. Population characteristics, presence of underlying pathologic conditions, presenting symptoms, conditions predisposing to aspiration, and admission radiologic findings were evaluated. Eighty percent of cases had one or more associated underlying disease processes over half were associated with radiologic features of bronchopneumonia in contrast to lobar infiltration (25 percent). The sputum Gram stain suggested pneumococci as the causative pneumonia agent in a high percentage of cases regardless of type of radiologic presentation and/or the presence of bacteremia. Pneumococcal polysaccharide capsular antigen typing of 37 patient isolates identified 20 different types, 62 percent of which are included in the Pneumovax vaccine. Pneumococcal pneumonia has a wide range of clinical presentations from those subjects admitted with clinical symptoms but no radiologic evidence of disease to fatal cases with bacteremia. Awareness of the range of clinical presentations of pneumococcal pneumonia in this compromised population may affect better earlier diagnosis and prompt appropriate therapy.

SUPPORTED BY U.S. Veterans Admin., Dept. of Medicine & Surgery funds n.a.

3.1381,

ANTECEDENTS OF ALCOHOLISM - SELF-REPORTED CHILDHOOD MINIMAL BRAIN DYSFUNCTION WITH ADULT DRINKING BEHAVIOR AND PSYCHOSOCIAL ADAPTATION

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This investigation focusing upon whether a homogeneous group of alcoholics can be differentiated on the basis of childhood signs of minimal brain dysfunction (MBD) was begun October, 1979. It requires extensive interviewing, testing, ratings upon 80 Alcohol Treatment Unit patients and 3 control groups. The latter consists of a normal group of General Medical and Surgery inpatients, a Drug Treatment Unit (DTU) group and a Mental Health Clinic (MHC) group. Basic data have been collected, processed and preliminary computer statistical analysis performed for the ATU group. Data thus far indicates many relationships between childhood MBD signs and adult adaptation of the ATU subjects (severity of alcoholism, and adult personality and life experiences, as well). Also, measures of current brain functioning show relationships to severity of alcoholism among ATU subjects. However, these varied relationships appear to be more complex than those thus far reported in the research literature. Most data have been obtained from control groups, with some interviewing still needed from 5 MHC patients. Collateral data obtained by phone from relatives of patients are still being collected for experimental and control subjects. It is anticipated that data collection will be completed in the current quarter. Substantial progress toward completing necessary group comparisons and all appropriate multi-variate analysis is expected in FY 1980. Several papers for submission for publication are being planned for preparation throughout FY 1981.

SUPPORTED BY U.S. Veterans Admin., Dept. of Medicine & Surgery funds n.a.

3.1382,

EPIDEMIOLOGY, GENETICS, AND MOLECULAR BIOLOGY OF AMINOGLYCOSIDE RESISTANCE IN NOSOCOMIAL INFECTIONS

J.F. John, U.S. Veterans Admin., Dept. of Medicine & Surgery, Medical Center, *109 Bee St., Charleston, South Carolina* 29403 (201-36-1416)

I am studying the epidemiology and molecular characteristics of antibiotic resistance (R) plasmids from aminoglycoside-resistant bacteria. Plasmids are visualized by agarose gel electrophoresis of ethanol-precipitated plasmid DNA. R plasmids are isolated by transfering them to sensitive recipients by conjugation or transformation. Aminoglycoside modifying enzyme activity is determined in the donors, transconjugants, and transformants. The project has concentrated on multiresistant Serratia marcescens (MRSM) the most common gentamicin-resistant Enterobacteriaceae in our hospitals. We have found 10 different conjugative R plasmids in MRSM thus far in Charleston. These plasmids have varying degrees of homology with one another as seen by analysis of DNA fragments from restriction endonuclease digestions. Our major findings include 1. A 6' amino-glycoside acetyl transferase (AAC) coded by chromosomal genes of amikacin-resistant S. marcescens. 2. An endemic 41 MD plasmid at Medical University Hospital originating in a neurological intensive care unit. This conjugative plasmid confers multiple antibiotic markers and elaborates either an AAC (3)-I or AAC (3)-III. MRSM containing the 41 Md plasmid has colonized or infected over 120 patients in the affiliated hospitals. 3. Plasmids at the Charleston VAMC differ in size from the Medical University plasmid types; 41 Md plasmids have not been found at the VAMC. Other Serratia plasmids, however, at VAMC exhibit varying degrees of homology with the 41 Md plasmid. 4. By comparing epidemiologic variables of MRSM-infected versus non-infected groups of patients in the same hospital location, no significant difference was found in antibiotic exposure, gentamicin exposure, pyuria, presence of bladder catheter, or length of hospital stay. 5. Other plasmids from gentamicin-resistant Enterobacteriaceae differ in size and restriction fragments from plasmids in S. marcescens.

SUPPORTED BY U.S. Veterans Admin., Dept. of Medicine & Surgery funds n.a.

3.1383,

GASTRIC LESIONS IN RHEUMATOID ARTHRITIS PATIENTS

P.H. Guth, U.S. Veterans Admin., Dept. of Medicine & Surgery, Medical Center, Gastroenterology Section, *Wilshire & Sawtelle Blvds., Room 209, Los Angeles, California* 90073 (562-36-8405)

This is prospective endoscopic and biopsy (bx) study of the gastric and duodenal mucosa in rheumatoid arthritis (RA patients (pts) on long-term non-steroidal anti-inflammatory therapy. To date, 26 pts have had endoscopy and 16 also had multiple box of antrum and duodenum.

The patients with gastric ulcer (GU) were in the distal antrum or pyloric channel; most erosions were in the antrum. Duodenal changes were minimal except for 1 duodenal ulcer found in a pt with 3 GU. None of the pts with ulcers and only 3 with Gastric Erosions (ER) had symptoms. All 9 pts with GU/ER had histologic gastritis in the intact areas of mucosa, and 5 had intestinal metaplasia. In contrast, of 7 pts without GU/ER only 3 had gastritis and 1 had intestinal metaplasia.

The preliminary data suggest that in treated RA pts 1) symptoms were poor indicators of GU/ER, 2) Duodenal lesions were uncommon, and 3) There was a strong association between intestinal metaplasia and gastric ulcers and erosions.

SUPPORTED BY U.S. Veterans Admin., Dept. of Medicine & Surgery funds n.a.

3.1384,

THE DETECTION OF INTERMITTENT ACUTE PORPHYRIA IN PSYCHIATRIC POPULATIONS

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PROJECT OBJECTIVES: (1) To determine the frequency of intermittent acute porphyria (IAP) in Brockton VAMC psychiatric inpatients; (2) To identify patients with the disease for neuropsychiatric study.

PLAN: Uroporphyrinogen-I-Synthetase, the enzyme deficient in the disease, is determined qualitatively for all psychiatric inpatients. Patients with low enzyme levels have a quantitative enzyme assay and determination of urinary porphyrin precursors, which are elevated attacks of porphyria.

METHOD: Blood specimens obtained for admission and routine blood counts are frozen and transported to Dr. Tishler's laboratory at Harvard Medical School where the enzyme assays are performed. Positive results are followed up with quantitative studies and shared with the patients' physician. The investigators provide consultation, genetic counseling, and family studies to the extent requested by the patients' physician.

RESULTS TO DATE: Between December 1976 and February 1980, 1348 samples were screened. Seven were qualitatively positive and specimens for quantitative assay were obtained. Four were normal, indicating those patients do not have the disease. One was border line, and two were clearly within the porphyric range. Additional studies of urinary porphyrin precursors are now in progress to clarify the relationship of these findings to classical IAP.

CLINICAL RELATIONSHIP: The results indicate that ca. 0.2% of individuals screened have the enzyme deficit associated with IAP. They are at risk for life-threatening attacks of the disease. This frequency is much greater than the best estimates for the general population (ca. 0.002%), indicating a small but important number of hospitalized veterans may be at risk for acute attacks of IAP.

SUPPORTED BY U.S. Veterans Admin., Dept. of Medicine & Surgery funds n.a.

3.1385,

PROSPECTIVE EVALUATION OF PATIENTS WITH SUSPECTED SINUS NODE DYSFUNCTION

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Seven patients had chronic, unexplained, nonparoxysmal sinus tachycardia. The clinical, electrocardiographic, and electrophysiologic characteristics of these cases are described. In each case electrocardiographic and electrophysiologic observations suggested that tachycardia was nonparoxysmal and due to increased automaticity of the sinus node (or of an automatic atrial focus located very near the sinus node). The mechanisms of increased sinus node automaticity in these patients were explored using drugs affecting the autonomic nervous system. In each patient these studies suggested a defect in either sympathetic or vagal nerve control of resting heart rate, with or without an abnormality of intrinsic heart rate.

Prolonged (greater than 152 msec) calculated sinoatrial conduction times (SACT) were found in 24 of 470 patients studied by the atrial extrastimulus technique, ranging from 155 to 220 msec (180 plus or minus 4.4; mean plus or minus SEM). There were 18 males and six females with ages of 29 to 85 (mean 65 plus or minus 2.6). Electrocardiographic monitoring revealed significant sinus or atrial dysrthythmias in 19 (79%) patients. Of these 19, 15 had persistent sinus bradycardia and/or sinoatrial block, three had sinus bradyarrhythmia with paroxysmal atrial tachycardia, and one had isolated atrial tachycardia. Additional electrophysiological evidence of sinus node or atrial dysfunction was present in 11 patients. Four patients needed permanent pacing during follow-up (mean follow-up period of 427 plus or minus 39 days) because of symptomatic bradyarrhythmia. Three patients died, none suddenly. In conclusion, prolonged calculated SACT was associated with a high incidence of electrocardiographic and electrophysiologic abnormalities of sinus node and/or atrium. Despite this, bradyarrhythmic morbidity was relatively low, suggesting that prolonged sinoatrial conduction time in the absence of symptoms is not an indication for prophylactic pacing.

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3.1386,

GENETICS OF EPILEPSY AND EFFECTS OF ANTIEPILEPTIC DRUGS

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This program consists of two projects: 1) A Genetic and Epidemiological Study of Epilepsy. This is an ongoing study of the role of genetic and environmental factors in seizure disorders and factors affecting prognosis of specific types of epilepsy. A total of 280 Minneapolis VAMC patients with confirmed diagnoses of epilepsy have been interviewed, clinically examined, and their medical records reviewed. subgroup of 46 patients with first-degree relatives suffering from seizures has been identified. These patients and their relatives (affected and unaffected) are undergoing further clinical testing. Interviews and testing will continue until sample sizes large enough for a meaningful statistical analysis have been obtained. 2) Cytogenetic Evaluation of the Effects of Anticonvulsant Drugs. The objective of this new project is to determine the effect of specific anticonvulsant drugs on human chromosomes in an attempt to elucidate a possible causative relationship of the reportedly elevated frequency of malignancies in epileptic patients and drug induced chromosomal damage. Studies of peripheral lymphocytes of long-term users of specific anticonvulsants (phenytoin, carbamazepine, phenobarbital and their combinations) have been initiated. Mitotic index depression, chromosomal breaks and aberrations and frequency of sister chromatid exchanges are being studied. Twenty-six patients have been studied to date.

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3.1387,

SMOKING AND DIABETIC RETINOPATHY

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The status of diabetic retinopathy as one of the principal causes of blindness in the U.S. is unchallenged. The question of whether cigarette smoking affects diabetic retinopathy is still an open one and needs investigation. The project is well within the scope of our capabilities and when recruitment difficulties are overcome, we expect to engage our full efforts in executing it.

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3.1388,

A 20-YEAR STUDY OF NARCOTIC ABUSE IN TUCSON, ARIZONA

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This project is inactive because of non-funding by NIDA. Although the proposal was accepted on its scientific merit it was not given a high enough priority

for funding. One publication has resulted: 'A Twenty-Year Follow-Up of Narcotic Addicts in Tucson, Arizona,' Am J Drug Alcohol Abuse 6(1):25-37, 1979 (co-author, Peggy Harrington, M.S., Research Assistant). The following abstract is submitted as the final report: This preliminary report from an epidemiological study of heroin addiction in Tucson, Arizona, 1956-1957, examines the status of heroin addicts 20 years after they have been identified as narcotics abusers, focusing on the maturation hypothesis which holds that heroin addicts tend to cease use of narcotics spontaneously by age forty.

A cohort of 51 subjects was identified from Public Records of Court Appearances for narcotic offenses during a 36-month period (1955-1957), located and, where possible, interviewed. Records from a minimum of two agencies (law enforcement, corrections, treatment, welfare) were used to establish current status of the individual with reference to the use of narcotics and/or other drugs. Demographic, ethnic, socioeconomic makeup of the sample, as well as criminal involvement and treatment episodes, is included.

After 20 years, one individual is drug-free or abstinent. Twenty-three are considered still addicted to heroin, 16 of these are in prison; seven are addicted to methadone or alcohol. Thirteen are dead. Six could not be located; however, five could be traced well beyond 1956 through criminal activities. All but one person have passed their fortieth birthdays. For these 51 addicts, the maturation hypothesis does not hold.

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3.1389,
STUDY OF TRANSIENT GASTRIC HYPOCHLORHYDRIA

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These experiments are designed to study spontaneous hypochlorhydria and gastritis. We are continuing to search for the cause of this phenomenon. We have developed a pepsinogen assay and will utilize this blood test to search for sporatic cases of hypochlorhydria. Preliminary studies have suggested that serum pepsinogen concentration increases as patients develop hypochlorhydria. Therefore, this test can be used to screen a large number of people. In addition, we will evaluate the epidemiology of this condition and will measure gastric acid secretion, serum gastrin concentration, and intrinsic factor concentration.

BIBLIOGRAPHIC REFERENCES: Ramsey, EJ, Carey, KV, Peterson, WL, et al: Epidemic Gastritis with Hypochlorhydria. Gastroenterology 76:1449-1457, 1979.

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3.1390,
ROLE OF ESTROGENS AS A FACTOR IN CANCERS OF HEAD AND NECK

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The incidence of squamous cell cancer in head and neck is high among chronic alcoholics as supported by clinical and epidemiological evidence. Increased levels of plasma estrogen have been reported in alcoholic cirrhosis and chronic alcoholism. The elevated plasma estradiol was regarded as a possible common factor. Therefore, the object was to test for the presence of specific estradiol receptor proteins in this group of squamous cell cancer which appear to develop in a milieu of high estrogen plasma levels.

The plan involved assay of estrogen receptor in the cancer cells by thin layer gel filtration method after incubation with tritiated estradiol. High affinity binding of tritiated estradiol to specific receptor proteins could be determined in the presence of non-specific binding protein component. As little as 50 mg of tissue sample could be used.

METHODOLOGY: Cancer cells were disrupted by sonifier in Tris-EDTA buffer and centrifuged at 10000 g. Supernatant was incubated at 0 degrees C with (3H)17Beta-estradiol for 30 min. and then applied to Sephadex plated surface of the Pharmacia thin layer gel apparatus. Inclination of the plate effected the separation and the radioactive complex was transferred to filter paper. The dried samples were placed in a scintillation spectrometer and radioactive determination made. Appropriate controls were run.

Nine tumor biopsies were tested; specific binding ranged from 10-35.5%. This preliminary study shows evidence of estrogen receptors present in squamous cell tumors of head and neck.

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3.1391,
THE EPIDEMIOLOGY OF MULTIPLE MYELOMA

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This is a retrospective and prospective case control approach to the investigation of the epidemiology of multiple myeloma. Studies focus on occupation with particular emphasis on radiation and on details of socio-economic class and medical history. Approximately two-thirds of the data concerning the retrospective studied cases have been abstracted, as have about 15% of the control data. The expected number of cases have been interviewed prospectively, but only 1/6 of the intended controls have been completed. A number of interesting tentative findings have thus far been derived from the data. These include: 1) A four-fold increased risk of multiple myeloma in first order relatives 2) Familial aggregation of multiple myeloma and demyelinating disease syndromes resembling multiple sclerosis. 3) Possible association between multiple myeloma and occupational low level radiation. 4) No apparent association between multiple myeloma and high socioeconomic status or diseases of immunity, allergic disorders, or chronic infections.

The study is continuing with the expectation that the required number of cases in control abstracts will be completed within the next year and one half.

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3.1392,
PREVALENCE OF PSYCHOSOCIAL PROBLEMS AMONG MEDICAL/SURGICAL INPATIENTS

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OBJECTIVES: (1) To assess the prevalence of psychosocial problems among medical-surgical inpatients; (2) To examine the distribution of psychosocial problems among patient subgroups; (3) To determine the extent to which patients who might benefit from mental health services are receiving these services; and (4) To evaluate the efficacy of using nursing personnel's routine observations for screening purposes.

PLAN: To survey a representative sample of VA Medical Center medical-surgical inpatients for whom mental health services might be provided.

METHOD: Questionnaire and interview.

RESULTS/CONCLUSIONS TO DATE: None.

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3.1393,
MULTIPLE SCLEROSIS IN THE FAROES

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As of September 1980, we have identified a total of 39 native-born Faroese with MS. They consist of A: 24 Faroese who had not been off the islands before onset (14 male, 10 female), B: 7 Faroese who had each been off the islands for a total of less than two years before onset (1 male, 6 female), and C: 8 Faroese who had been off the islands three or more years before onset (1 male, 7 female), four of whom also had onset outside the islands.

The native-born resident Faroese MS series is taken as A (24) plus B (7) for total of 31 cases (15 male, 16 female). The group of 8 with prolonged foreign residence is assumed to have acquired their disease off the Faroes.

Onset in Group A took place between 1943 and 1961 inclusive in 23 cases, plus one with onset in 1970. Onset in Group B took place between 1945 and 1973 inclusive: 3 before 1950, and 1 each in 1956, 1965, 1968, 1973. Onset in Group C ranged from 1917 to 1977.

The accepted series (A plus B) still follows a lognormal distribution compatible with the prior interpretation of a point source epidemic. There are now two patients born after WW II, with onsets in 1970 and 1968; both came from the same small area of the island of Eysturoy.

BIBLIOGRAPHIC REFERENCES: Kurtzke JF: Multiple sclerosis in the Faroe Islands. In: Rose FC (ed): Clinical Neuroepidemiology. Pitman Medical Ltd, London, 1980, pp 226-238. (5) Kurtzke JF: Clustering and epidemic occurrence of MS. In: Bauer HJ, Poser S, Ritter G (ed): Progress in Multiple Sclerosis Research. Springer Verlag, Berlin, 1980, pp 519-524.

SUPPORTED BY U.S. Veterans Admin., Dept. of Medicine & Surgery funds n.a.

3.1394,
ZINC AND VITAMIN A LEVELS IN PATIENTS WITH ESOPHAGEAL CARCINOMA

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Seventeen patients with squamous carcinoma of the esophagus and without gross evidence of malnutrition were evaluated for zinc and vitamin A nutriture, using plasma zinc and plasma vitamin A levels. Protein-energy nutritional status, hepatic status, and factors known to effect plasma zinc levels and plasma vitamin A levels were assessed. Three control groups were also evaluated: (1) chronic alcoholics without carcinoma; (2) non-squamous, non-lung carcinomas without alcoholism; (3) subjects without alcoholism or carcinomas.

Mean plasma zinc levels were significantly lower in the esophageal carcinoma group (65.7 plus or minus 2.3 ug/dl) than in the carcinoma group without alcoholism (77.4 plus or minus 3.6 ug/dl or the non-carcinoma, non-alcoholic group (80.5 plus or minus 2.4 ug/dl). Mean plasma levels in the esophageal carcinoma group did not differ significantly from the chronic alcoholic group (72.4 plus or minus 3.9 ug/dl).

Patient groups with both esophageal carcinoma and other non-squamous carcinomas had significantly lower mean plasma vitamin A levels (32.6 plus or minus 3.4 ug/dl and 43/6 plus or minus 4.1 ug/dl respectively) vs. mean plasma vitamin A levels in the alcoholic and non-alcoholic non-carcinoma groups (53.3 plus or minus 6.5 ug/dl and 60.2 plus or minus 4.2 ug/dl respectively).

Liver disease and protein-energy malnutrition were uncommon in any group. Our findings suggest a true deficiency of zinc and/ or vitamin in patients with esophageal squamous carcinoma. We hypothesize that this deficient state may contribute to the development of esophageal squamous carcinoma.

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3.1395,
MONITORING OF CIMETIDINE INDUCED LEUKOPENIA

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PROJECT OBJECTIVES: (1) To determine the incidence of leukopenia occurring in hospitalized patients treated with cimetidine; (2) to determine the effect of oral cimetidine versus the effect of intravenous cimetidine on white blood cells; (3) to determine if any relationship exists between cimetidine blood levels and the effects on white blood cells.

PLAN: Patients treated in their normal course of therapy with cimetidine will, if they so consent, have samples of blood drawn at set intervals for the purpose of analysis for complete blood counts, and blood level determination for cimetidine. These patients must have a baseline normal white blood cell count, not carry a diagnosis implicated with alteration of white blood cell counts, or be taking other medication known to cause alterations of white blood cell counts.

METHOD: Complete blood counts with differentials and cimetidine blood levels are within the capabilities of this hospital. Determination of the cimetidine blood levels will be made utilizing a derivation of the assay developed by Randolph and co-workers.

CLINICAL RELATIONSHIP: This area of research is extremely important in the safe treatment of patients treatment with cimetidine.

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3.1396,

BODY COMPOSITION AND MORBIDITY IN AGING MEN

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PROJECT OBJECTIVES: 1) To develop an equation to predict fat-free mass and total fat in Normative Aging Study (NAS) participants. 2) To determine if body composition (especially fat-free and fat mass) was predictive of morbidity and mortality in this population over the past 15 years. 3) To evaluate a portable ultrasound machine for the measurement of subcutaneous fat and muscle thickness.

PLAN: Anthropometric and health data are available for 2260 initially healthy Normative Aging Study participants for 15 years. To improve available body composition data, special examinations of 200 participants will be made to determine a predictive equation for total fatness and to evaluate the ultrasound equipment. Data analysis will relate specific body composition measures to 30 major disease types, self rated health and mortality.

METHODOLOGY: Special body composition evaluations will include measurement of total body potassium in a whole body counter (VA Medical Center, Boston), anthropometry (standard NAS test battery), ultrasound (Body Composition Meter, Ithaco, Inc., Ithaca, N.Y.). Ultrasound accuracy testing will be made on cadavers at Harvard Medical School.

CLINICAL RELATIONSHIP: This research is relevant to issues of preventive medicine and dietetics. Results may indicate the extent to which body composition predisposes to specific diseases, and have bearing whether weight loss or gain may be an effective preventive measure.

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3.1397,

GROUP B STREPTOCOCCAL INFECTIONS IN THE NEWBORN

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Epidemiological aspects of Group B streptococcal (GBS) infection and specific properties of the GBS were investigated for this final year of the grant. An analysis of factors which predisposed to maternal colonization revealed that the use of estrogen pills prior to conception, maternal fever, and endometritis were significantly correlated with fever at delivery, vaginal delivery and a prolonged second stage of labor. The external auditory canal and umbilicus were the best sites for recovery of GBS in the infant; while vaginal, rectal and periurethral suds were equally satisfactory in the mother. Todd-Hewitt Broth containing colistin and nalidixic was found to be an excellent selective medium and did not require blood for good recovery. CIE was only able to detect GBS in 50% of maternal cultures when applied directly to the initial broth containing mixed flora. There were no false positives, however. The function of the alternative pathway of was found to be mildly but significantly correlated with birth weight and independent of maternal illness. The hyaline membranes in babies who died from GBS sepsis and pneumonia and those who died in the first few days from IRDS were found to contain C3, IgG, C4 and factor B. A common inflammatory pathway is suggested with possible immune injury to alveoli. Finally, an endotoxin-like property was attributed to the GBS based on clinical, in vivo (animal) and in vitro studies.

SUPPORTED BY U.S. Veterans Admin., Dept. of Medicine & Surgery funds n.a.

3.1398,

INTRAHOSPITAL TRANSFER OF PLASMIDS ENCODING FOR MULTIPLE ANTIBIOTIC RESISTANCE

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Our previous studies had documented that an epidemic of urinary tract infection at the Seattle Veterans Administration Hospital was caused by the spread of both an epidemic bacterial strain (Serratia marcescens) within the hospital and the spread of a single 45 Md plasmid to a variety of other Enterobacterizciae.

In the past year we have examined 165 new strains of gentamicin resistant Enterobacterizciae to determine whether or not gentamicin resistance in the post epidemic period was still mediated by this single plasmid. Twenty-one different species were included in the study. Sixty-four belonging in 9 species harbored the same plasmid. Forty-seven isolates of 4 species including two organisms from other institutions carried as 12 Md plasmid. Eleven isolates belonging to 3 species carried a 105 Md R factor. We are now in the process of characterizing these plasmids more completely to define whether or not they represent the introduction of new R factors into our hospital or the 'evolution' of our epidemic plasmid through the acquisition of resistance carrying transposons.

We have also initiated a prospective study of catheterized urology patients to determine the frequency of in vivo R plasmid spread within this unique population. To date we have examined 116 urine specimens from 31 patients. In one patient we have been able to demonstrate the spread of an R factor encoding for gentamicin resistance from a strain of Citrobacter freundii to three other specimens of Enterobacteriaciae isolated sequentially from his urine.

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3.1399,

THE EFFECT OF RETIREMENT ON PHYSICAL HEALTH

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OBJECTIVES: to examine possible changes in physical health related to occupational retirement and to detail the nature of these changes and the circumstances under which they occur.

RESEARCH PLAN: The study population consists of 900 males (aged 50 plus in 1975) who are participants in the Normative Aging Study. The population is divided into two groups: (a) 380 men working at baseline physical examination but retired at follow-up exam; (b) 520 men employed at baseline and at follow-up exams. Retirees and their working age peers will be compared for differential patterns of health change while controlling for intervening variables such as education, income, occupational type and attitudes toward work and retirement. In addition, the investigation will specify health change as to type of morbidity and examine whether changes in physical health are more prevalent at any particular time following retirement.

METHODOLOGY: Health status at baseline and follow-up (3 years apart) is assessed by self-report and by physical examinations. Physical exam data were available from the parent study, as were data from a pre-retirement questionnaire on work situation, health and lifestyle. Follow-up data on the work and retirement situations of the two groups were collected in the past year.

FINDINGS: There is no excess incidence of decline in self-assessed health among retirees compared to age peers who continue to work. Neither does retirement prompt any increase in the frequency of somatic complaints. Health reversals are no more prevalent during any particular interval over the first three years after retirement.

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3.1400,

SPONTANEOUS BACTERIAL PERITONITIS

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This project was conceived to look prospectively at patients with cirrhosis of the liver and determine the incidence of a specific complication - spontaneous bacterial peritonitis. The only procedure involved is an abdominal paracentesis, and there have been no complications in the 50 patients entered so far. The incidence of peritonitis is 6% to date.

Original plans were to include at least 50 patients. Because the incidence of peritonitis has increased in the second year of the study, I plan to continue to a total of 100 patients. There were 0 cases of peritonitis in 20 patients during the first year and 3 cases in 30 patients during the second year.

PROGRESS REPORT: Since the last report there has been one case in 24 patients. The data will be collected and reported shortly.

SUPPORTED BY U.S. Veterans Admin., Dept. of Medicine & Surgery funds n.a.

3.1401,

PATHOGENETIC ROLE OF CRYOGLOBULINS IN RENAL DISEASE (C.I.G.)

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OBJECTIVES OF PROJECT: A) To survey the nephritic population to define 1) incidence, 2) composition, 3) magnitude and 4) immunologic reactivity of C.I.G. patients among those with documented renal disease. B) To define the potential immunologic relationship between C.I.G. and mechanism of renal injury in such patients. C) To define the immunological relationship between C.I.G. and circulating immune complexes in patients with presumed immune-complex glomerulonephritis.

RESULTS: Previous report of 8/78 described survey results for C.I.G. in patient groups, and anti-Ig activities of the isolated cryoprecipitates (CP). The latter also were tested for autoantibody and antigen content. For antibodies: 7 solubulized CP were incubated with homologous tissue sections and tested for Ig binding by immunofluorescence (I.G.); 3/7 had significant content of antibodies (1 each to vascular smooth muscle, cardiac muscle, and skeletal muscle). For antigen content: rabbits were immunized with CP emulsified in complete Freund's adjuvant, and antisera absorbed with normal human serum (idiotypic antisera) were tested for binding to human tissue sections; 4/19 antisera had binding activity (to skeletal muscle, nuclei, reticulin, and elastin respectively). To establish an immunologic relationship between CP and immunoglolin (Ig) deposits seen in patient kidneys by I.F., fluorescent idiotypic antisera were tested on autologous kidney sections; 1 antiserum to CP also bound to autologous immune deposits. These data suggest that C.I.G. occurs in small fraction of patients with renal disease. When it occurs, the CP often contain definable autoantigens and/or antibodies. In only 1 of 10 cases was it possible to show an immunological identity between renal Ig deposits and the isolated CP.

BIBLIOGRAPHIC REFERENCES: McPhaul, J.J. Clin. Exp. Immunol. (1978) 31, 131-140.

SUPPORTED BY U.S. Veterans Admin., Dept. of Medicine & Surgery funds n.a.

3.1402,

HEPATITIS B CARRIER STATE AND THE SURGICAL PATIENT

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178 patients were screened randomly for the hepatitis B virus (HBV) carrier state. Only 3 patients were identified as carriers. Careful historical examination and analysis of biochemical profiles did not identify the carriers. The incidence of carriers in our population then was 1.7% - much greater than in the blood bank donor population in N. New Jersey 0.1%. The date suggests that routine screening for HBV in necessary in selected urban general hospitals.

SUPPORTED BY U.S. Veterans Admin., Dept. of Medicine & Surgery funds n.a.

3.1403,

AMERICAN HEALTH FOUNDATION EPIDEMIOLOGICAL STUDIES

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Tobacco-related cancers and myocardial infarction continue to constitute a major source of death and disability in the U.S. (deaths and morbidity which largely are preventable because of their association to tobacco usage). Collection of data on smoking habits, demographic characteristics, alcohol consumption, occupational and medical histories of patients with tobacco-related diseases and matched controls continues. Annually, 300 lung, esophagus, and bladder cancer patients plus 300 first episode myocardial infarction and 150 pancreatic cancer patients will be interviewed. Results indicate that the risk of developing these diseases increases with quantity smoked, duration of the habit and, for lung and larynx cancer, non-filter cigarette smoking. Risk of mouth, larynx and esophagus cancer among smokers increases with quantity of alcohol consumed. Increased smoking and low cessation rates are noted among lower socioeconomic groups suggesting that these groups will bear an ever increasing proportion of the burden of tobacco-related diseases.

Collection of data (on demographic characteristics, diet and lifestyle habits) in patients with gastrointestinal tract cancer and control patients continues. To date we have 799 gastrointestinal tract cancer cases and an equal number of controls. Fifty percent of the cases have primary colon cancer, 18% have primary rectal cancer, 16% have primary gastric cancer, and 12% have intestinal polyps.

A preliminary analysis of demographic variables and dietary factors has been performed, and a paper is in preparation.

SUPPORTED BY U.S. Veterans Admin., Dept. of Medicine & Surgery funds n.a.

3.1404,

PSYCHIATRIC ILLNESS ON MEDICAL AND SURGICAL WARDS - FOLLOW-UP OF A PROSPECTIVE

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The proposed investigation represents a two-year follow-up of a study in which 300 medical surgical patients, ages 65 and over, were evaluated by means of a structured psychiatric interview for the presence of diagnosable psychiatric illness. A substantial rate of previously unrecognized psychiatric illness was found. The present proposed study will establish prognostic implications for various psychiatric diagnoses in patients of this age group and also compare the prognoses of the medical illnesses in these patients in the presence and absence of psychiatric illness.

SUPPORTED BY U.S. Veterans Admin., Dept. of Medicine & Surgery funds n.a.

3.1405,

STUDY ON THE EPIDEMIOLOGY OF CRYPTOCOCCUS NEOFORMANS

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Cryptococcus neoformans has been known since 1894 when Sanfelice discovered it in peach juice and demonstrated that it caused lesions in experimentally infected animals. It was first isolated antemortem from a case of cryptococcal meningitis by Verse in 1914. No source of infection was known until 1955, when Emmons reported finding it regularly in pigeon nests and droppings under pigeon roosting sites. No one has yet shown how the yeast gets into the pigeon habitat although there is considerable information relating to how it survives and reproduces in weathered pigeon droppings. Preliminary studies have suggested that the bird's feed may be the source, although C. neoformans has not been found in food materials commonly fed to domesticated pigeons; however, other species of Cryptococcus are commonly found in bird feeds. The object of this study is to attempt to determine the source of C. neoformans in pigeon droppings - a very basic aspect of the epidemiology of cryptococcosis. This is to be accomplished by examining various feed materials available to domestic and wild bird flocks in this area and using a variety of methods to isolate and characterize any C. neoformans present. Pathogenicity, physiology and mating types of these will be compared to isolates obtained locally from wild bird roosting sites.

SUPPORTED BY U.S. Veterans Admin., Dept. of Medicine & Surgery funds n.a.

3.1406,

PROSPECTIVE SEROLOGIC STUDY OF LEGIONNAIRES' DISEASE IN FAMILIES

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The hypotheses is that the clinical and epidemiologic features of Legionnaires' disease can be better understood by studying sera obtained from a family study of diarrhea and respiratory disease, where the sera and clinical data have already been prospectively obtained. The families are from both rural and urban Canada. Serologic conversion and antibody levels to Legionella pneumophila will be measured, using the IFA technique, with the four known serotypes of L. pneumophila as antigens.

SUPPORTED BY U.S. Veterans Admin., Dept. of Medicine & Surgery funds n.a.

3.1407,

VALIDATION OF SURVEY OF DRINKING BEHAVIORS AMONG VA OUTPATIENTS

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The results of this study give two independent estimates of alcoholism in the VA outpatient population which are significantly different from each other. In all of the study hospitals, the MAST gave a consistently higher prevalence than clinical judgments.

We examined a number of factors which we felt might explain some of the differences in the two estimates, however, we failed to show a consistent relationship for any of these factors. It is concluded that VA clinicians in general have a higher threshold for judging alcoholism than does that MAST.

Other factors which one might wish to consider in choosing one methodology over the other have more to do with administrative difficulties than with scientific validity. For example, in the study hospitals it generally took less time to train four to five MAST interviewers than it did to mobilize clinical staff to participate in the study. Another consideration is that the MAST took up more patient time (about 8-10 minutes per patient on the average) but the clinical judgment took up more physician time. Important from a research point of view is that patient compliance is better than clinician compliance resulting in higher response rates. In general the weight of these administrative considerations, combined with the fact that the MAST is more uniform and objective than the clinical judgements, tends to favor the use of the MAST in situations where only one method for determining alcoholism is needed.

SUPPORTED BY U.S. Veterans Admin., Dept. of Medicine & Surgery funds n.a.

3.1408,

COMPUTER ANALYSIS OF MICROBIOLOGIC DATA

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The programs for entrance of microbiologic data into the H-P 9830 computer were completed in May, 1978. All organisms isolated in the Microbiology Laboratory on which antibiograms were done have been entered on a daily basis since that time. Retrieval programs for analysis of data from the H-P 9830 A were being developed and a number were in use until February, 1980, at which time a decison was made to purchase a DEC-MINC-11 computer to be used for direct entrance of data by the microbiology technicians. A part of this project involved the use of a digitizer to directly read zone diameters. It is expected that this aspect of the project will be completed shortly and that retrieval programs will then be written to extract data of epidemiologic interest.

SUPPORTED BY U.S. Veterans Admin., Dept. of Medicine & Surgery funds n.a.

3.1409,

DEPRESSION AMONG HYPERTENSIVES AND IMPLICATIONS FOR PATIENT ADHERENCE TO ANTI-HYPERTENSIVE MEDICATION

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The study outlined in the proposed research will examine the inter-relationships among hypertension, depression, and patient adherence to anti-hypertensive agents. Depression will be examined as it relates to pre-morbid affective history, medication and side effects, demographics, compliance, degree of hypertension and electrolyte status. Measures of depression, medication side effects and compliance will be combined in questionnaire. An interview measuring present affective status and past affective history will also be done.

Data will be collected over a six week period in an outpatient hypertension clinic; sixty subjects will be involved in this study.

A primary goal of this study is to provide information which is intended to be of value to the nursing practitioner in facilitating the effective emotional and medical management of the individual with hypertension.

SUPPORTED BY U.S. Veterans Admin., Dept. of Medicine & Surgery funds n.a.

3.1410,

DURATION OF OROPHARYNGEAL COLONIZATION WITH GRAM-NEGATIVE RODS IN HOSPITALIZED PATIENTS

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The oropharynx of healthy individuals is not usually colonized with Gram-negative Bacilli. Among hospitalized patients, 60% or more of individuals may become colonized during hospitalization. This colonization may subsequently lead to the development of Gram-negative rod pneumonia. Numerous previous studies have evaluated the frequency and chronology of acquisition of Gram-negative rod colonization but have not evaluated the duration of such colonization. It is the aim of our study to further our understanding of the epidemiology of Gram-negative rod colonization by following a group of hospitalized patients who become colonized during hospitalization for the duration of their colonization. We hope, by clarifying the relationship of the factors associated with acquisition of Gram-negative rod colonization to the duration of this colonization, we will be able to further understand host-parasite interactions. Our research plan will be to follow a group of 50 patients who acquire Gram-negative rod colonization during hospitalization to determine the duration of their colonization. Various clinical factors and measures will be recorded to develop relationships between the duration of colonization and a patient's clinical status. Patients will be followed after discharge from the hospital in order to allow for appropriate follow-up.

As of this date, only four to five patients have been enrolled in the study, but it is anticipated that the entire project will be able to be completed before the end of this summer.

SUPPORTED BY U.S. Veterans Admin., Dept. of Medicine & Surgery funds n.a.

3.1411,

DELAYED STRESS DISORDER IN HISPANIC VIETNAM VETERANS

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The objectives of this research study are (1) to develop and validate measures of Vietnam-linked Post Traumatic Stress Disorder (VLPTSD) for use in Hispanic County populations; (2) to estimate the prevalence of VLPTSD among Hispanics in County Mental Health Catchment Area 100 (East Los Angeles); (3) to estimate the prevalence of other psychiatric disorders and socio-emotional adjustment problems in the same population; (4) to clarify the relationship of VLPTSD and other forms of psychiatric disorder and socio-emotional adjustment problems in the same population; (5) to examine the accuracy of several theories concerning variables associated with VLPTSD in the same population; (6) to determine if a model incorporating the various theories is significantly predictive of VLPTSD; (7) to explore dynamics of the elements of VLPTSD and its relationship to other forms of impairment and to successful life functioning via extended clinical interviews; (8) to test the relative efficacy of a three-stage clinical treatment developed by the East Los Angeles VA Neighborhood Mental Health Clinic, the usual group rap therapy, and other experimental model(s) developed from the results of this study for use with Hispanic victims of VLPTSD.

Methodology includes survey, interview and experimental therapy techniques. On the basis of the results of the data analysis, an experimental treatment plan will be piloted and evaluated in the third year.

SUPPORTED BY U.S. Veterans Admin., Dept. of Medicine & Surgery funds n.a.

3.1412,

EPIDEMIOLOGIC CATCHMENT AREA-LOS ANGELES, HISPANIC/ANGLO STUDY

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The purpose of the proposed research is to (1) estimate the true incidence and prevalence of specific mental disorders according to current diagnotic criteria, using a sample survey of the general adult Hispanic and Anglo population, including those resident in institutions, from Catchment Areas 89 and 100 of Los Angeles County, (2) to study the factors associated with the development and continuance of these

disorders, and (3) to study the relationship between psychiatric disorder and utilization of psychiatric, general health, and other treatment facilities.
SUPPORTED BY U.S. Veterans Admin., Dept. of Medicine & Surgery funds n.a.

3.1413,
EPIDEMIOLOGIC SURVEY OF NON-A NON-B HEPATITIS IN A HEMODIALYSIS UNIT

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During the last 2 years we have detected 20 patients in the Dialysis Unit who presented with unexplained liver enzymes elevation and were diagnosed as having non-A non-B hepatitis. We are analyzing the presently available clinical data on our patient population and dialysis unit staff. To complete this initial survey we plan to ask the wives, and other relatives of those patients, living in the same household to complete a questionnaire and have blood drawn, once, to measure SGPT, SGOT, HBsAg and anti-HBs antibody. Although this information is needed clinically, we will also use it as a pilot survey to consider the need for a larger study on the clinical, epidemiologic and biochemical aspects of non-A non-B hepatitis to be proposed and conducted in the future.
SUPPORTED BY U.S. Veterans Admin., Dept. of Medicine & Surgery funds n.a.

3.1414,
DRINKING HISTORY OF ALCOHOLICS

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PROJECT OBJECTIVES: A large number of studies have in recent years tested hypotheses regarding factors that may differentiate alcoholics from nonalcoholics. Some of the studies have explored metabolic factors, personality factors, ability to discriminate blood alcohol level, amount of alcohol ingested per sip, etc. Surprisingly, nobody has bothered to look at what alcoholics drink and why they drink it. In other words, after so many years of research we don't have answers to questions such as: Do alcoholics drink more brandy than vodka? If so, it is because brandy tastes better, or is less expensive, or why? What are the favorite drinks of alcoholics? When they don't ingest alcoholic drinks, what do alcoholics drink?, etc.
RESEARCH PLAN: We are proposing that we gather information from alcoholics that will allow us to determine whether there is any pattern to the drinking behavior of alcoholics. For this purpose, we plan to distribute a questionnaire to both inpatients and outpatients currently under treatment for alcoholism at the Wood VAMC. The questionnaire was developed by Dr. Timothy Baker of the University of Wisconsin-Madison.
METHODOLOGY: See above.
FINDINGS: Not applicable.
SUPPORTED BY U.S. Veterans Admin., Dept. of Medicine & Surgery funds n.a.

3.1415,
SMOKING EFFECT OF LIPROPROTEIN LEVELS AND VASCULAR DISEASES

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The key role of the plasma lipoproteins in the development of occlusive vascular disease is well known. Epidemiologic studies have implicated heavy and sustained cigarette smoking as an important risk factor in the development of atheromatous disease.
OBJECTIVES: 1. To ascertain whether cessation of smoking results in changes in serum cholesterol-binding reserve and in plasma lipoproteins (especially the high density lipoproteins) and whether resumption of smoking has any effect upon these components. 2. To determine in four groups of individuals (those free of vascular disease, those with coronary artery disease, those with peripheral arterial disease and those with carotid artery disease) whether or not smokers in comparison with nonsmokers and ex-smokers have altered serum cholesterol-binding reserve and altered plasma lipoproteins (especially the high density lipoproteins). 3. To determine whether cigarette smoking influences the frequency and severity of diabetic retinitis and to study the interrelationships between cigarette smoking, frequency and severity of diabetic retinitis and levels of plasma lipoproteins and cholesterol-binding reserve.
METHODS: Plasma will be utilized for lipoprotein electrophoresis and for preparative ultracentrifugation for the separate analysis of the high density, low density and very low density lipoproteins by standard methods. Cholesterol and triglyceride will be analyzed by standard methods; cholesterol-binding reserve by the method of Hsia.
SUPPORTED BY U.S. Veterans Admin., Dept. of Medicine & Surgery funds n.a.

3.1416,
YOUNG SUICIDES - A PSYCHIATRIC & TOXICOLOGICAL STUDY

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OBJECTIVES: The suicide rate for young adults has been increasing. Concurrently, drug and alcohol use has also increased in this age group. In order to study the association between these observations, we are asking: (a) what are the types and frequencies of psychiatric disorders (including alcohol and drug related ones) in young suicides; (b) what alcohol or drug residues can be detected in the body after the suicide act; (c) are there diagnostic differences between the young suicide and the age 30 or older suicide; (d) is the veteran population over-represented in either age group; (e) are there psychological or pharmacological treatment differences between patients who suicide and living patients with the same disorder.
PLAN AND METHODOLOGY: Psychiatric assessment will utilize information from personal interviews with friends, family and treating health professionals, as well as Coroner's reports and an extensive toxicologic report. Structured interviews will be utilized and diagnosis will be assigned according to both the DSM-III and the more stringent Feighner criteria. We anticipate studying 150 suicides in the under 30 group and an equal number in the over 30 group. Collection of information on suicides is expected to take two years. The San Diego Country Coroner's office is collaborating in this phase of study. In order to look at effectiveness/adequacy or treatment, a control group of living patients matched for age, sex, socioeconomic status and diagnosis will be studied utilizing available records and drug/alcohol screens; interviews will not be done with the living subjects or family/friends in order to avoid comparability problems.
SUPPORTED BY U.S. Veterans Admin., Dept. of Medicine & Surgery funds n.a.

3.1417,
LONG-TERM STUDY OF CLIMATE EFFECT ON ASTHMA

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Asthmatic attacks are often unpredictable and frequently cannot be related to a definite causal factor. Changes in climate have been reported on occasion to cause epidemics of acute asthma attacks. This study will follow a large population of patients having asthma and will attempt to correlate asthma attacks with changes in humidity, barometric pressure, temperature, wind speed and direction and pollutants as these conditions are recorded daily by the Federal government. Hopefully, further knowledge about the inter-relationship of asthma and climatic conditions will result from this study.
SUPPORTED BY U.S. Veterans Admin., Dept. of Medicine & Surgery funds n.a.

3.1418,
ETIOLOGY OF AORTIC INSUFFICIENCY - ASSOCIATION WITH ANKYLOSING SPONDYLITIS

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The objectives of this study are 1) to determine the prevalence of ankylosing spondylitis and its variants such as spondylitis associated with psoriasis, Reiter's disease and inflammatory bowel disease in unselected cases of lone aortic incompetence, 2) to determine the prevalence of HLA-B27 antigen in these patients with lone aortic incompetence, and 3) to classify and define the spectrum of disease seen in association with lone aortic incompetence today. The study population will consist of patients with lone AI detected by a cardiologist by physical examination and confirmed by echocardiography or cardiac catheterization. Lone AI is defined as AI no accompanied by any other significant valve lesion (e.g. aortic stenosis, mitral stenosis or mitral insufficiency). These patients will be evaluated by a rheumatologist for possible etiology with special emphasis on symptoms and signs suggestive of ankylosing spondylitis and its variants. In addition to clinical rheumatological examination, the special studies will include serological tests for syphilis, rheumatoid factor, and HLA-B27 antigen. Radiological examination of sacroiliac joints and lumbosacral spine will be done when indicated by history, physical examination or a positive HLA-B27. Histopathologic examination of aortic valve and aorta will be done when the tissue is available following surgery or autopsy. Results will be tabulated to determine the prevalence of various diseases detected by this examination in our study population.
SUPPORTED BY U.S. Veterans Admin., Dept. of Medicine & Surgery funds n.a.

3.1419,
PERIPHERAL NEUROTOXICITY AT THE LOVE CANAL AREA OF NIAGARA FALLS, NEW YORK

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In Spring 1978, it was revealed that residents of the 'Love Canal' area of Niagara Falls, New York had been chronically exposed to industrial chemicals that had leaked from underground disposal sites into their homes. The 'Love Canal' has become a nationally recognized prototype of industrial environmental contamination. The present nerve conduction study was undertaken to detect evidence of toxic peripheral neuropathy as a result of that contamination. In a cohort study design, volunteers were screened for factors known to affect nerve condition. Thirty-five of two hundred volunteers passed the screening process. Controls were drawn from the neighboring census tract and twenty volunteers were eligible. The following was found to characterize the resident group: Slower sensory conduction velocity, the sural nerve showing the most prominent change. We suggest that nerve conduction techniques can serve as epidemiologic tools investigating health effects of certain types of environmental contamination.
SUPPORTED BY U.S. Veterans Admin., Dept. of Medicine & Surgery funds n.a.

3.1420,
THE EFFECT OF IODINATED CONTRAST MEDIA ON THE RENAL FUNCTION OF THE GERIATRIC PATIENT

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PROJECT OBJECTIVES: (1) To determine the effect of hypaque or iodinated contrast media on the glomerular and tubular function in the elderly population. (2) To determine the exact prevalance for renal failure in the geriatric group associated with IVP. (3) To shed light on the pathogenesis of iodinated contrast induced acute renal failure.
METHODS: A prospective evaluation of the effect of intravenous hypaque on the renal function of 100 geriatric patients undergoing IVP in St. Albans is currently being done to determine the effects of hypaque on glomerular and tubular function in the elderly population. Blood determination are being done for CBC, BUN, FBS, uric and creatinine and electrolytes. Urine studies for urine volume, creatinine, electrolytes, uric acid excretion as well as specific gravity and osmolality are being measured. Both urine and blood studies are being done 24 hours before and 24 hours after the injection of hypaque. Weights will be observed to determine the role of volume depletion on the pathogenesis of the acute renal failure. The results of the renal function will be adjusted to the expected age related decline in renal function.
CLINICAL RELEVANCE: Clinical information that will be obtained would be of tremendous help not only to the VA patients but for other patients as well.
SUPPORTED BY U.S. Veterans Admin., Dept. of Medicine & Surgery funds n.a.

3.1421,
ETIOLOGY AND EPIDEMIOLOGY OF LEGIONNAIRES' DISEASE

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Recognition of infections caused by Serogroup 2 of Legionella pneumophilia, (Togus Strain) has been accomplished in 1979 with support of laboratories of C.D.C. Surveys for the presence of the bacterium in water from many sources have revealed viable L. pneumophilia in water specimens of shower heads in

building 207, but not in building 206 or 200. The Philadelphia Strain, Serogroup 1, was isolated from the water of shower heads and not Serogroup 2. Epidemiologic investigation of the presence of viable microorganisms in potable water are now in progress.

SUPPORTED BY U.S. Veterans Admin., Dept. of Medicine & Surgery funds n.a.

3.1422,
PHARYNGEAL FLORA

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PROJECT OBJECTIVES: To study the pharyngeal flora by quantitative methods of house staff members over an 11-month period. To correlate the colonization with service rotation, viral illness and other variants.

PLAN: House staff members were requested to voluntarily participate in the study. Eighty-nine volunteered. The participants underwent quantitative pharyngeal cultures at weekly, bi-weekly or monthly intervals.

METHODS: Every participant underwent quantitative cultures using saline gargle. A total of 605 cultures were taken. Participants with upper respiratory infections (URI) were requested to provide blood for viral serologic studies. The colonization of the pharynx with gram-negative bacilli (GNB) and S. aureus (SA) was correlated with episodes free of illness and during episodes of viral URI.

RESULTS: Twenty percent of the house staff studied had 1 or more GNB in their pharynx during the study. Colonization by Sa was 8-9 percent, there was no difference in colonization between sexes, smoking habits or dental hygiene. Colonization was transient and lasted two weeks. During an episode of URI the colonization increased from 20 percent to 65 percent for GNB and from 8 percent to 38 percent for SA. High colonization rates were found also in this group of patients (Current Chemother Infect Dis II: 1011-1013, 1980).

CLINICAL RELATIONSHIP: The increased colonization of the pharynx with SA and GNB during URI may be related to the etiology of pneumonias.

SUPPORTED BY U.S. Veterans Admin., Dept. of Medicine & Surgery funds n.a.

3.1423,
A SURVEY OF LIP CANCER AND SOLAR CHEILOSIS IN THE STATE OF OKLAHOMA

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OBJECTIVES: The purpose of this study is to study the relationship of sun exposure and solar cheilosis with the carcinogenesis of lip cancer in the state of Oklahoma.

RESEARCH PLAN: The VA Medical Center, Oklahoma Memorial and Presbyterian Hospitals will provide the sample population for this study. The study will be a retrospective study utilizing selected patient information obtained from the Tumor Registry, University of Oklahoma Health Sciences Center.

METHODOLOGY: Information needed will be obtained by review of patient charts and by telephone interview. Also involved will be a review of pathological biopsy slides for determination of changes indicated by solar radiation.

SIGNIFICANCE: What the investigators hope to discover is a correlation between the neoplasia experience and occupational information provided by the patient.

SUPPORTED BY U.S. Veterans Admin., Dept. of Medicine & Surgery funds n.a.

3.1424,
STATISTICAL MODELS IN HEALTH SERVICES RESEARCH - LOGISTIC REGRESSION WITH RANDOM EFFECTS

J.P. Krischer, U.S. Veterans Admin., Dept. of Medicine & Surgery, Medical Center, Health Services Research & Development Center, *Gainesville, Florida* 32601 (266-86-5654)

Many problems in health research involve the relationship between dichotomous response (indicating presence or absence of a certain characteristic) and certain factors. If the levels of a factor observed in the study group constitute a random sample of the levels contained in the population, then the factor is said to be random. Statistical methodology is not presently equipped for the analysis of dichotomous response models involving random factors.

The objective of this project is to develop a unified approach for the statistical analysis of the above types of models. Two such approaches that will be explored in great detail are:

1) 'heirarchical-Bayesian' -here it is assumed that the levels of the random factor vary according to a probability distribution which is naturally conjugate to the conditional distribution of the response.

2) logistic regression-here the logit transformation is applied to observed proportions and expressed as a linear model in the factors. Variation in levels of a random factor corresponds now to a Gaussian perturbation of the logit.

Computer analysis will help to determine the efficacies of these two approaches.

SUPPORTED BY U.S. Veterans Admin., Dept. of Medicine & Surgery funds n.a.

3.1425,
A PILOT CASE CONTROL STUDY OF SARCOMAS AND CHRONIC METALLIC FOREIGN BODY EXPOSURE AMONG WWII VETERANS

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Since the pioneering work of Turner and Oppenheimer et al. in which rats implanted subcutaneously and intraperitoneally with plastics were found to develop higher rates of sarcomas, similar research by a number of independent investigators has firmly established the role of foreign bodies in tumorigenesis in animals. Foreign body (FB) tumorigenesis in man has received little attention. Information concerning humans exists in the form of scattered reports in the literature on cancers developing at the sites of scars or FB. One possible population for the study of FB tumorigenesis in man is the combat veteran population of WWII. This group contains many individuals who for one reason or another have had combat related metal fragments and scars in their bodies for over 30 years. Also, it is a large group by epidemiologic standards, a fact which facilitates the study of low incidence neoplasms such as sarcomas. Furthermore, this group is typically cooperative in VA related interview research. The actual study design would call for the comparison of exposure information on 100 to 450 sarcoma cases and a similar number of controls. Criteria for selection would include histological verification of disease status and active service in the army or marines during WWII. Apart from providing important biomedical information on the likelihood of FB tumorigenesis in man, the results of this study, if positive, could suggest increased clinical suspicion for sarcomas and thereby lead to earlier detection and reduced mortality. This pilot project will be carried out with a very limited budget.

SUPPORTED BY U.S. Veterans Admin., Dept. of Medicine & Surgery funds n.a.

3.1426,
TRENDS IN THE INCIDENCE OF ISCHEMIC HEART DISEASE

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The VA (Washington, D.C.) office provided a run on the numbers of first discharge diagnoses in the ICD8 code regions 410-414. The data were sorted by age groups in decades starting at age 18, by sex and by year starting in early 1972.

Preliminary analyses suggest that the trend in the incidence of ischemic heart disease in the population treated in VA hospitals is downward. The average decline in about eight years is about 40 percent in most age groups.

SUPPORTED BY U.S. Veterans Admin., Dept. of Medicine & Surgery funds n.a.

3.1427,
EPIDEMIOLOGICAL PATTERNS OF NASAL AND CUTANEOUS COAGULASE POSITIVE STAPHYLOCOCCI AMONG HEMODIALYSIS PATIENTS AND PERSONNEL

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Infections are the second leading cause of mortality among hemodialysis (HD) patients. The majority of these infections are caused by S. aureus and are usually associated with the vascular access site. Therefore, the source of staphylococci and their pattern of carriage within the HD unit might offer therapeutic possibilities.

Skin contact and nasal swab cultures have been performed on approximately 50 chronic HD patients and 22 HD personnel at least once weekly over 24 weeks. All S. aureus isolates have been saved in a viable state. We wish to study the pattern of nasal and cutaneous staphylococcal carriage over the six months duration on both HD patients and HD personnel and any potential relationship between the staphylococcal carriage in either the HD personnel or patient groups and staphylococcal isolates appearing over the vascular access sites of HD patients. The specific, definitive identification of staphylococcal isolates will be determined by their susceptibility to standardized bacteriophages and their acquisition of resistance to antibacterial substances.

SUPPORTED BY U.S. Veterans Admin., Dept. of Medicine & Surgery funds n.a.

3.1428,
STUDY OF CHRONIC STRONGYLOIDIASIS IN WORLD WAR II PACIFIC THEATER PRISONERS OF WAR

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The project was initiated on 5-8-80 after approval of the Research and Development Committee. Three-hundred and eighty six (386) questionnaires were sent veterans identified as former POWs by the Washington State POW organization. Two-hundred and sixty two (262) responses were received - 157 from former Pacific Theater ex-POWs. One-hundred and fifty five (155) Pacific Theater ex-POWs expressed willingness to participate in the study. Forty-four (44) individuals who indicated suggestive skin or gastrointestinal symptoms were examined in clinic. At this point, the study is nearly complete with stool exams completed on all 44 individuals. To date, no evidence of Strongyloides stercoralis or other intestinal parasite has been found. The IgE level results are pending and additional stools will be obtained from individuals with abnormally high values. Stools seeded with Strongyloides stercoralis and submitted to the technologist in a blind fashion have been detected, so that the techniques used are felt to be sensitive enough to pick up light infections. It would appear that the high rate of chronic Strongyloides stercoralis infections in British and Australian ex-POWs relates to their exposure on the Thai-Burma railway. This study will be concluded at this point due to negative results in sample size large enough to detect the problem if present.

SUPPORTED BY U.S. Veterans Admin., Dept. of Medicine & Surgery funds n.a.

3.1429,
LONGITUDINAL AND CROSS-SECTIONAL ECHOCARDIOGRAPHIC STUDY IN HEALTHY VOLUNTEERS

M. Wong, U.S. Veterans Admin., Dept. of Medicine & Surgery, Medical Center, Cardiology Section, *Wilshire & Sawtelle Blvds., Room 209, Los Angeles, California* 90073 (552-52-2603)

For studying the aged heart, we postulated that subclinical heart disease is prevalent in the elderly and is detrimental to cardiac function independent of any age-related decline in cardiac performance. Thus, we proposed to evaluate the hearts of asymptomatic elderly volunteers using sensitive noninvasive methods to identify subclinical disease and to quantitate the effect on cardiac function compared to the disease-free elderly cohort.

The purpose of this prospectus is to enroll healthy volunteers in their second to sixth decades into a cross-sectional and longitudinal study of the heart. Subjects will have echocardiograms taken over a 5-year period at regular intervals and immediately following any illness and trauma. The cross-sectional data will be used as standards to interpret the cardiovascular assessments in the elderly subjects. The longitudinal data will determine the physiological variability of the echocardiographic measurement. Any additional variability demonstrated and associated with non-cardiac illness and generalized stress will be new information and will provide a basis for formulating hypotheses about aging of the heart.

SUPPORTED BY U.S. Veterans Admin., Dept. of Medicine & Surgery funds n.a.

3.1430,

THE VETERANS ALCOHOLISM SCREENING TEST (VAST) AN OUTGROWTH OF THE MICHIGAN ALCOHOLISM SCREENING TEST (MAST)

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The Veteran's Alcoholism Screening Test (VAST), developed at the VA Medical Center in Fayetteville, N.C., is a revision of the Michigan Alcoholism Screening Test (MAST) that attempts to distinguish between past and present alcoholism. The VAST contains the original 24 questions from the MAST, but each of the 24 original MAST questions is followed by three questions designed to identify the specific time period to which an alcoholic answer to the question refers. Thus, a time frame is determined for each item on the questionnaire: within the last year, more than a year ago but not more than five years ago, and more than five years ago. Consequently, scores for the three time periods, in addition to the original MAST score, can be obtained. The weights and scoring for each of the VAST questions are the same as the corresponding MAST question. Using a sample of 118 pairs of VA ambulatory care patients and their relatives, the VAST is found to be a more valid indicator of alcoholism than the MAST based on the agreement between patient and relative scores for the current and 1-5 years time periods. This is true whether test scores are considered as integer-valued variables or converted to categorical variables.

It is also obvious that prevalence could be dramatically different using the VAST as opposed to the MAST. Looking at cumulative VAST prevalence for the current and 1-5 years time periods combined, the MAST shows a prevalence nearly twice as high.

The use of the VAST is recommended over the MAST because it is shown to be more valid, more useful, and more accurate.

SUPPORTED BY U.S. Veterans Admin., Dept. of Medicine & Surgery funds n.a.

3.1431,

RECORD REVIEW OF URINARY TRACT INFECTIONS IN SPINAL CORD INJURY PATIENTS

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Urinary tract infections are a substantial problem for patients with spinal cord injuries despite recent advances in bladder drainage techniques which appear to have greatly reduced the occurrence of such infections. Precise data regarding present rates of urinary infection and characterization of those factors predisposing to infection are needed for any further improvement in rates of infection. The proposed study will obtain these data through a retrospective record review of admissions to the Spinal Cord Injury Unit over the past six years. Using uniform methods and objective criteria, data will be collected regarding the occurrence of urinary tract infections during hospitalization, the characteristics possibly predisposing to such infections, and those adverse outcomes possibly associated with urinary tract infections. The data will be analyzed with techniques permitting adjustment for the effects of inter-related variables. No additional personnel requirements are anticipated, and there will be no patient contact or intervention in patient care. Funds for one year is requested toward the cost of computer analyses and preparation of reports.

SUPPORTED BY U.S. Veterans Admin., Dept. of Medicine & Surgery funds n.a.

3.1432,

A STUDY OF FACTORS WHICH CONTRIBUTE TO PERSISTING PREVALENCE OF ALCOHOLISM AMONG DOMICILIARY RESIDENTS AT HAMPTON VAMC

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PROJECT OBJECTIVES: Domiciliary residents will identify clusters of factors which can be associated with the persisting prevalence of alcoholism among them and which interfere with their self-care. The factors were classified as psychological, social, and cultural and related to self-image, coping ability, social interactions, and lifestyles.

PLAN: Domiciliary residents were identified through microfiched medical records and a listing of residents attending group therapy. Interviews were conducted during a two week period.

METHODOLOGY: A descriptive survey was done utilizing an interview/ questionnaire tool. The T-test was utilized to determine the level of significance of the factors.

FINDINGS: The analysis revealed ninety-one statistically significant results by the T-test. Five factors were identified as supporting the investigators's hypotheses which were: (1) inability to handle problems, (2) inability to accept suitable means of relaxation, (3) inappropriate attitudes toward the use of alcohol, (4) manner in which they consume alcohol, and (5) interference with adequate food intake. There were twelve non-supporting factors which were: (1) dissatisfaction with self, (2) lack of self-confidence, (3) inability to control emotions, (4) feeling of inferiority, (5) feeling of guilt, (6) over-dependency, (7) inadequate relationships with others, (8) inability to accept advice and/or suggestions from others, (9) intake of alcohol as part of their daily activities, (10) familial problems resulting from their alcohol intake, (11) preoccupation with alcohol and drinking, and (12) use of tranquilizers. Residents suggested what helped them stay sober as responses to the open-ended questions. These responses were positively related to the supporting factors. The responses were the basis for the interventions recommended.

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3.1433,

HEMATOPOIETIC EFFECTS OF CIMETIDINE

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PROJECT OBJECTIVES: Objectives to determine the incidence and etiology of hematopoietic toxicity from the drug Cimetidine.

PLAN: Cimetidine is a commonly used H2 histamine receptor. We plan to look at patients in the General Medicine and GI clinics who are on Cimetidine. We will obtain routine CBC, Platelet counts and Diff. counts from the patients on Cimetidine in these clinics. Length of time and dose of Cimetidine will be recorded. Any patients found to have a cytopenia will undergo bone marrow examination to try to determine etiology of this drug.

CLINICAL RELATIONSHIP: Since this drug is a commonly used agent and some patients have been reported to have hematologic toxicity from the drug, it is important to look at the incidence as well as try to determine etiology of this toxicity.

SUPPORTED BY U.S. Veterans Admin., Dept. of Medicine & Surgery funds n.a.

3.1434,

CASE CONTROL STUDY OF LUNG CANCER IN FORMER MALE RESIDENTS OF CUBA

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The Health Systems Division of Equifax is conducting a two year epidemiologic study on the health effects of different smoking habits. This study is being conducted under subcontract to Enviro Control, Inc. of Rockville, MD, for the Smoking and Health Program funded by the National Cancer Institute. Incident cases of lung cancer in Cuban males in the Miami/Dade County area will be identified and interviewed. Each case will be assigned an age matched (plus or minus 5 years) hospital and a neighborhood control.

Newly diagnosed cases of lung cancer will be identified through the pathology departments of participating hospitals. The physician of record will be contacted to determine the patients eligibility as a Cuban and to obtain consent to interview the patient. Hospital controls will be identified through records of hospital admissions and the same procedures for contacting attending physicians will be followed. Neighborhood controls will be located from a predetermined search pattern based on the address of a lung cancer case.

After signing a consent form, each subject will be interviewed about his work history, personal habits such as smoking, family medical history and diet. All cases and controls will be interviewed in the same manner by trained interviewers. The interviewers will not be aware of a subjects diagnosis or control status and all responses are held in confidence.

SUPPORTED BY U.S. Veterans Admin., Dept. of Medicine & Surgery funds n.a.

3.1435,

HISTOCOMPATIBILITY, VIRAL AND IMMUNOGENETIC FACTORS IN ALCOHOLIC AND NON-ALCOHOLIC CIRRHOSIS OF THE LIVER

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The specific aims of the proposed study are threefold: first, to determine the frequency of the histocompatibility antigenic types in alcoholic, post-hepatitic, and cryptogenic cirrhosis: second, to determine the incidence of serological parameters of type A, type B, and non-A, non-B, hepatitis viruses among patients with alcoholic and non-alcoholic cirrhosis; and finally, to characterize the binding of immunoglobulin to hepatocytes in liver biopsy specimens from patients with alcoholic and non-alcoholic cirrhosis. This study will be carried out in patients with chronic liver disease who have been admitted to the hospital for diagnosis and/or management of their liver disease and who would normally require a liver biopsy for proper management of their disorder. Demographic and pertinent historical data as it relates to chronic alcoholism and the epidemiology of viral hepatitis will be abstracted from the patient's medical records. Tissue typing, hepatoglobin phenotypes, serological assays for the hepatitis viruses, autoimmune antibody determinations and standard liver chemistries, including serum bile salt analyses will be performed on blood specimens. In addition to the standard processing of the liver biopsy specimen for light microscopy, immunofluorescent studies will be performed to characterize the nature of immunoglobulin binding to hepatocytes.

The results of these studies should better elucidate the importance of genetic predisposition, viral hepatitis, and immunoglobulin binding in the pathogenesis of cirrhosis of the liver.

SUPPORTED BY U.S. Veterans Admin., Dept. of Medicine & Surgery funds n.a.

3.1436,

ATHEROSCLEROSIS IN UREMIA

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OBJECTIVE: To clarify the causes and significance of the accelerated atherosclerosis in patients with chronic renal failure.

RESEARCH and METHODOLOGY: We have evaluated this with prospective epidemiologic assessment of known risk factors and clinical-biochemical studies characterizing the lipid disorder.

FINDINGS: Our work has documented that cardiovascular disease is consequence, at least in part, of high blood pressure, smoking and elevated triglyceride levels. We have also shown that the elevated triglyceride levels can be a consequence of a variety of disturbances in uremia that inhibit lipo-protein lipase. We have also shown that clofibrate can be used safely, at very low doses, to lower triglyceride levels in these patients.

The most recent findings suggest an interaction of drugs, such as androgens, B blockers and cimetidine, and abnormal calcium metabolism with the lipid disorder. Work in progress is attempting to clarify this interaction.

SUPPORTED BY U.S. Veterans Admin., Dept. of Medicine & Surgery funds n.a.

3.1437,

THE SPREAD OF HEPATITIS B FROM HEALTH CARE DELIVERERS

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It has been estimated that as many as 1 percent of health care professionals are healthy carriers of the hepatitis B virus. These individuals represent a considerable problem in health care delivery due to the potential for transmission of the virus to the patient population they care for. This risk of transmission is felt to be small but is, as yet, essentially undefined. The objective of this proposal is to better define the risks of transmission of hepatitis B virus by health care deliverers to patients in a prospective manner. The results will be helpful to minimize transmission to the patient by identifying certain carrier groups that seem to be associated with infectivity. In addition, by providing data on infectivity, the study will prevent future unilateral, unfounded decisions by health care agencies to prohibit such carriers from participation in primary health care delivery.

SUPPORTED BY U.S. Veterans Admin., Dept. of Medicine & Surgery funds n.a.

3.1438,

THE EFFECT OF LIFE EVENTS ON ALCOHOLISM

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The Effect of Life Events on Alcoholism research project has screened one hundred and ninety-three patients for eligibility to date. Out of this, fifty patients did not meet criteria and forty subjects and co-informants have been entered into the study. The remainder of the patients have either dropped out of the program, still considering participation or arranging an interview date. The major difficulty has been the lack of a willing co-informant. Methods to overcome these difficulties are being considered.

An addendum to this study has been approved in which a co-informant is not necessary. A review of research presently available on life events and alcoholism has been completed and will be submitted for publication.

SUPPORTED BY U.S. Veterans Admin., Dept. of Medicine & Surgery funds n.a.

3.1439,

NHLBI TWIN STUDY FOLLOW-UP EXAMINATION

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The overall objective of NHLBI Twin Study is to examine familial aggregation of risk factors for coronary heart disease (CHD) in the attempt to separate environmental from genetic contributions in middle-aged white, male monozygotic and dizygotic twins. The first task is to repeat the core examination performed in this group 10 years ago consisting of a history, physical examination and laboratory assessment oriented toward CHD and its risk factors. The second task consists of ancillary proposals in immunology, cardiology, pulmonary and psychology.

The initiation of the examination of the twins has been postponed to January, 1981, by NHLBI due to administration delays. Planning and organizing at Wadsworth has been completed.

SUPPORTED BY U.S. Veterans Admin., Dept. of Medicine & Surgery funds n.a.

3.1440,

MALIGNANT MELANOMA IN EL SALVADOR

E. Hernandez Perez, Universidad de El Salvador, Facultad de Medicina, Unidad Docente de Dermatologia, *c/o Ciudad Universitaria, San Salvador, El Salvador* (007)

OBJECTIVE: To evaluate the epidemiology and special characteristics of malignant melanoma in El Salvador.

APPROACH: Only microscopically verified cases are reviewed. Clinically, the following parameters are considered: age, sex, time elapsed since onset of disease, topography. Microscopically, the following parameters are considered: type (nodular, superficial spread, etc.), depth, thickness, cellular type. (Translated)

SUPPORTED BY Universidad de El Salvador funds n.a.

3.1441,

CONSIDERATIONS ON THE PATHOLOGY OF THE THYROID GLAND IN BRAZIL (ANALYTIC STUDY OF 3771 PATIENTS)

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OBJECTIVE: In the Amazon region there is a high incidence of iodine-deficiency goiter. National and international statistics show more thyroid cancer in areas with a high incidence of goiter. Once the data have been processed by computer it will be possible to prepare a document indicating the necessity of modifying or changing the eating habits of this population. This should result in medium and long term change in the incidence of goiter/thyroid cancer in the Amazon region.

APPROACH: This is an analytical study of 3771 patients with disease of the thyroid gland, divided into two groups: surgical and clinical. Data obtained from the patients' records during 45 years (1930-1975) of the Thyroid Surgery Service will be analyzed by the Data Processing Service of the Universidade dos Amazonas and will permit the preparation of reports on the entire body of patients and the establishment of relative incidence, frequency, treatment and cure of patients. (Translated)

SUPPORTED BY Universidade do Amazonas funds n.a.

3.1442,

BRAIN INJURIES AND PROTECTIVE SPORTS EQUIPMENT

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DESCRIPTION: This is a continuing study of the basic mechanics of head injuries, based on the premise that the neurosurgeon diagnosing and treating head injuries is in a better position to make his diagnosis and to determine the treatment needed if he knows the mechanism by which the injury was produced and the area of the brain most likely to be affected.

These studies have now been broadened to include the evaluation of protective sports equipment, with particular emphasis on protective helmets. The National Operating Committee on Standards for Athletic Equipment (NOCSAE) has issued a set of specifications for football helmets, and the NCAA now requires that helmets which meet these specifications be used in games played under the jurisdiction of NCAA.

Unfortunately, the acceptance or rejection criteria in the NOCSAE specifications are based on data published several years ago. These data are given in the form of a curve of acceleration versus duration of acceleration. The curve is known in the industry as the Wayne State University Tolerance Curve. Most authorities probably agree that this curve leaves something to be desired as an injury criterion. Nevertheless, since it seems to be the best that is available, it is used. The standard testing procedure based on the WSU Tolerance Curve provides essentially a go - no go decision with little indication of the comparative performances of different helmets. The objectives of this research are to develop procedures for making comparative evaluations and to correlate these evaluations with injuries actually observed on the football field and elsewhere. It should be possible, in time, to determine what conditions produce concussion, and how helmet construction affects those conditions.

Measurements of head accelerations produced by the impact of a projectile on a headform protected by a helmet are being made in the laboratory, and a mathematical model of the system is being developed.

Our preliminary test results indicate that there are noticeable differences in helmet performance, and there is some correlation between the make of the helmet and the incidence of head injuries.

SUPPORTED BY University of Texas funds n.a.

3.1443,

PESTICIDE MONITORING

J.C. Street, Utah Higher Education System, Utah State University, Agricultural Experiment Station, Dept. of Animal Dairy & Veterinary Sciences, *Main Bldg., Room 104, Logan, Utah* 84321 (0078933)

OBJECTIVE: Assist the Human Effects Monitoring Branch, Office of Pesticide Programs, U.S. Environmental Protection agency, in determining the magnitude of human exposure to pesticides, providing expert consultant service to review, analyse, and validate pesticide risk and benefit data, conducting epidemiologic studies of various exposed population groups, devised means of recohnition and diagnosisof pesticide effects in man.

APPROACH: Maintaining an inventory of pesticide usage in the study area (Utah) and use patterns; make human blood, milk or other tissue analyses in collaboration with the national monitoring program; establishing a group of certified consultants and coordinating their data review; development of methods suitable for population and environmental monitoring; developing special studiesof pesticides health effects; and participation in Pesticide Incident investigations as needed in the study area and elsewhere on request of the OPP.

PROGRESS:

SUPPORTED BY Utah State Government funds n.a.

3.1444,

QUANTITATIVE AND QUALITATIVE CORRELATION BETWEEN INCIDENCE OF MORTALITY AND MORBIDITY IN THE DOUBS AREA

S. Schraub, Centre Pierre Masson, *Pl. St. Jacques, c/o Centre Hospitalo Univer., 25030 Besancon, France*

OBJECTIVE: Quantitative and qualitative correlation of the incidence of mortality with the incidence of morbidity in a defined area.

APPROACH: Quantitative correlation of the incidence of morbidity with the incidence of mortality is possible with data from INSERM (National Institute of Medical Research), which officially collects mortality data based on death certificates, and with data from the Population Cancer Registry of Doubs. These correlations are useful in testing the validity of the cancer registry and they also enable proper appreciation of the differences between incidences of mortality and morbidity which appear not to be correlated with the the survival of patients with cancer of some specific sites. Qualitative correlation gives some data about the validity of death certificates in France.

PROGRESS: Seventeen percent of the data found in death certificates are incorrect due to imprecisions (2.5%) and errors (14.5%). Data on leukemia, cancer of the uterus and hepatic cancer contain most errors.

SUPPORTED BY Vaincre le Cancer funds n.a.

3.1445,

DETECTION OF STAPHYLOCOCCAL ENTEROTOXIN IN FOODS

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OBJECTIVE: Evaluation and improvement of methods for the detection of staphylococcal enterotoxins in foods; Preparation of specific antisera and their homologous enterotoxins for use in performing tests for enterotoxins.

APPROACH: Published methods for enterotoxin detection will be tried with various foods to determine which is most suitable for routine laboratory use. Efforts will be made to simplify and shorten the procedures where possible. Purified enterotoxins will be used as antigens to prepare specific antisera, which will be standardized and made available for enterotoxin detection tests in other laboratories. These reagents are not available commercially and their preparation will require additional research, particularly with the newer types D and E.

PROGRESS: The objectives of this project are to determine the best methods available for detection of enterotoxin in foods and develop new ones if possible, train people in the use of the recommended methods, and supply food industry laboratories with reagents for enterotoxin detection. The Food Research Institute procedure of Reiser, Conaway and Bergdoll (Appl. Microbiol. 27:83, 1974) is still the method of choice and is the one we train people to use. Several people went throught our training course this year. We have developed a radioimmunoassay (RIA) procedure (Appl. Environ, Microbiol. 36:421, 1978) which we think is the best method for detecting enterotoxin in foods. Not all laboratories can use it because of the need for special equipment and the purified enterotoxins. We have been able to detect enterotoxin in foods which were involved in food poisoning outbreaks with this method when we could not find it with the other method. We found enterotoxin (SEA) in pre-cooked batter dipped cod, the cause of a food poisoning outbreak in South Dakota and, also, in ham from a food poisoning outbreak in Wisconsin. We examined 30 cans of Lobster Bisque which had been implicated in an outbreak in 1975 and found one can to contain very small amounts of SEA (20 ng/100 ml). This casts some doubt on the Lobster Bisque as the cause of the food poisoning. Enterotoxin reagents were supplied to several food companies.

SUPPORTED BY Wisconsin State Government funds n.a.

3.1446,

WILDLIFE RESERVOIRS OF ARBOVIRUSES

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OBJECTIVE: Determine the occurrence and epidemiological significance of LaCrosse virus variants, and the relationship of these variants to mosquito vectors and wildlife hosts.

APPROACH: LaCrosse viruses will be isolated from wildlife hosts and mosquito vectors inn SW Wisconsin. These isolates will be tested to determine if plaque, mouse virulent (or attenuated), temperature sensitive, thermal stable or antigenic variants occur. These variants will be tested for their ability to infect wildlife hosts and to be transmitted by Aedes triseriatus, the natural vector.

PROGRESS: The role of medium-sized forest mammals in LaCrosse (LAC) virus epidemiology is being evaluated. LAC virus-infected mosquitos Aedes triseriatus infected red foxes. The foxes became infected and developed a viremia of 4-5 days duration and of sufficient amplitude to infect susceptible mosquitos which, in turn, transmitted the virus to susceptible chipmunks, a common forest host of this virus. Thus it appears that the red fox can potentially serve as a reservoir and dessiminator of LAC virus. Sentinel foxes placed in an endemic area became infected, indicating that transmission to foxes does occur commonly in nature. Experiments with captive raccoons revealed no viremia and it appears unlikely that they play a role as LAC virus reservoirs. It was shown that the snowshoe hare is capable of developing a significant viremia following experimental infection with Powassan (POW) virus. However, within the boreal forest in Northeastern Alberta, infection of snowshoe hares by POW virus was relatively uncommon during the period of our study. Our field studies did indicate that deer mice in this area were commonly infected with Modoc (MOD) virus. This virus also infects humans and we have evidence of antibiodies in local Indian population in the area. Ecological changes associated with mining of the Alberta tarsands appeared to increase deer mouse populations and the potential risk for increase of Modoc virus transmission in the area.

SUPPORTED BY Wisconsin State Government funds n.a.

3.1447,

A LONG-TERM FOLLOW-UP STUDY OF WOMEN USING DIFFERENT METHODS OF CONTRACEPTION

M.P. Vessey, University of Oxford, Dept. of Social & Community Medicine, *S. Parks Rd., Oxford OX2 6HE, England, United Kingdom*

Seventeen family planning clinics are participating in a prospective study of the beneficial and adverse effects of different methods of contraception. The investigation is funded by the Medical Research Council. Over 17,000 women are under observation; on admission to the study 57% of them were using oral contraceptives, 25% were using a diaphragm and 18% were using an intrauterine device. During follow-up, each subject is questioned at return visits to the clinic, and a record of pregnancies and their outcome, hospital visits, changes in contraceptive methods and the results of cervical smears is accumulated. Women who default are sent a postal questionnaire and if this is not returned, they are telephoned or visited in their homes and the necessary information is collected. So far, data representing 90,000 woman-years of follow-up are available for analysis. Losses to follow-up have been fewer than 1 per 100 per annum and adherence to the method of contraception in use at entry has been reasonably good. Analyses completed to date concern the entry characteristics of the subjects, patterns of morbidity, outcome of pregnancy, fertility after discontinuation of contraception, and efficacy of different methods. Most of the findings fit in well with those of retrospective studies and with those of the Royal College of General Practitioners prospective study. A detailed interim report of the study was published in the Journal of Biosocial Science in October 1976. The study continues.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.1448,

CASE-CONTROL STUDY OF THE POSSIBLE RELATIONSHIP BETWEEN ORAL CONTRACEPTIVES AND CANCERS OF THE BREAST, ENDOMETRIUM AND OVARY

M.P. Vessey, University of Oxford, Dept. of Social & Community Medicine, *S. Parks Rd., Oxford OX2 6HE, England, United Kingdom*

Although a great deal is known about the short- and medium-term hazards of oral contraceptives, there is still a great need to monitor possible carcinogenic effects. In this investigation, women of childbearing age newly presenting with cancers of the reproductive system at any of six London teaching hospitals are interviewed, together with matched controls. The study has been in progress for about eight years and now includes nearly 1,000 cases of cancer of the breast. Results concerning the first 90 cases of breast cancer were published in the British Medical Journal in September 1972, the next 232 cases in the Lancet in April 1975, and the next 385 cases in the British Medical Journal in July 1979.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.1449,

THE DETERMINATION OF HIGH RISK GROUPS FOR BREAST CANCER SCREENING

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Women aged 35 and over who have a family history of breast cancer and/or have had no viable pregnancy before that age, and/or have had a previous breast biopsy or cyst aspiration and/or in whom clinical examination is equivocal or difficult in view of nodular breasts are being screened by clinical examination with emphasis on minimal signs and mammography. Women with a clinical abnormality have the standard lateral and cephalocaudal mammographic views; the 'normal' women have single view only with breast compressed in a plane from the axilla to the xiphisternum giving a 45 degree oblique view with excellent visualization of the breast and a radiation exposure of around 0-18 rad. Detection rates are being compared with those from the screening of a similar group of women in Guildford, but using standard mammographic views for all women. To date the cancer rate in asymptomatic women is the same in the two groups. Epidemiological, clinical and mammographic risk factors are being studied.

Description provided by IARC and DKFZ with ICRDB/NCI support.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.1450,

STUDY OF CANCER OF THE LUNG AND STOMACH, AND OF BRONCHITIS MORTALITY IN RELATION TO URBAN FACTORS

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This is a study based on published mortality data. One of the features of the distribution of lung cancer deaths in recent decades has been the relatively high rate in urban areas, but the pattern is changing gradually and the death rates currently experienced by recent cohorts are not much higher in urban than in rural areas, a change most marked in London. These findings are being considered in relation to the substantial changes in pollution by smoke, as well as changes in smoking habits, and possible biases introduced by selective migration. The data have been accumulated gradually, as they become available, starting with deaths in 1951, and the object is to assess the trends over a 25 year period, arranged on a cohort basis. Data from this study for the Greater London area are also being used in connection with an investigation of lung cancer incidence among London Transport workers, over a similar 25 year period. The experience of the London Transport group as a whole is being compared with that of the general population, and incidence rates are being calculated for several job categories with a view to exploring the effects of exposure to diesel fumes.

Description provided by IARC and DKFZ with ICRDB/NCI support.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.1451,

HORMONAL FACTORS IN THE ETIOLOGY OF BREAST CANCER

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Results of a prospective study of the island of Guernsey, obtained in this laboratory, have shown that women who subsequently develop breast cancer have, on the average, a subnormal excretion of urinary androgen metabolites. The investigation now in progress is to examine (1) whether in a prospective study this urinary abnormality is reflected in the general circulating levels of plasma androgens, (2) plasma androgen levels in women with increased risk of breast cancer (e.g., race, familial history, age at first birth, etc.) and (3) the general androgen status in women with established breast cancer.

Description provided by IARC and DKFZ with ICRDB/NCI support.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.1452,

LONG-TERM FOLLOW-UP OF CHILDHOOD CANCER SURVIVORS

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There is considerable concern about possible long-term effects of radiotherapy and chemotherapy used in treating children with cancer, including the induction of second primary tumors. It has also been suggested, though at present direct evidence is lacking, that improvements in survival for certain categories of tumor, and the subsequent increase in the number of children born to survivors, will lead to the recognition that there is a genetic component in the aetiology of some of the cancers of childhood comparable to that for retinoblastoma. The Childhood Cancer Research Group is coordinating a collaborative study which will eventually include records of about 6,000 children who have been treated for cancer and survived for at least three years. These survivors will be followed up to determine the incidence of second tumors and also the incidence of abortions, stillbirths, congenital defects and malignant disease among their children. For children treated in Scotland, subsequent hospital admissions, school health records and other medical records are being studied and compared with corresponding records for a sample of controls, using record linkage. Various other long-term effects may be studied for cases from particular centres. It is planned also: (1) To carry out laboratory studies including hematological studies, cytogenetics and possibly measurement of immunoglobulins for some of the cases included in the study and (2) to establish a pathology registry for children in whom second primary tumors occur.

Description provided by IARC and DKFZ with ICRDB/NCI support.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.1453,

THE GENETICS AND EPIDEMIOLOGY OF RETINOBLASTOMA

G.J. Draper, University of Oxford, Dept. of the Regius Professor of Medicine, *S. Parks Rd., Oxford OX2 6HE, England, United Kingdom*

The objectives of this study are: (1) To determine the incidence of second primary tumors, particularly osteosarcoma, among children surviving retinoblastoma; (2) to determine whether there is an increased incidence of other cancers, either in general or of certain specific types, among the parents of children with retinoblastoma; (3) to ascertain whether, as for certain congenital defects, the incidence of this disease is related to parental age; and (4) to examine associations between congenital defect, particularly mental retardation, and retinoblastoma. About 500 case of retinoblastoma have been ascertained through hospital, cancer registries and death certificates; epidemiological and familial data are also being collected.

Description provided by IARC and DKFZ with ICRDB/NCI support.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.1454,

CHILDHOOD CANCER REGISTRY

G.J. Draper, University of Oxford, Dept. of the Regius Professor of Medicine, *S. Parks Rd., Oxford OX2 6HE, England, United Kingdom*

A registry for childhood neoplasms occurring in England, Scotland and Wales has been established with the following objectives: (1) To obtain estimates of incidence, mortality and survival rates, (2) to provide a basis for epidemiological, genetic and medical care studies, (3) to provide a service to other research workers. Registrations of cancer in children below age 15 and deaths below age 16 are reported to the Childhood Cancer Research Group by the Office of Population Censuses and Surveys, the Information Services Division of the Scottish Health Service, regional cancer registries, and clinicians. This is supplemented by clinical information derived from hospitals and general practitioner records. A classification

system particularly appropriate for childhood cancer and based on the International Classification of Diseases for Oncology has been developed. Comprehensive data on incidence, mortality and survival have been analyzed and will be published by the Office of Population Censuses and Surveys. Studies currently in progress include: (1) Comparisons of survival rates for children with leukemia and Wilms' tumor included in MRC clinical trials with those for children not included, (2) the provision of treatment for children with cancer, (3) studies to determine whether there is an increased incidence of cancer in the parents of children with cancer.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.1455,

PROLONGED AND VARIABLE EXPOSURE TO ASBESTOS FIBER

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Ninety-two senior staff members of a large asbestos/cement company with factories spread over the country are being studied. This company manufactures asbestos/cement products, roof and ceiling sheets, insulation boards, piping and moulded goods and the staff have been exposed to all of these as well as to visits to asbestos mines. Exposure has been estimated as heavy in 17, moderate in 23 and light in 52 persons. Medical examination, including X-ray, carried out in 1973, 1974 and 1976 revealed pleural thickening in 43 and thickening with parenchymal change in 3 persons. Follow-up of the cohort continues.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.1456,

LOCATIONAL CLUSTERS AND OCCUPATIONAL RISK

P.J. Cook, University of Oxford, Dept. of Social & Community Medicine, *S. Parks Rd., Oxford OX2 6HE, England, United Kingdom*

The postal code of each individual in the Southwest (U.K.) Cancer Registry for a retrospective period of fifteen years is to be added to the data already coded by the Office of Population Censuses and Surveys, and the data scanned for evidence of geographical clustering of cases which might point especially to unsuspected occupational risks.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.1457,

CANCER REGISTRATION IN EAST AND CENTRAL AFRICA

P.J. Cook, University of Oxford, *S. Parks Rd., Oxford OX2 6HE, England, United Kingdom*

Data has been collected by regular postal questionnaire to rural hospitals in Uganda, Kenya, Tanzania, Malawi and Zambia, and by establishing a cancer registrar in the major hospitals of Nairobi, Dar es Salaam, Blantyre, Lusaka and Kitwe. The data is in the final stages of analysis; incidence rates have been calculated for the towns and proportional frequencies for the rural areas; comparisons are being made between the patterns of variation for individual cancers and environmental and sociological variables.

Description provided by IARC and DKFZ with ICRDB/NCI support.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.1458,

MORBIDITY AND MORTALITY STUDY OF BENZOTRICHLORIDE WORKERS

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OBJECTIVE: To assess incidence of respiratory and other neoplasms in benzotrichloride workers in view of the published work of Sakabe.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.1459,

POSSIBLE CARCINOGENIC HAZARDS OF HAIR DYE USAGE

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The present project is a feasibility study to determine whether a larger scale investigation could usefully be undertaken. One source of data is by questionnaire to volunteers to record their pattern of usage and to form an index file for linkage with health and mortality records. The second source is from hairdressers and others whose work brings them frequently into contact with hair dyes. Again, their health and mortality records will be related to extent of exposure.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.1460,

SHORT-TERM VARIATION IN PRE-NATAL CANCER RISK

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An analysis has been undertaken in which all deaths from malignant disease of British children between 1953 and 1971 have been tabulated by month of birth and age at death. Comparative 'expected' numbers have been computed with allowance for survey coverage, cohort size and secular trends. A program has been developed which is designed to correlate these series of observed and expected numbers in an appropriate manner with any time-varying factor of interest. A study of the temporal association with influenza and poliomyelitis incidence has been completed; the data are available for the analysis of any monthly observations that may be of etiological interest or significance.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.1461,

CANCER MORTALITY IN 11,121 MALES BORN 1903-1928 - A COMPONENT OF A YUGOSLAVIAN CARDIOVASCULAR DISEASE STUDY (ABBREV)

D. Kozarevic, Inst. of Chronic Diseases & Gerontology, Dept. of Chronic Diseases, *Slobodana Penezica 35/2, Belgrade, Yugoslavia*

The Yugoslavia Cardiovascular Disease (CD) study was initiated in 1961-1963 in two geographical areas in Yugoslavia (Tuzla and Remetinec). The study population comprised 11,121 males, both urban and rural residents, aged 35-64 at the initial examination in 1964. This population was subsequently re-examined by the same study teams on two occasions, the last time seven years following the initial examination. The methodology and results were compared with those of the Framingham Study, USA (J. Chron. Dis., 29:405-411, 1976 and Am. J. Epidem., 104, 133-140, 1976). Mortality follow-up for the cohort is essentially complete. The centralized mortality register makes it possible, in principle, to identify the death of any specific person occurring within the country. The re-examination of the cohort provided means to check the completeness of this mortality follow-up and update the mortality lists. There is a distinct excess of cancer mortality in the Yugoslavian study population, the age-adjusted rate being 60% higher than in Framingham. The most striking excess is for stomach cancer which accounts for a vastly greater proportion of cancer deaths in Yugoslavia (23.2%) than in Framingham (3.7%). As in other populations, this excess appears to be accompanied by a lower mortality from cancer of the large intestine. If the age-adjusted mortality for cancer is expressed as a percentage of the total age-adjusted mortality, Framingham and United States mortality are very similar whereas cancer mortality in the Yugoslavian study areas is higher than in the country as a whole. There is a strong likelihood that the Yugoslavian CVD study areas have higher than the average cancer mortality for the country. These findings are being further investigated.

Description provided by IARC and DKFZ with ICRDB/NCI support.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.1462,

NON-HODGKIN'S LYMPHOMAS IN CHILDREN

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From 1965 to 1977 a total of 140 children with non-Hodgkin's lymphomas attended the Oncology Unit of the Children's Hospital of Buenos Aires. A male preponderance was found and the peak age was five years. The most frequent location was the abdomen, in particular the ileocaecal region. The histological pattern in a high percentage was the diffuse poorly differentiated lymphocytic form. The main objectives of future epidemiological research will be: detection of primary immunodeficiency disorders, and evaluation of the frequency of herpes and/or other virus infections.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.1463,

EPIDEMIOLOGICAL STUDY OF CANCER IN ALGERIA 1946-1955 AND 1966-1975

A. Yaker, Centre Hospitalo Universitaire Mustapha, Laboratoire Central dAnatomie Pathologique et de Cytologie, *Algiers, Algeria*

Data on histologically diagnosed cases of cancer are collected from pathology laboratories in Algiers, Oran and Constantine which cover the whole country. This includes: histopathological diagnosis; site; age; sex; ethnic group and geographical distribution. The relative frequency will be studied for two ten-year periods. If feasible, minimum incidence rates will be calculated and high risk groups determined as part of planning for a national program of cancer control.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.1464,

RELATIONSHIP BETWEEN BRACKEN INFESTATION AND CANCER MORTALITY IN VICTORIA, AUSTRALIA

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Rural Victoria has areas of bracken fern infestation. The mortality from all types of cancer is being compared between the populations living in bracken and non-bracken areas. Prior epidemiological and experimental research has indicated an increased risk of bladder cancer and bowel cancer in association with the ingestion of bracken fern.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.1465,

INCIDENCE OF CANCER IN WESTERN AUSTRALIA

M.M. Lugg, University of Western Australia, Dept. of Health & Medical Services, *Perth, W. Australia 6009, Australia*

Western Australia has a diverse climate over its 1,000,000 square miles of area, and a scattered population of approximately 1,000,000. This population has remained relatively stable, making possible extensive epidemiological analysis, including long term follow-up. Cancer incidence, by site, age, sex, geographic location of patient, work history, and detailed treatment for three months following diagnosis is currently being analyzed.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.1466,

THE EVALUATION OF CENTRAL CANCER REGISTER BASED UPON HOSPITAL, DEATH AND PATHOLOGY STATISTICAL SYSTEMS

M.M. Lugg, University of Western Australia, Dept. of Health & Medical Services, *Perth, W. Australia 6009, Australia*

Western Australia has a diverse climate over its 1,000,000 square miles of area, and a scattered population of approximately 1,000,000. This population has remained relatively stable, making possible extensive epidemiological analyses, including long term follow-up. The present cancer register uses as data sources hospital discharge summaries, death registrations, pathology reports and radiotherapy attendances for locating patients with cancer. The current study attempts to define how complete the 'case finding' is using these methods.

Description provided by IARC and DKFZ with ICRDB/NCI support.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.1467,

CARCINOMAS OF THE URINARY TRACT AND ASSOCIATION WITH ANALGESIC ABUSE

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The aim of the study is to determine the incidence of carcinomas of the urinary tract in patients who abuse analgesics, particularly those containing aspirin, phenacetin, caffeine, paracetamol and salicylamide. Patients studied will be those referred to Royal Prince Alfred Hospital with analgesic-induced renal disease (analgesic nephropathy) or those patients known to abuse analgesics. This group of patients will be followed prospectively to determine the frequency and type of carcinomas of the urinary tract and which analgesic is specifically associated with the development of these carcinomas. It is anticipated that between 50 and 400 such persons will be followed. Controls will be age- and sex-matched patients with comparable renal disease, who do not consume analgesics, attending the same clinic.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.1468,

DYSPLASIA OF THE UTERINE CERVIX AND CANCER RISK

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The aim is to study cancer risk in patients with dysplasia of the uterine cervix using biopsy examination. Three hundred ninety-seven patients in whom colposcopy revealed atypical aspects - mosaic, punctation, leukoplasic or atypical vessels - were examined after three months, then every semester for two years, then yearly until completion of the research which covered the seven year period from 1972-1979. Of the 210 patients with slight dysplasia, 7 showed carcinoma in the subsequent examination (3.32%); of the 35 patients with moderate dysplasia and under 30 years of age, three presented carcinoma in the examinations that followed (8.57%); of the 84 patients with moderate dysplasia and over 30 years old, 13 presented carcinoma in the examination that followed (15.47%); of the 68 patients with acute dysplasia, 16 presented carcinoma in the examination that followed. Follow-up continues.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.1469,

THYROID CANCER AND ENDEMIC GOITER

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For decades a possible correlation between endemic goiter and thyroid cancer has been discussed. So far only contradictory evidence has been obtained, perhaps due to the fact that epidemiological data from endemic goiter areas in developing countries are insufficient. The present study includes epidemiological data from western Austria (about 90 percent of thyroid cancer cases from this area seen in this department) where extensive studies on the incidence of endemic goiter have also been carried out. These figures will be compared with relevant data from other countries all over the world.

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3.1470,

SMOKING AND LUNG CANCER

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This epidemiological investigation compares lung cancer mortality and tobacco consumption. The nature of the tobacco used as well as chemical content will be examined, and the influence of these various products on observed differences in national lung cancer risks determined. The influence of social and economic factors as well as occupation, education and smoking habits will be ascertained.

Description provided by IARC and DKFZ with ICRDB/NCI support.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.1471,

KIDNEY CANCER AND TOBACCO CONSUMPTION

C. Vutuc, Universitat Wien, Inst. of Hygiene Social Medicine & Epidemiology, Arbeitsgruppe fuer Sozialmedizin und Epidemiologie, *Kinderspitalgasse 15, 1095 Vienna, Austria*

The aim of this retrospective survey is to determine if smoking causes kidney cancer. The emphasis will be on cancers of the renal pelvis - about 150 such cases will be studied - although cancers of the renal parenchyma will also be included. For each case two matched controls with non-tobacco selected disease will be interviewed. The results of tobacco smoking in both cases and controls will be compared with data from the Austrian population collected in 1972 and 1977.

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3.1472,

INCIDENCE OF BREAST CANCER IN CANADIAN INDIANS AND ESKIMOS CORRELATED WITH THEIR CHANGING LIFE-STYLES

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Cancer of the breast was considered to be unknown in Canadian Indians and Eskimos 25 years ago. It is still rare in Eskimos but is fairly common in Indians, though probably less common than in the general Canadian population. The question of whether there has been a real change in incidence is being studied, and, if so, whether the change is associated with the marked changes in life-style of the native people in recent years. Of particular interest is whether prolonged breast feeding (of about two years) can be shown to have protected women from breast cancer. Diet is also being examined.

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3.1473,

GEOGRAPHICAL DISTRIBUTION OF MALIGNANT NEOPLASMS OF THE BRAIN IN CANADA

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Malignant neoplasms of the brain have received very little epidemiological attention in spite of the low survival rate and their occurrence in childhood or early adulthood. A few studies dealt with their general distribution in the United States and Denmark and only one studied the geographical distribution in relation to environmental factors. This project will study the geographical distribution of brain tumours across Canada using both mortality and incidence data by calculating age-adjusted mortality and incidence rates for census divisions. These rates can be related to various environmental variables known for the census divisions. In addition, this study will investigate the occupations recorded for a selected group of brain tumour deaths and compare them with those of a matched group of controls. Of special interest will be occupations likely to involve chemical or radiation exposure. Prenatal radiation has been shown to increase the risk of childhood cancer of the central nervous system, and the same situation may apply to adult brain cancer.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.1474,

URBAN MORTALITY STUDY

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Death certificates for all deaths during 1971 among residents of the 21 largest census metropolitan areas in Canada have been searched to identify the census tract of residence (census tracts are small statistical areas established in large urban communities, usually have populations between 2,500 and 8,000, are relatively uniform socio-economically, have permanent boundaries and are as compact as possible). Death rates by sex, age and cancer site will be calculated for census tracts aggregated according to median household income. Correlations between mortality rates and census tract characteristics will be sought.

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3.1475,

THE ROLE OF EXOGENOUS ESTROGEN IN NEOPLASIA AND HYPERPLASIA OF THE ENDOMETRIUM

C.A. Woolever, McMaster University, School of Medicine, Dept. of Obstetrics & Gynecology, *1200 Main St. W., Hamilton, Ontario, Canada* L8S 4J9

The objective is to assess the significance of exogenous estrogen use in the development of endometrial carcinoma and hyperplasia. Newly diagnosed endometrial carcinomas and hyperplasias were obtained from 21 metropolitan hospitals in Toronto. From April 1, 1977 to March 31, 1978, 144 carcinomas and 575 hyperplasias were diagnosed among metropolitan residents. Tissue slides for both case groups were reviewed independently by two senior pathologists. For each of the confirmed carcinoma and hyperplasia cases, two age-matched neighborhood controls were used. Both cases and controls were interviewed in their homes. Detailed information was sought on medications, gynecological histories, episodes of bleeding and associated surgical procedures. The degree of medical surveillance is being assessed in addition to other confounding variables. Interview information is being verified against available medical records from hospitals and physicians' offices. The analysis is expected to be completed by June 1980.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.1476,

CASE-CONTROL STUDY OF ETIOLOGICAL FACTORS IN HEAD AND NECK CANCER

J.M. Elwood, Cancer Control Agency of British Columbia, Epidemiology Division, *2656 Heather St., Vancouver, British Columbia, Canada* V5Z 3J3

The objective of the study is to evaluate the association of alcohol, tobacco and occupation to cancer of the head and neck, and to determine whether such exposures are independent or interactive. It is planned to interview all new patients with these tumors seen at the Cancer Control Agency of British Columbia (which includes about 90 percent of new cases in the province) over a 3 1/2 year period, to give a total of about 350 cases. The control group will consist of an age-and sex-matched group of patients with other tumors chosen on the basis of lack of association with the main exposures, for example breast and gynecological cancer in women, chronic lymphomas and multiple myeloma, and prostatic tumors in men. The interview will provide information on a lifetime occupational history and quantification of current and past tobacco and alcohol usage habits.

Description provided by IARC and DKFZ with ICRDB/NCI support.
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3.1477,

MALIGNANT LYMPHOMA IN COLOMBIA IN RELATION TO EPSTEIN-BARR VIRUS

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The objective of this study is to explore the role of Epstein-Barr virus (EBV) in Hodgkin's disease and other malignant lymphomas in Colombia. Serum samples are obtained from patients and appropriate controls, and malignant lymph nodes from biopsy or autopsy. The samples are immediately frozen and stored in low temperatures for periodic shipments to laboratories in the United States for detection of viral markers in both serum and tissues. There is as yet no indication of an association between EBV infection and malignant lymphoma in Colombia, but at least 50 cases will have to be examined before any conclusion can be drawn.

Description provided by IARC and DKFZ with ICRDB/NCI support.
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3.1478,

LUNG CANCER IN CUBAN WOMEN

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The objective of this restrospective study is to document lung cancer incidence among Cuban women as a function of smoking habits and other life-style factors. The mortality rate for women living in Cuba is one of the highest in the Western hemisphere. The study incorporates a case-control design, using a neighborhood and hospital control for each lung cancer case. Data will be obtained for types of tobacco used, number of years of smoking, pattern of smoking, drinking habits and demographic information. Central data analyses will be performed at Enviro Control Inc., Rockville, Md., USA.

Description provided by IARC and DKFZ with ICRDB/NCI support.
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3.1479,

SOCIAL IMPORTANCE OF CANCER

E. Dimitrova, Slovak Akademie Ved, Inst. of Experimental Oncology, Dept. of Epidemiology, *Ul. Csl. Armady 21, Bratislava 88032, Czechoslovakia*

The aim of this study is to obtain information on the contemporaneous social significance and relative importance of malignant tumors. The evolution, recent and projected future trends of mortality, morbidity, incapacity for work, chronic disability and admissions to hospitals caused by malignant tumors in this country will be analyzed and compared with those for other important groups of diseases.

Description provided by IARC and DKFZ with ICRDB/NCI support.
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3.1480,

GEOGRAPHICAL PATTERNS OF CANCERS IN SLOVAKIA

I. Plesko, Slovak Akademie Ved, Inst. of Experimental Oncology, Dept. of Epidemiology, *Ul. Csl. Armady 21, Bratislava 88032, Czechoslovakia*

Geographical variations of cancer mortality and morbidity within Slovakia - the eastern part of Czechoslavakia - are being examined. Two five year periods 1968-1972 and 1973-1977 will be compared. The relation to the age, sex, rural, urban and/or industrial areas will be studied. The objective of this investigation will be to collect the basic data for the start of a population-based cancer registry, to evaluate the validity of cancer notification and to establish current geographical patterns of cancer mortality and morbidity as a basis for further analytical studies.

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3.1481,

GEOCHEMICAL ENVIRONMENT AND OCCURRENCE OF MALIGNANT TUMORS IN SELECTED DISTRICTS OF CZECHOSLOVAKIA

V. Jilek, Inst. of Mineral Raw Materials, Dept. of Technology, *Vitezna 425, Kutna Hora 28403, Czechoslovakia*

The chemical composition and radioactivity of drinking waters in selected districts of Czechoslovakia are being studied in relation to the observed differences in the occurrence of malignant tumors. Maps will be made using the data obtained, the amounts of chemical elements ingested by the population calculated and the relation between the geochemical environment and mortality from malignant tumors evaluated statistically. The levels of some trace elements in selected organs of the human body (necropsy material) will be determined by neutron activation analysis and atomic absorption spectrophotometry.

Description provided by IARC and DKFZ with ICRDB/NCI support.
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3.1482,

INCIDENCE OF CANCER AMONG SELECTED GROUPS IN DENMARK

J. Clemmesen, Finseninstitutet, Danish Cancer Registry, *Strandboulevarden 49, DK2100 Copenhagen, Denmark*

A series of studies of cancer risk in selected groups and occupations is being undertaken. These will include the distribution of cancer among hairdressers, and risk of thyroid cancer among patients with thyroid struma, the geographical distribution of leukaemia and Hodgkin's disease in Denmark and a case-control study of cancer of the bladder.

Description provided by IARC and DKFZ with ICRDB/NCI support.
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.1483,

TITRE TO EPSTEIN BARR VIRUS, C-TYPE VIRUS RUBELLA AND INFLUENZA VIRUS IN UNTREATED HODGKIN'S PATIENTS AND CONTROLS

J. Hesse, Inst. of Medical Microbiology, *30 Julianemariesvej, DK2100 Copenhagen, Denmark*

Having found that untreated patients with Hodgkin's disease in Denmark show elevated titres not only against Epstein-Barr virus but also against herpes simplex virus (Hesse et al., 1977 Int. J. Cancer 19:49) but not against adenovirus, it is proposed to determine if this abnormal reactivity to virus also exists against other virus groups. Age- and sex-matched controls are chosen randomly from the population of a specified area of Copenhagen and from randomly selected healthy blood donors from a small town (and surrounding rural areas) in Jutland.

Description provided by IARC and DKFZ with ICRDB/NCI support.
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3.1484,

MALIGNANT POTENTIAL OF ORAL LICHEN PLANUS

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The objective of this study is to obtain information on the potential for malignant transformation of oral lichen planus lesions over a 15-year period. Seven hundred (700) patients with histologically verified oral lichen planus are being followed. The patients are asked about past and present oral symptoms and smoking habits. The location and type of oral lichen planus lesions are registered and photographed. After the first examination the patients are seen once a year, except those with epithelial dysplasias who are seen every three months. At the follow-up examinations all changes in the lesions are recorded, photographed and, if necessary, biopsied. So far, five patients have been found with a simultaneous occurrence of lichen planus and erythroplakia. The influence of smoking on the lesions will be studied.

Description provided by IARC and DKFZ with ICRDB/NCI support.
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3.1485,

CANCER INCIDENCE AMONG 10,000 NEW MEMBERS OF THE CARPENTERS AND CABINET MAKERS' TRADE UNION

J. Olsen, Odense Universitet, Inst. of Hygiene & Social Medicine, Dept. of Social Medicine, *Winslowsvej 17, 5000 Odense, Denmark*

The purpose of this cohort study is to study cancer incidence and all causes of death in 10,000 new Union members and the association between occupational exposures and mortality. Data on cancer morbidity in the members of this cohort will be obtained from the Danish Cancer Register.

Description provided by IARC and DKFZ with ICRDB/NCI support.
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3.1486,

CANCER OF STOMACH AND RECTUM IN EGYPT AND SOME OTHER ARAB COUNTRIES

Y.Z. Mohran, Ain Shams University, Faculty of Medicine, Gastroenterology Unit, *Abbassia St., Cairo, Egypt*

Cancers of the stomach and rectum, common in other parts of the world, seems to be rather uncommon in Egypt and other Arab countries, an observation based on hospital statistics. A surprisingly high frequency of rectal cancer in younger age groups has already been uncovered which seems unrelated to previous parasitic infection, dietary or immunological factors. In Ein Shams University and Kings Hospital in Medina, located in Egypt and Saudia Arabia respectively, preliminary data are being collected to elucidate effects, if any, of occupation, age, sex, rural or urban origin, geographical distribution, diet or previous parasitic infection on cancer frequency.

Description provided by IARC and DKFZ with ICRDB/NCI support.
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3.1487,

ETIOLOGY AND PROGNOSIS OF PLEURAL CALCIFICATION

T.J. Partanen, Inst. of Occupational Health, Dept. of Epidemiology & Biometry, *Haartmaninkatu 1, SF00290 Helsinki 29, Finland*

This project concerns the asbestos-related aetiology of pleural calcification and, from the view point of cancer, the prognosis of these calcifications. The study of prognosis has been directed mainly towards mortality from neoplasms in a cohort of 608 persons with pleural calcification and 608 persons without such calcification at the start of follow-up. The cohorts were formed in 1972 in connection with compulsory chest radiography of the populations of three communities: one with an anthophyllite mine and mill, the other with an asbestos cement plant and a third 'average' urban community. Persons working in these two plants have been identified. The cohorts were matched by age and sex and were between 20 and 74 years of age at that time. By the end of 1976, 18 deaths were observed from neoplasms in the calcification group, 14 in the reference cohort. For malignate neoplasms of the respiratory tract, the figures were 10 and 6, respectively, and, for the neoplasms of the lymphatic and haematopoietic system, 3 and 0. Follow-up will be extended at least until 1983.

Description provided by IARC and DKFZ with ICRDB/NCI support.
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3.1488,

EPIDEMIOLOGICAL STUDIES OF CANCER IN TWINS

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The study of twins can illuminate the relative role of different environmental factors in cancer etiology. The Finnish Twin Registry contains data on some 34,500 adult twins of the same sex. Zygosity was determined by questionnaire in 1975. Record linkage with the Finnish Cancer Registry for cancer incident prior to 1977 has been carried out. Since data on zygosity for many of the cases in this retrospective study were not available, cancer incidence in twins and risk of cancer among co-twins of cancer cases was compared for twins vs. non-twins using 7,332 singletons as controls. The study will be continued for several years until sufficient cases with data on

zygosity are available, as well as for study of specific sites.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.1489,

A STUDY ON GASTRIC POLYPS

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All cases with polyp-like lesions diagnosed by gastroscopy at the Gastroenterological Dept. of II. Medical Clinic, University of Helsinki, from 1970 onwards are included, reexamined and polypectomized as far as possible. The aim is to ascertain the risk of development of cancer in the polyp and in the surrounding mucosa. The morphological state of the gastric mucosa and the dynamics of gastritis often seen together with gastric polyps will be ascertained by taking multiple biopsies. The secretory state of the polypous stomach measured with serum gastrin and pepsinogen I levels will be investigated. The accuracy of cytological and biopsy specimens will be compared with the histological findings on polypectomy.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.1490,

COMMUNITY EXPOSURES TO VINYL CHLORIDE MONOMER

R. Saracci, Centre International de Recherche sur le Cancer, Unit of Epidemiology & Biostatistics, *150 Cours Albert Thomas, 69372 Lyon Cedex 2, France*

A study is being undertaken of current (cross-sectional) mortality for the years 1947-1978 in the resident population of a town of 28,800 (1971) in which a large chemical factory is located. This factory has produced, among a variety of other chemicals, vinyl chloride monomer (VC) since about 1953 and discharge into the air occurs. Death certificates of residents are collected and coded (ICD-8) and a time trend analysis, by sex, age and cause of death, is being made in comparison with the corresponding time trends for the country as a whole. In addition time trends of proportional mortality by age, sex, cause of death and residential history within the town are computed. The study will be concluded, the analysis finished and paper prepared during 1980.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.1491,

RISK OF PRIMARY LUNG CANCER AMONG IRON MINERS

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The purpose of this study is to determine whether working in iron mines involves an increased risk of primary lung cancer. A retrospective mortality survey will be carried out in Lorraine on 2,000 miners for whom data from periodic medical examinations are available for a period of 20 years. The adjusted absolute and relative incidence rates for primary lung cancer among miners and surface workers will be compared.

Description provided by IARC and DKFZ with ICRDB/NCI support.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.1492,

EVALUATION OF EARLY DETECTION OF CANCER OF THE CERVIX UTERI BY CYTOLOGICAL SCREENING

D. Neuser, Staedtisches Krankenhaus im Friedrichsham, Zytodiagnostisches Zentrallabor, *Leninalle 49, 1017 Berlin, German Democratic Republic*

Between 1955 and 1969 the situation with respect to cervix carcinoma in Berlin hardly changed; morbidity, mortality, stage distribution and 5-year survival rates remained much the same. It is proposed to test whether cytological screening can lower morbidity and mortality. For this purpose, all women aged 20 to 65 living in Berlin will be cytologically examined every two years. Using the National Central Cancer Registry, the relationship of carcinoma in situ to invasive carcinoma and the stage distribution of the invasive cervix carcinomas and morbidity and mortality before, during, and after screening will be investigated. The first four years were characterized by a considerable increase in carcinomas in situ and a shifting of stages in favor of stages Ia and Ib, with coverage of 80% of the target population. In 1978 a significant decrease in carcinoma in situ (38%) and in invasive cervical cancer (30%) was observed for the first time in the whole female population.

Description provided by IARC and DKFZ with ICRDB/NCI support.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.1493,

HORMONAL CONTRACEPTION AS A FACTOR IN GYNECOLOGICAL CANCER

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Prolonged intake of hormonal contraceptives as a possible cause of increased risk for a gynecological cancer has been discussed many times. Several studies contradict this relationship. Using data from patients with colon, corpus uteri and ovarian carcinoma, this problem is again being analyzed for the period 1978-85. All female patients with carcinomas of these sites are being questioned about the period and the time they have taken contraceptives. Using controls, the frequency of intake of hormonal contraceptives in the total female population of this region will be deduced.

Description provided by IARC and DKFZ with ICRDB/NCI support.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.1494,

ROLE OF OPIUM PRODUCTS IN THE ETIOLOGY OF ESOPHAGEAL CANCER IN NORTHERN IRAN

N.E. Day, Centre International de Recherche sur le Cancer, Unit of Epidemiology & Biostatistics, *150 Cours Albert Thomas, 69372 Lyon Cedex 2, France*

Opium dross is widely consumed in the area of high esophageal cancer incidence in northern Iran. It has been shown to be mutagenic in the Ames test. A series of studies is under way to identify the components in the dross.

Description provided by IARC and DKFZ with ICRDB/NCI support.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.1495,

INTERNATIONAL HISTORICAL PROSPECTIVE STUDY OF HEALTH EFFECTS OF MAN-MADE MINERAL FIBRES IN THE PRODUCER INDUSTRY

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The objective of the study is to determine the mortality experience and, whenever possible, the cancer incidence of workers in the man-made mineral fibre (MMMF) production industry. Starting in 1976, factories belonging to the European groups of MMMF manufacturers (CIRFS-EURIMA) were individually visited to identify plants suitable for a historical prospective study, according to the following criteria: (1) No loss or destruction of personnal records; (2) MMMF production process in operation for at least twenty years; (3) some method of mortality/morbidity follow-up available; (4) nominal fibre-size of some fibres less than five microns. On this basis 13 plants, located in seven countries, were selected for study and data collection at these plants, in which workers exposed to MMMF total approximately 4,500, is starting in 1978. Environmental measurements of airborne MMMF concentrations are being carried out in parallel by a team from the Institute of Occupational Medicine, Edinburgh, U.K. Follow-up of the workers will be the responsibility of national collaborating institutions, and comparisons are to be made between groups of workers with various levels of exposure and between worker populations and general (national or regional) populations. All data will be finally submitted to a central, common analysis.

Description provided by IARC and DKFZ with ICRDB/NCI support.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.1496,

EPIDEMIOLOGY OF SKIN CANCER INCLUDING MALIGNANT MELANOMA IN TWO FIVE-YEAR PERIODS

H.D. Jung, Kreiskrankenhaus Kreispoliklinik, Hautabteilung, *M. Ostrowskistrasse 69, 209 Templin, German Democratic Republic*

On the basis of the legally required registration of malignant tumors of the skin in the German Democratic Republic, two five-year periods are being examined and the incidence compared. The success of therapy will be evaluated.

Description provided by IARC and DKFZ with ICRDB/NCI support.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.1497,

CASE-CONTROL STUDY - RELATION BETWEEN CANCER OF THE ENDOMETRIUM AND ESTROGEN INTAKE

H.P. Kewitz, Freie Universitat Berlin, Inst. fuer Klinische Pharmakologie, *Hindenburgdamm 30, D1000 Berlin 45, Federal Republic of Germany*

Previous epidemiological retrospective studies have shown that there is some evidence of a positive correlation between estrogen intake and endometrial cancer. Patients with endometrial cancer are interviewed, their habits of drug intake determined and compared with two control groups.

Description provided by IARC and DKFZ with ICRDB/NCI support.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.1498,

CASE-CONTROL STUDY - RELATION BETWEEN BREAST CANCER AND RESERPINE INTAKE

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Previous epidemiological retrospective studies established conflicting results about association between reserpine treatment and development of breast cancer.

In this country, where reserpine is the leading drug used in the treatment of arterial hypertension, this question deserved special attention.

We studied 512 cases with breast cancer, including all newly diagnosed women admitted at 17 hospitals in Berlin between 1975 and 1977. Controls matched for hospital and age were allocated to two groups: a) women with benign breast disease (n equals 878), and b) women admitted for surgery excluding breast or gall-bladder disease (n equals 392). Patients were interviewed for their medication histories with all participants ignorant about the final histopathological result at that moment. Information about medication was confirmed by written statements of the patients' physicians.

First results have been published - Europ. J. Clin. Pharmacol. 11, 79-83 (1977) and Naunyn-Schmiedeberg's Archives of Pharmacol. 308 supplement, R8 (1979) - and revealed no support to the hypothesis of association between reserpine treatment and breast cancer.

Final results, including stratification according to various known risk factors for breast cancer, histopathological classes, and duration of treatment will be published by this year.

Description provided by IARC and DKFZ with ICRDB/NCI support.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.1499,

FREQUENCY OF BRONCHIAL CARCINOMA IN RURAL AND AIR-POLLUTED AREAS

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In the last five years all cases of deaths in Bochum, Brilon and Meschede have been investigated. All relatives of persons who died from bronchial carcinoma, liver cirrhosis and apoplexy were visited by a team of investigators and questioned about occupational exposures, main residence and smoking habits of the deceased. Data collection has been completed and statistical analyses are now being carried out.

Description provided by IARC and DKFZ with ICRDB/NCI support.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.1500,

DISCRIMINATION OF OCCUPATIONAL AND NON-OCCUPATIONAL MESOTHELIOMAS INCLUDING ANALYSIS OF DUST PARTICLES AND ASBESTOS IN LUNG (ABBREV)

H. Otto, Pathologisches Institut der Staedtischen Kliniken, *Beurhausstr. 40, 4600 Dortmund, Federal Republic of Germany*

At the Institute of Pathology of the Clinic at Dortmund, the Hauptverband der Gewerblichen Berufsgenossenschaften has opened a central register for all cases of mesothelioma. The Berufsgenossenschaft will request lung material for analysis from the surgeons and pathologists.

Description provided by IARC and DKFZ with ICRDB/NCI support.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.1501,

STUDY OF OCCUPATIONAL CANCERS

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The aims of this study are: (1) to survey manual workers and other staff employed in chemical and related industries for cancer and (2) to analyze possible aetiological associations between different cancer sites and occupational chemical exposures. In this retrospective study of the years 1950-1968 all ill and/or deceased employees (active or retired) of 10 large firms have been included and for the same time period all other deaths from one of those firms also have been collected. Information has been collected on sex, cause of death, occupation, substance to which exposed and for the cases of cancer: type of neoplasm, age at time of diagnosis and method of diagnosis. For the statistical analysis a multivariate model is being used. In February 1979 a detailed description of the study (more than 400 pages) was presented; it should be discussed in several expert groups in April and in autumn 1979. The study will be published in 1980 in a research report of the DFG.

Description provided by IARC and DKFZ with ICRDB/NCI support.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.1502,

INVESTIGATIONS OF THE INCIDENCE OF MALIGNANT BONE TUMORS IN VARIOUS REGIONS OF SAARLAND

O.M. Schmitt, Orthopaedische Universitaetklinik, *6650 Hamburg, Federal Republic of Germany*

In a prospective study the primary malignant bone tumors are registered, to see if there are any differences between the incidence rate of these tumors and those observed from 1965-1975. In the retrospective study malignant bone tumors were shown to occur more frequently in the overcrowded areas of the region where iron smelters are located than elsewhere. The influence of measures to prevent environmental pollution by the industrial works on the incidence of malignant bone tumors is now to be investigated during the prospective study.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.1503,

EPIDEMIOLOGICAL FACTORS IN URINARY BLADDER CANCER

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Information is being collected from patients with urinary bladder cancer on occupational exposure to carcinogenic factors, eating habits with particular reference to saccharin and cyclamate, tobacco and alcohol consumption, drug abuse and metabolic disorders.

Description provided by IARC and DKFZ with ICRDB/NCI support.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.1504,

CAUSE OF BRONCHIAL CARCINOMA

F. Schmidt, Ruprecht Karl Universitat Heidelberg, Klinische Fakultaet, Forschungsstelle fuer Praeventive Onkologie, *Maybachstrasse 14, 6800 Mannheim, Federal Republic of Germany*

For this investigation into the influence of filter cigarettes on bronchial carcinoma rates and the causes of bronchial carcinomas among non-smokers, the characteristics of all bronchial carcinoma cases in 1966-1976 diagnosed in the Mannheim-Heidelberg-Ludwigshafen area will be analyzed using information obtained from questionnaires completed by dependents. The response rate has hitherto been about 50 percent. The proportion of cigarette smokers (cigarettes with and without filters) among patients is compared with the percentage of cigarettes smoked by the general population.

Description provided by IARC and DKFZ with ICRDB/NCI support.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.1505,

BURKITT'S TUMOR PROJECT

R.J. Biggar, U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, Viral Oncology Section, *Accra* (D-IARC-78-220)

For more than one decade many aspects of research into Burkitt's lymphoma have been studied at this center. Tumor specimens are provided to reseach groups and a serum bank on all patients throughout their illness is maintained. Epidemiological studies have included geographical variation and a longitudinal follow-up of the natural history of Epstein-Barr virus infections. Current studies include HLA typing of patients and controls to determine if there are groups at greater risk of developing this neoplasm as has been reported for nasopharyngeal cancer.

Description provided by IARC and DKFZ with ICRDB/NCI support.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.1506,

RELATION BETWEEN MEAT-CURING BY SMOKE AND FREQUENCY OF STOMACH CANCER

G. Hajdu, (No Performing Organization Reported), *Hungary*

In this area (Wend) it is traditional to smoke pork with freshly cut soft woods (alder, together with the fruit of the juniper bush). In such meat the amount of 3,4-benzpyrene is six times higher than in factory-smoked samples and other cocarcinogens have been found in these products. The farmers of Wend eat three to four times more of this meat than the average Hungarian, as do the Wends living in Solvenia near the Hungarian border. The frequency of stomach cancer has hitherto been twice as high among the population of Wend as among other groups living around this area. An educational campaign is expected to lead to a decrease in the frequency of this cancer in Wend.

Description provided by IARC and DKFZ with ICRDB/NCI support.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.1507,

CASE-CONTROL STUDY OF BREAST CANCER

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The aim of the investigation is to re-examine the high risk factors for breast cancer already established in the author's material. In two southern counties of Hungary, 511 breast cancer patients, both urban and rural, were re-investigated using a computer adapted questionnaire. Replies in the study were compared with those of an age-matched control group containing 942 women from the same geographical area without breast disease by using mathematical-statistical analysis (p equals 0.0; x2 equals 10.8). Significant risk factors were found to be almost the same as formerly: higher educational level (secondary school or more), blood relatives (mother and/or sister) suffering from breast cancer, nulliparae, first pregnancy after the age of 30, no suckling, some previous diseases such as struma, ovarian disorders and breast operation. A further study aims to determine the use of these factors for possible selection of a high risk group for breast cancer screening. 684 breast cancer patients and 15,571 screenees have been investigated. 81% of the cancer patients and 43% of the screened women were found to have one or more of the risk factors.

Description provided by IARC and DKFZ with ICRDB/NCI support.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.1508,

EPIDEMIOLOGY OF CHILDHOOD TUMORS

P.M. Shah, Gujarat Cancer & Research Inst., Chemotherapy & Medical Unit, *New Civil Hosp. Campus Asarwa, Ahmedabad 380016, Gujarat, India*

The aim of this study is to determine the pattern of childhood cancer in Gujarat State. With the effective control of infectious diseases in childhood, malignant disorders in childhood have become an important cause of mortality in pediatric practice. About 150 new cases of pediatric tumors are registered every year at the Gujarat Cancer Research Institute.

Description provided by IARC and DKFZ with ICRDB/NCI support.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.1509,

EPIDEMIOLOGY OF LEUKEMIAS AND MALIGNANT LYMPHOMAS IN GUJARAT

P.M. Shah, Gujarat Cancer & Research Inst., Chemotherapy & Medical Unit, *New Civil Hosp. Campus Asarwa, Ahmedabad 380016, Gujarat, India*

There are very few epidemiological studies of leukemias and lymphomas available from India. The aim of this study is to evaluate the profile of these disorders in Gujarat State. 35 percent of Hodgkin's disease patients are in the pediatric age group and acute myeloid leukemia is common, whereas chronic lymphatic leukaemia is very rare. 900 cases had been collected by December 1978 and case collection continues.

Description provided by IARC and DKFZ with ICRDB/NCI support.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.1510,

EPIDEMIOLOGICAL CUM-PREVALENCE STUDY OF CARCINOMA OF THE CERVIX IN URBAN, RURAL AND TRIBAL AREAS IN THE INDIAN POPULATION

C.A. Shah, Gujarat Cancer & Research Inst., Dept. of Gynecology, *New Civil Hosp. Campus Asarwa, Ahmedabad 380016, Gujarat, India*

Carcinoma of the cervix uteri is the most common cancer in Indian women. Through several studies in other parts of the world, the relationship of this cancer with low socioeconomic group, early onset of sexual activity and child bearing is well known. These factors are now being studied in a prospective study in urban, rural and tribal areas in the state of Gujarat, India. The clinical examination includes cytological smears and histological confirmation of suspected cancer. In the first part of the study some 30,000 women have been studied.

Description provided by IARC and DKFZ with ICRDB/NCI support.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.1511,

AN INTERVENTION STUDY OF ORAL CANCER AND PRECANCEROUS LESIONS IN RELATION TO TOBACCO USE IN RURAL INDIAN POPULATIONS

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Through follow-up studies for the last ten years it has been established that tobacco usage in the various forms practiced in different parts of India is definitely associated with oral cancer and precancerous lesions. The incidence of precancerous lesions among those who do not practice tobacco habits of any kind was almost zero, whereas incidence among those with such habits ranged from 1 to 35 per 1,000 per year, depending upon the habit. The next step is to find out whether the association between oral cancer and precancerous lesions and tobacco habits is direct by demonstrating a reduction in the incidence of precancerous lesions when the tobacco habits are discontinued. A sample of 12,000 individuals with tobacco habits has been examined and interviewed in each of the three rural areas under

study. In order to persuade these villagers to give up their tobacco habits, they are being exposed to a concentrated program of education, motivation and guidance. The villagers are being shown a documentary film, especially made for this purpose, in the vicinity of their homes, in the most suitable format formulated after conducting impact studies of the film in each of the three areas. The message is also communicated personally to each of the examined individuals by trained social scientists. In addition, the population is being subjected to visual, audio and other media support in the form of newspaper articles, posters and radio broadcasts. These individuals are being reexamined annually to assess changes in tobacco habits, development of new oral precancerous lesions and changes in previously diagnosed lesions. The first annual reexamination is complete and the second one in progress.

Description provided by IARC and DKFZ with ICRDB/NCI support.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.1512,

MODIFYING EFFECT OF DIET ON UPPER ALIMENTARY TRACT CANCER IN PERSONS WHO CHEW AND SMOKE TOBACCO

P.N. Notani, Tata Memorial Center, *Dr. Ernest Borges Marg, Bombay 400012, Maharashtra, India*

Tobacco chewing and smoking habits carry a high risk for cancers of the upper alimentary tract, yet not all those who chew or smoke heavily contract the disease. This indicates a role for other factors which may have a modifying effect on these risks. Preliminary study of existing records of a Bombay population indicated a reduction in oral cancer risk in persons with tobacco chewing and smoking habits who ate eggs, meat or fish (Ind. J. Cancer, 13: 156-160, 1976). A pilot study was carried out to standardize the methods for collection of dietary information such as the type and quantity of Indian spices, consumption of vegetables, pulse and fat in addition to eggs, meat and fish. Data on habits and diet have been collected on cases and 167 controls during the current year. It is proposed to continue collection of data during 1980 following which the material will be analyzed.

Description provided by IARC and DKFZ with ICRDB/NCI support.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.1513,

EPIDEMIOLOGICAL STUDY OF CARCINOMA OF THE UTERINE CERVIX RELATED TO BATHING HABITS

M.S. Dvivedi, Cancer Hospital, *Indore 452001, Madhya Pradesh, India*

It is an established fact that carcinoma of the uterine cervix is more prevalent in low socioeconomic groups even in developed areas. There is a possibility that low socioeconomic groups do not have proper washing facilities in their dwelling places. It is presumed that women who submerge the pelvis in a bath tub might cleanse the vaginal passages more effectively than those who take a shower. In India it is rare to have a bath tub in the bathroom even in the urban population. The usual method of taking a bath is by a bucket and mug. In the rural areas the source of water is either tanks, rivers or rivulets and either the women bathe at their own house using a bucket and a mug or at these other sources of water. In the present study we are studying habits of patients reporting with carcinoma of the uterine cervix for treatment at this center. We are also studying the bathing habits of the husbands of the patients with particular reference to circumcision, retraction of the prepuce during washing and cleaning smegma. This study has been undertaken with a view to studying the status of genital hygiene of patients with carcinoma of the uterine cervix. The non-circumcised husbands are questioned to determine how often they remove the smegma when taking a bath. The distributional pattern of the patients according to these habits may give some indication of causative factors of this disease.

Description provided by IARC and DKFZ with ICRDB/NCI support.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.1514,

PROSPECTIVE AND RETROSPECTIVE STUDY OF HODGKIN'S DISEASE IN RURAL POPULATION IN EAST JAVA, INDONESIA

K.M. Mertowidjoyo, Universitas Airlangga, Faculty of Medicine, Dept. of Pathology, *Jalan Dharmahusada No. 47, Surabaya, East Java, Indonesia*

Children with Hodgkin's disease in East Java, Indonesia, usually come from rural areas, located near the rice fields (paddy) and from a closed community with a low socioeconomic status. The main objectives of the present study are to identify high risk groups among the population and investigate time-space aggregation of Hodgkin's disease in the population.

Description provided by IARC and DKFZ with ICRDB/NCI support.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.1515,

NATURAL BACKGROUND RADIATION AND CANCER FREQUENCY IN HUMAN POPULATION GROUPS

S.P. Allwright, University of Dublin Trinity College, St. James Hospital, Dept. of Community Health, *James St., Dublin 8, Ireland*

Studies investigating the relationship between natural radiation and cancer have produced varying and inconclusive results. The objective of this study is to determine type specific age standardized cancer death rates in Ireland in relation to defined areas of high and low background radiation. Regions of probable high and low radiation have been selected on the basis of existing geological data. Radiation levels both indoor and outdoor, in these areas will be monitored. The unit area for radiation monitoring will be ten sq km, based on the National Reference Grid. Cancer mortality in the regions where radiation has been measured will be determined, also based on the ten sq km unit of area.

Description provided by IARC and DKFZ with ICRDB/NCI support.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.1516,

GEOGRAPHICAL DISTRIBUTION OF CANCER MORTALITY IN IRELAND

J.P. Kevany, University of Dublin Trinity College, Dept. of Social Medicine, *Dublin, Ireland*

To determine the spatial distribution of cancer mortality in the population 35 years of age and older and to correlate cancer mortality with natural and man-made environmental variables, standardized mortality rates for each sex and for major cancer categories are computed annually on a continuous basis. Five-year mean frequencies are calculated for each county and subsequently for electoral divisions and for topographical grid units of ten sq.km. Geochemical, soil and water data will be compared with cancer frequencies on the basis of correlation and regression analysis.

Description provided by IARC and DKFZ with ICRDB/NCI support.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.1517,

CASE-CONTROL STUDY OF SQUAMOUS CARCINOMA OF THE CERVIX UTERI

M. Moriarty, St. Lukes Hospital, Radiotherapy & Clinical Oncology Centre, *Highfield Rd., Rathgar, Dublin 6, Ireland*

This case-control study will include 100 patients with invasive cervical cancer, 100 with carcinoma in situ and 100 age-matched controls. Questions will be asked about age, parity, socioeconomic group, marital status, age at first coitus, number of coital partners, age at first pregnancy, etc. The diagnosis of carcinoma in situ will be based on a combination of cytology, colposcopy and histology. A histological diagnosis of severe dysplasia will be considered equivalent to carcinoma in situ. Control subjects will have normal cytology and/or colposcopy.

Description provided by IARC and DKFZ with ICRDB/NCI support.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.1518,

CLUSTERS OF CANCER IN FAMILIES

M. Ben Hur, Israel Center for Registration of Cancer & Allied Diseases, *18 20 King David St., Jerusalem 91000, Israel*

Approximately 3,400 members belonging to 1,500 families have been identified in the Israel Cancer Registry. Correlations between selected cancer sites will be investigated, taking into consideration family relationships (spouses, siblings, offspring, etc.) and age at time of diagnosis. The observed data will be compared with those to be expected for the total population using the files of the Israel Cancer Registry.

Description provided by IARC and DKFZ with ICRDB/NCI support.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.1519,

EPIDEMIOLOGY OF MESOTHELIOMA IN ISRAEL (1973-80)

C. Lemesch, Ministry of Labour, Div. of Labour Inspection, *P.O. Box 915, Jerusalem, Israel*

In this study the occurrence of mesothelioma in Israel is being monitored. During the period 1960-72, only one mesothelioma was noted to have a definite occupational history of exposure to asbestos (Environ. Res. 12: 255-261, 1976) but, considering that the asbestos industry in Israel was established only in the early 1950s and that mesothelioma of occupational origin has been shown to have a relatively long latent period of about 20 years or more, it is possible that more cases of clear occupational origin will appear in the near future.

Description provided by IARC and DKFZ with ICRDB/NCI support.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.1520,

BREAST CANCER IN ISRAELI FEMALES OF EASTERN ORIGIN

B. Bertini, Health Inst., Epidemiological & Cytological Research Unit, *P.O. Box 16320, Tel Aviv, Israel*

The aim of the proposed investigation is to: (1) Survey the difference in the incidence of breast cancer in seven to ten thousand Israeli women of Oriental communities from five regions of origin: North Africa, Kurdistan, Cochin, Iraq and Yemen. The risk in Yemenites is known to be particularly low. (2) As regards women of each community, determine differences between the immigrant generation and their Israeli-born offspring. (3) Examine the relationship between the different demographic, geographic, cultural, social and economic factors and cancer of the breast, by generation. Hormonal balance will be assessed by biological and cytological methods.

Description provided by IARC and DKFZ with ICRDB/NCI support.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.1521,

GEOGRAPHICAL VARIATION OF CANCER INCIDENCE

N. Tanaka, Chiba Cancer Center Research Inst., Dept. of Epidemiology, *666-2, Nitona-Cho, Chiba 280, Chiba, Japan*

It has been demonstrated that the geographical variation of site specific cancer death rates in cities and districts in Chiba Prefecture is primarily ascribable to urban-rural differences. In order to investigate the causes of such differentiation in cancer incidence, the geographical distribution is now being studied by classifying especially the urbanized areas into much smaller districts.

Description provided by IARC and DKFZ with ICRDB/NCI support.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.1522,

HOST-ENVIRONMENT INTERACTION IN HUMAN CARCINOGENESIS

N. Tanaka, Chiba Cancer Center Research Inst., Dept. of Epidemiology, *666-2, Nitona-Cho, Chiba 280, Chiba, Japan*

Data collection for the study of interactions between familial history of cancer and occupation continues and will take several more years to complete. Familiality of cancer is now also being studied using par-

ticipants in cervix cancer mass screening to acquire information on the extent and mode of familial cancer in the general population.

Description provided by IARC and DKFZ with ICRDB/NCI support.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.1523,

CASE-CONTROL STUDY OF CANCER OF THE URINARY TRACT IN THE PROVINCE OF TORINO, ITALY

B. Terracini, Universita degli Studi di Torino, Istituto di Anatomia e Istologia Patologica, *Via Santena 7, I10126 Turin, Italy*

A case-control study on cancer of the urinary tract in male residents in the Province of Torino started late in 1977. Cases are collection in three of the eight urological wards in hospitals (or University departments) of the Province of Torino. Each case is sex- and age-matched with a control, hospitalized in the same urological wards. All cases of cancer, cystitis and hematuria of unknown origin are excluded as controls. Information is collection on smoking experiences, coffee consumption, use of analgesics and artificial sweeteners and occupational history throughout life. Up to December 1979, 191 cases and 175 controls had been interviewed. Preliminary results on 75 pairs have been published (Epidemiologiae Prevenzione, 1979). Further analysis will be carried out when 200 pairs have been collected.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.1524,

EPIDEMIOLOGICAL DATA COLLECTION ON STOMACH CANCER AND ITS PRECURSORS

M. Crespi, Istituto Regina Elena per lo Studio e la Cura dei Tumori, Cancer Detection Center, *Viale Regina Elena 291, 00161 Rome, Italy*

Stomach cancer cases will be collected prospectively in the centers involved in the project for the next three years. A detailed inquiry on dietary habits, socio-economic status and occupational environment will be performed on each case and in individuals with predisposing conditions and in a control group, both matched for sex and age. The centers involved represent areas with different mortality rates for stomach cancer. New diagnostic techniques for the detection of cancer in early stages and for known predisposing conditions will be tested during this study and a new approach for a network aimed at the collection of high risk individuals, based on cooperation between doctors involved in primary medical care and the reference centers, will be implemented.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.1525,

MORTALITY, INCIDENCE AND PREVALENCE AS INDICATORS OF THE MAGNITUDE OF THE CANCER PROBLEM WITHIN AN ITALIAN REGION

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Within the Marche region, located in Central Italy, as within most of the country, there is heterogeneity as far as demographic, socio-economic and environmental characteristics are concerned. Taking into account these considerations, the geography of Marche and the findings of a previous study, an investigation will be carried out for the period 1971 to 1981 into the distribution of mortality, incidence and prevalence by individual tumor sites in the coastal, hill and mountain zones of this region which can be respectively considered urban, semi-urban and rural. The three zones may represent an ideal compromise between the need for units small enough to be homogenous for demographic and environmental characteristics that might influence cancer risk and yet large enough to provide stable estimates. Mortality, incidence and prevalence data are abstracted from death certificates from the 246 municipalities of the Marche region and from the clinical record cards available in the 90 hospitals of the same region.

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SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.1526,

CANCER MORTALITY AMONG ATOMIC BOMB SURVIVORS IN HIROSHIMA PREFECTURE

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The atomic bomb survivors in Hiroshima Prefecture were estimated in 1975 to be nearly 180,000. Using the data bank containing information about the survivors in our institute, a survey on cancer mortality among the survivors from 1965 onwards is being conducted. This includes comparison with mortality in the general population of all Japan and in the non-exposed population of Hiroshima Prefecture. The mortality statistics for 1968, 1969 and 1970 will be obtained in 1979.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.1527,

MORTALITY STUDY OF STEEL WORKERS

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Excesses of respiratory cancer among coke oven workers are considered to be related to the exposure to coal tar effluents. To study whether there are any other carcinogenic risk factors in the environment of iron and steel producing plants, about 300,000 steel workers who had worked for at least 1 year at the beginning of 1973 in one of 127 plants in Japan were registered as members of the study cohort. Ascertainment of deaths will be obtained from the family registry system in Japan and death certificate information will be collected from the District Legal Affairs Bureau. In a preliminary stage, the cohort will be followed up retrospectively to the end of 1976, but follow-up thereafter will be continued.

Description provided by IARC and DKFZ with ICRDB/NCI support.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.1528,

PROSPECTIVE STUDY ON LUNG CANCER IN CHROMIUM PLATING WORKERS

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In a retrospective study (Keio J. Med.) on chromium platers, the authors did not find an increased risk of lung cancer or of cancers of other sites. In order to confirm this finding, a prospective study on the same population is being peformed, which will require at least five years of observation.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.1529,

STUDY OF NUTRITION, STEROID METABOLISM AND THE INCIDENCE OF FEMALE CANCER

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In various ethnic groups the risk of developing breast cancer is often inversely related to that for cervical cancer. The hormonal environment of the host may somehow be implicated in the induction of these cancers. The relation between the nutritional level, steroid metabolism and the incidence of cervical and breast cancers will be investigated among the inhabitants of urban and rural districts of Japan. The characteristics of patients with such neoplasms will be compared with those of populations with differing cancer risks. The steroid metabolism of each subject will be assessed by estimating the excretions of 14 neutral steroids with 24 hr. urine. Initial results have been published in the Journal of the National Cancer Institute (54:1023-1029, 1975; 54:1275-1282, 1975; 54:41-47, 1977 and 59:49-54, 1977, and 61:35-39, 1978).

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.1530,

EPIDEMIOLOGICAL STUDY OF BLADDER CANCER

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In Japan, the age-adjusted mortality rate for bladder cancer has levelled off in males and there is a possible downward trend for females over the last two decades. These trends were observed despite the recent remarkable increases in potentially hazardous environmental agents. In addition, the proportion of bladder cancer and kidney cancer deaths has been constant, 7:3, over these 20 years. These findings are very suggestive of the aetiological importance of host factors in bladder cancer production. Host factors and several environmental factors are now being investigated accordingly in Metropolitan Nagoya by a case-control study. Along with this investigation, familial cases are compared with non-familial cases in respect to tryptophan metabolism, HL-A types and others. Geographic clusters of bladder cancer deaths by city and county have been tested by a newly developed significance test, based on a Monte Carlo method. The test revealed no significant clusters of either high or low bladder cancer mortality in Japan from 1969-1971.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.1531,

MALIGNANT NEOPLASMS OF THE GALLBLADDER AND BILE DUCTS IN JAPAN

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This study aims to describe geographical distribution and time trends of malignant neoplasms of the gallbladder and bile ducts in Japan and to discover etiological factors by relating various environmental factors and other related diseases to mortality from biliary tract cancer. Analysis comparing mortality rates from malignant neoplasms of the gallbladder and bile ducts and food intake by prefecture suggests that dried noodles, pork and fish might be associated with this cancer. Relationships between biliary tract cancer and gallstones and other biliary tract diseases are now under investigation using autopsy materials.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.1532,

CANCER INCIDENCE IN OKAYAMA PREFECTURE

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In 1952 the Health Dept., Okayama Prefectural government, began to study the incidence rates of cancer in cooperation with the Okayama Prefectural Medical Association. Since then, the situation has been investigated periodically and in 1977 the sixth survey was started. The objective is to ask all the medical facilities in Okayama Prefecture for the numbers of patients treated for malignant neoplasms in the year.

Description provided by IARC and DKFZ with ICRDB/NCI support.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.1533,

ESTIMATION OF CANCER INCIDENCE IN ALL JAPAN

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In order to obtain comparable cancer data in various areas of Japan and to estimate cancer incidence in all Japan, a co-operative cancer incidence survey has been conducted five times since 1973 with the participation of all active cancer registries in Japan. In 1978, twelve prefecture-wide and two city-wide registries took part. Each registry prepared the data according to standard methods as far as possible. From these data, age-adjusted incidence rates were computed for each prefecture or city and the cancer incidence for all Japan estimated at the Osaka Cancer Registry. The survey will be conducted yearly.

Description provided by IARC and DKFZ with ICRDB/NCI support.
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3.1534,

SURVIVAL OF CANCER PATIENTS IN OSAKA

A. Hanai, Center for Adult Diseases, Dept. of Field Research, *3-3 Nakamichi 1-Chome, Higashinari-ku, Osaka 537, Japan* (01029)

In Japan, the five-year survival rates of cancer cases for the general population were first ascertained in Osaka. The five-year relative survival rates for cases diagnosed as cancer during 1965-1974 were calculated using registry data linked with a file of all the death certificates for Osaka residents during 1965-1979. In Osaka between 1965-1970 and 1970-1974, survival rates rose, Particularly for stomach, large intestine, breast, uterus, and bladder cancer, malignant lymphoma and leukemia. Differences in survival rates between different districts within Osaka will be analyzed.

Description provided by IARC and DKFZ with ICRDB/NCI support.
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3.1535,

EPIDEMIOLOGICAL STUDY OF THE NATURAL HISTORY OF STOMACH CANCER

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A prospective study is being conducted to estimate the frequency of the development of cancer in persons found to have gastric ulcer, gastric polyp and chronic gastritis. From a follow-up study of the 1,782 patients diagnosed through a screening program as having gastric ulcer, it was shown that there were 30 cancer cases during the follow-up period (average 5.1 years) in contrast with the expected number of 15.5. About half of the 30 cancer cases, however, were diagnosed as cancer within a year of the diagnosis of gastric ulcer and should have been considered as false negative cases. These data suggest that those patients with a diagnosis of gastric ulcer should be regarded as a high risk group, although a hypothesis of the malignant change of gastric ulcer is not supported. A follow-up study of about 10,000 patients on whom endoscopic biopsy tests were conducted at this Center and whose diagnoses were histologically confirmed is now being prepared.

Description provided by IARC and DKFZ with ICRDB/NCI support.
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3.1536,

GEOGRAPHICAL STUDY ON HUMAN CANCERS

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The Japanese material is mainly derived from the Saitama prefecture (5 million population), all histological slides from this reference population being filed in our department. Series from other ethnic groups are being collected to derive population-based incidence rates for each histological type of cancer for other selected sites. Pre-cancerous lesions such as metaplasia of the stomach and bronchus, obtained from autopsy material from various countries, are also included in the study program.

Description provided by IARC and DKFZ with ICRDB/NCI support.
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3.1537,

FREQUENCY OF CANCER OF THE NASOPHARYNX IN YOUNG ARABS IN MOROCCO

J. Bompoint, Centre Anticancereux du Marocco, *c/o Hopital Averroes, Casablanca, Morocco*

Following a study of the role of tobacco in 500 cases of larynx cancer seen at the Cancer Hospital of Casablanca, Morocco, which demonstrated a strong influence of smoking, particularly at an early age (Rev. Laryng. 97: 729-732, 1976), the characteristics of nasopharynx cancer, particularly in young age groups, are being studied.

Description provided by IARC and DKFZ with ICRDB/NCI support.
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3.1538,

ETIOLOGICAL FACTORS OF HEPATOCELLULAR CARCINOMA IN CHINESE AND ABORIGINES OF WEST MALAYSIA

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Liver cancer is one of the most common malignancies in Malaysia occurring frequently among the Chinese and Orang Asli (aborigines). Necropsy and liver biopsy specimens showing hepatocellular carcinoma are examined by orcein, immunoperoxidase and immunofluorescence for the presence of HBA. Patients with liver cancer are examined for HBsAg. Each Orang Asli patient admitted to the Gombak Orang Asli Hospital is accompanied by other members of his family. The blood of these persons, who constitute a control group, is examined. Chronic liver disease associated with the hepatitis B antigen seems to be an important factor in the etiology of liver cancer in the Orang Asli. It is proposed to examine the food eaten by the Orang Asli for aflatoxin.

Description provided by IARC and DKFZ with ICRDB/NCI support.
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3.1539,

SEASONAL INFLUENCE ON HEMATOLOGICAL MALIGNANCIES

J.W. Logan, Wellington Hospital, Dept. of Radiotherapy & Oncology, *Wellington, New Zealand*

This study is an extension of a previous survey of death rates by month of year and month of onset with a view to assessing relationship of hematological malignancies, i.e. leukemia, myeloma and malignant lymphoma, to seasons if any exists. The study will cover all of New Zealand.

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3.1540,

CANCER IN MAORIS FROM PREHISTORIC TO PRESENT ERA

J.W. Logan, Wellington Hospital, Dept. of Radiotherapy & Oncology, *Wellington, New Zealand* (D-IARC-79-431)

This study comprises (1) a survey of available literature, which is mainly anecdotal, before the end of 19th century, (2) correlation of findings with data about cancer in other primitive people before contact with the 'outside world', (3) examination of skeletons and (4) comparison of European-Maori incidence. The underlying hypothesis is that with the exception of genetically determined forms, cancer is a virus disease due to a European virus.

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3.1541,

INCIDENCE OF DIFFERENT HISTOLOGICAL TYPES OF STOMACH CANCER IN WARSAW

Z.L. Wronkowski, Instytut Onkologii im Marii Sklodowskiej Curie, Dept. of Cancer Control & Epidemiology, *15 Wawelska St., 00973 Warsaw, Poland*

There are conspicuous differences in the incidence of stomach carcinoma in different populations. Stomach cancer still remains a leading malignancy in Poland and the high incidence rates could be caused by changes in diet during the second world war and the post-war period. The main objectives of the present study are to investigate the distribution of two types of stomach carcinoma, i.e. 'intestinal' and 'diffuse', in the population of the city of Warsaw and to analyse the time trends for three decades. The study design is retrospective. All available pathological slides for stomach cancer patients from the city of Warsaw will be collected and reviewed. Age-adjusted rates will be computed.

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3.1542,

CANCER INCIDENCE AMONGST PETROCHEMICAL WORKERS IN WARSAW REGION

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The purpose of this study is to determine whether incidence of cancer among petrochemical workers differs from the rates in two control groups, i.e., farmers and the general population in the Warsaw region. The population under study consists of all workers of the Petroleum Plant in Plock who started work after January 1, 1965 - approximately 15,000 individuals. A control group of farmers, individually matched by year of birth and sex, will be used. Both groups will be followed up and cancer cases will be ascertained through linkage of records of the study and control groups and those of the Warsaw Tumor Registry. Data on risk factors for study and control groups will be collected. Age, by individual year, sex and site specific cancer incidence rates will be compared with the expected numbers based on incidence rates in the Warsaw region. Man years of exposure will be calculated for specific cohorts by age and sex so that a dose-response relationship may be tested.

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3.1543,

EPIDEMIOLOGICAL FACTORS IN GASTRIC CANCER, CLUJ DISTRICT, ROMANIA

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Study of cancer incidence in the Cluj district (1974-1975) shows that in males gastric cancer is the most common form of cancer (42.2 per 100.000 per annum being more widespread in the rural areas (about 73.0). In females, breast cancer is the most common form of cancer (27.0) followed by cervix uteri (23.8) and stomach (22.1). Previously, the rank order was cervix uteri, stomach, cancer. The correlation between nitrosamines and gastric cancer is being studied, estimating the secondary amines in traditional foodstuffs and the nitrate and nitrite in drinking water in rural areas. Routine systematic investigations of pollution in drinking water in the Cluj district show considerable variations.

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3.1544,

COHORT STUDY ON HEPATITIS B CARRIERS AND LIVER CANCER

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Liver cancer is one of the most common forms of cancer in Singapore, especially among Chinese males. Seroepidemiological studies have shown that the frequency of exposure to hepatitis B virus (HBV) and the frequency of chronic carriers is much higher among liver cancer patients than among controls. The main objectives of the present study are to identify the carriers and non-carriers of HBV and to measure their risk for developing liver cancer. A group of at least 5,000 Chinese males over 45 years of age will be bled and their sera will be tested for various markers of HBV. Re-bleeding of those patients found to be positive for various markers of HBV will be attempted to confirm their carrier status. The liver cancer cases which develop in this cohort will then be identified by record linkage with the National Cancer Registry in Singapore. In addition, an attempt will be made to study the other epidemiological factors which may have a bearing on the onset of liver cancer. The study design is prospective by nature.

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3.1545,

LYMPHOMAS IN THE AFRICAN

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There is at present no cancer registry in the Transvaal, but all patients of various race groups referred to our department are being investigated as regards age distribution, clinical presentation and histological types. Five-year survival figures are being collected. Comparison between the various racial groups is being made. Distribution of leukemia/lymphoma in the African race group is also being investigated. The age, racial distribution, sex, histological type, site of presentation and response to treatment will be examined and a comparison with white patients will be made.

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3.1546,

ENVIRONMENTAL AND DEMOGRAPHIC STUDIES ON ESOPHAGUS CANCER IN TRANSKEI

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Esophageal cancer shows a marked geographical variation in incidence in the Transkei. Three main lines of investigation are being undertaken: 1) Agricultural associations: the following studies are being conducted on a broad scale in high and low incidence districts; soil profiles and pedalogical classification, soil mineral and trace elements, elements in plants and water and the distribution of mycotoxin in edible produce. 2) Environmental carcinogens: analyses of nitrosamines in prepared food and beer from high and low incidence areas, mycotoxin analyses of prepared and stored food from high and low incidence areas, biological screening program of dietary staples, snuff, beer and home-grown tobacco smoke condensate on rats. 3) Population studies: case-control questionnaire study, a clustering study -geographic, temporal and familial - and detailed ecological studies in cluster and adjacent areas free of esophageal cancer.

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3.1547,

PRIMARY LIVER CANCER RATE AND AFLATOXIN INTAKE IN TRANSKEI

S.J. Van Rensburg, South African Medical Research Council, National Research Inst. for Nutritional Diseases, Division of Nutritional Pathology, *P.O. Box 70, Tygerberg 7505, Cape Province, South Africa*

The objective is to establish if the international data on the relationship between liver cancer and aflatoxin intake are also applicable to the Transkei. Prepared food samples are being collected from four districts in Transkei for the chemical analysis of aflatoxins. Cancer incidence will be assessed by simple hospital registration, and, further, by the incidence rates in mine workers originating from the study area. HBsAg antigenemia in the study areas is being determined.

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3.1548,

RELATION BETWEEN CANCER INCIDENCE AND ENVIRONMENTAL FACTORS

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The geographical distribution of various types of neoplasms is studied in Sweden. Register data on liver cancer in males indicate that the three big cities in Sweden have an increased rate in comparison to the remainder of the country and that the rate has increased the last 10 years. This difference is less pronounced among females. Further analyses using hospital records are performed to investigate the possible causes of this difference, with particular reference to occupational exposure and alcohol consumption.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.1549,

REGIONAL TUMOR REGISTRY FOR SOUTHERN SWEDEN

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In the new organization proposed for oncological care in Sweden, it is planned to found seven oncological centers, in each of which a regional tumor registry will be established. These registries not only collect the reports on new cancers in the region but also take part in clinical trials, epidemiological studies and similar activities undertaken in the region. A regional tumor registry with these functions has now been established in the southern part of Sweden.

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3.1550,

RETROSPECTIVE EPIDEMIOLOGICAL STUDY OF HEALTH HAZARDS IN THE RUBBER INDUSTRY

B.E. Holmberg, National Board of Occupational Safety & Health, Unit of Occupational Toxicology, *17184 Solna, Sweden*

All workers in two large rubber companies employed between January 1, 1930, and December 31, 1972, who worked for more than one year, will constitute the cohort. The cohort will be subdivided according to department: mixing department and other production departments. White collar workers form a control group. These lists of workers will be completed by the personal identification number and compared with the official death registry and the cancer registry.

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3.1551,

MORTALITY STATISTICS

H.E. Hansluwka, World Health Org., Division of Health Statistics, *1221 Ave. Appia, Geneva 27, Switzerland*

Statistical data concerning mortality following the 'A' list of the International Classification of Diseases are collected on a world-wide basis, processed, stored and published annually (Volume 1 of the World Health Statistics Annual). Data on cancer mortality according to the four-digit list of ICD are collected and stored in WHO's data bank. Epidemiological and statistical analyses of cancer mortality are periodically published as a special subject in the World Health Statistics Quarterly (WHSQ), e.g., Breast WHSQ, No. 6, 1975; Uterus, WHSQ, No. 8, 1975; Digestive Organs and Peritoneum, WHSQ, No. 3, 1976: Hodgkin's Disease, WHSQ, No. 2, 1977: Lung, WHSQ, No. 2, 1977: Pancreas, liver, ovary, cancer survival statistics, WHSQ, No. 1, 1978; cancer of eye, cancer mortality in Europe, 1970-74, WHSQ, No. 2, 1978; Sex differentials in cancer mortality and morbidity, WHSQ, No. 4, 1978; Cancer of the Urinary Bladder, Kidney and Skin, WHSQ. No. 1, 1980; Social and Economic Implications of Cancer in the United States of America, WHSQ, No. 1, 1980, as well as Cancer Statistics, Report of a WHO/IARC Expert Committee, Techn. Rep. Ser. 632, 1979.

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3.1552,

RETROSPECTIVE STUDY OF CANCER MORTALITY RELATED TO PLACE OF RESIDENCE

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It was shown by Blumer (Schweiz. Med. Wschr. 106, 503 (1976)) that cancer mortality was strongly dependent on place of residence. People living in the immediate vicinity of the central road of a city in Switzerland died about 9 times as frequently from cancer as people in remote areas of the same city. In a recalculation of the raw data (Schweiz. Med. Wschr. 107, 312 (1977)) the results were confirmed in that the cancer mortality of the group living near the road was higher by a factor of two than expected on the basis of age-adjusted cancer mortality in Switzerland. It is planned to determine if a similar relationship can be found in other places in Switzerland.

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3.1553,

CHRONOLOGICAL OBSERVATION OF EPIDEMIOLOGICAL CHARACTERISTICS OF LUNG CANCER IN TAIWAN

S.P. Yang, National Taiwan University, College of Medicine, Dept. of Internal Medicine, *1 Jenai Rd. Section 1, Taipei, Republic of China*

A previous study indicates that lung cancer in Taiwan has the following epidemiological characteristics: 1. An increasing rate which is the highest among malignant neoplasms in the past 20 years. 2. A male to female ratio of 2 to 1, which has been the same for the past 30 years. 3. A high frequency of adenocarcinoma even in males (34.3% for males and 58.7% for females). 4. A recent rapid increase which cannot be explained solely by cigarette smoking. In order to determine whether these epidemiological characteristics will change in the future, a time trends study is underway for each five-year interval, analyzing available vital statistics data and clinical material collected from major hospitals islandwide (there is still no islandwide cancer registration system) and comparing the results of the 2nd lung cancer prevalence survey (in conjunction with the 5th tuberculosis prevalence survey) in 1977-1978 with those of the first survey carried out 5 years ago.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.1554,

CANCER EPIDEMIOLOGY IN TANZANIA, EAST AFRICA

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Epidemiological studies, based on the national registry and on the registry of pathological specimens, including case studies of the most frequent cancers in Tanzania (cervix uteri, liver, skin in albinos, and stomach) are envisaged. Investigations of cancers which appear to be unusually frequent in relative terms (Burkitt's lymphoma, Kaposi's sarcoma, retinoblastoma) as well as of the cancers rare in East Africa, but frequent in Europe and North America (lung, colon, breast, pancreas, prostate) are contemplated.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.1555,

MORTALITY FROM CANCER IN RELATION TO OCCUPATIONAL AND SOCIAL CLASS

W.P. Logan, (No Performing Organization Reported), *Switzerland*

A historical review of cancer mortality by occupation and social class based on the Decennial Occupational Mortality Supplements of the Registrar General for England and and Wales 1851-1971, is being undertaken. Comparisons with similar data from other countries are being made.

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3.1556,

INVASIVE CERVICAL CANCER IN GENEVA

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This investigation is a restrospective study of the frequency and chronological distribution of cytological examinations of cervical smears in women who developed invasive cervical cancer between 1970 and 1975. Cases are compared with controls, i.e., screened women who did not develop invasve cervical carcinoma, matched by age, vital data and nationality. The results of the study will help to determine the optimal interval between successive screenings.

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3.1557,
MORTALITY FROM CANCER OF THE COLON AND RECTUM IN RELATION TO FOOD SALES

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Standardized mortality ratios for cancers of the colon and rectum show significant differences among the 25 cantons of Switzerland. Data on sales of foodstuffs have been obtained from one of the two major cooperatives. The deaths for the 7 years 1969-1975 and the corresponding populations have been calculated for the same areas as for food sales. The latter will be converted into nutritional content (fibre etc.) and compared with the death rates. A search will be made for similar data in other countries.
Description provided by IARC and DKFZ with ICRDB/NCI support.
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3.1558,
NEUCHATEL CANCER REGISTRY

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The registry collects data from all cancer cases from the Canton of Neuchatel (population: 170,000), and contains information about socio-economic status, rural or urban origin, symptoms, treatment, as well as histological diagnosis. The sources of information are: pathological, cytological, hematological reports, medical files (hospitals and practicing doctors), autopsies and deaths certificates.
Description provided by IARC and DKFZ with ICRDB/NCI support.
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3.1559,
BURKITT'S LYMPHOMA PROJECT, MARA REGION, TANZANIA

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The general objective is to study the epidemiology of Burkitt's Lymphoma (BL) and, more specifically, to investigate the role of hyper-endemic malaria in BL causation. In order to see whether hyper-endemic malaria is necessary for BL development, a malaria suppression trial is being carried out. Chloroquine tablets are distributed twice monthly to approximately 90,000 children aged 0-10 in order to reduce malaria to hypo-endemic levels. The malaria suppression was initiated in 1977 and will be continued for five years, during which the incidence of BL will be carefully monitored in the area. The prevalence of malaria parasitaemia declined satisfactorily during the first year of the trial but since the end of 1978 it has returned to the previous high levels. Drastic measures are now being taken to rectify this situation. The program will continue until the end of 1982.
Description provided by IARC and DKFZ with ICRDB/NCI support.
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3.1560,
ENDEMIC PLEURO-PERITONEAL DISEASE IN RURAL TURKEY

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Recent clinical and epidemiological studies in Turkey have revealed that calcified pleural plaques, chronic fibrinous pleurisy and malignant mesothelioma are endemic in some villages with asbestos deposits. Mineralogical electron microscopy studies in airborne dust samples in these villages revealed mostly tremolite, chrysotile asbestos and other mineral fibers (rutile, eckermannite, antigorite etc.). However, there are two villages in the Nevsehir region without asbestos deposits which have a much higher incidence of the same diseases. Mineralogical studies of some geological and airborne dust samples and studies of lung tissues have demonstrated the presence of erionite, a type of zeolite. Part of the study has been published.
Description provided by IARC and DKFZ with ICRDB/NCI support.
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.1561,
AN EPIDEMIOLOGICAL STUDY OF LEUKEMIA INDUCED BY EXPOSURE TO DIFFERENT CHEMICALS

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Despite the fact that there is a significant reduction in the incidence of haematopoietic insults, such as aplastic anaemia and leukaemia, after the strict prohibition of the use of benzene as a solvent in Turkey, other chemicals (those used in the textile industry and asbestos) may still be involved in the occurence of leukaemia among the working population. The scope of the present project is to perform an epidemiological study as well as clinical and laboratory investigations directed towards the detection of the incidence and the types of leukaemia produced in those chronically exposed to these chemicals. It is also believed that the detection of the patients involved, while they are still at the pre-leukaemic stage, may be of importance. The cytochemical and immunological alterations likely to be observed in such subjects constitute another interesting aspect of the task. Chromatographical analysis of the chemicals in question will be undertaken.
Description provided by IARC and DKFZ with ICRDB/NCI support.
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.1562,
PROSPECTIVE STUDY OF BURKITT'S LYMPHOMA, WEST NILE DISTRICT, UGANDA

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The main objective is to study the etiological involvement of the Epstein-Barr virus (EBV) in Burkitt's lymphoma (BL). Additional objectives are to study the epidemiology of the EBV and BL in the West Nile district, and the role of hyperendemic malaria in BL causation. cohort of 42,000 children aged 0-8 years was bled in an initial phase between 1972 and 1974. During the subsequent case detection, fourteen BL cases were diagnosed in the children who were bled. The testing of the 'pre-sera' and appropriate controls showed that viral capsid antigen antibodies to the EBV had already been elevated in the BL candidates up to four years before tumor manifestation (Nature 274, (5673) 756-761, 1978). Other EBV antibody activities (early antigen and Epstein-Barr nuclear antigen) were not elevated in the pre-BL sera and the case detection in the study cohort will continue until 1979 in order to study the mechanism of how EBV infection promotes BL development. The study of BL epidemiology has confirmed that the tumor still shows significant time-space clustering and seasonal variation, thus favoring an infectious etiology. The epidemiology of the EBV is being studied in number of sample groups which were bled repeatedly during the years 1973-1977. The testing for EBV antibodies in the sera is now progressing at the laboratory at IARC, Lyon. The BL case detection in the West Nile district will continue through 1979. Since the testing of the 14 pre-bled BL sera in 1977, 5 new pre-bled BL cases have been detected and will be tested for anti-EBV activities in 1979. The analysis of the malaria data collected in the longitudinal survey in the West Nile has indicated that malaria parasitemia declined drastically in the West Nile between 1973 and 1977. The malaria slides are now being reexamined to ensure that this observation is true.
Description provided by IARC and DKFZ with ICRDB/NCI support.
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3.1563,
STUDY OF A BRITISH SHIPYARD POPULATION WITH REGARD TO LUNG CANCER INCIDENCE IN MEN WITH PLEURAL PLAQUES

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Pleural plaques, both fibrous and calcified, have been widely described in the neighborhood of asbestos mines and in populations using asbestos industrially. They are commonly thought to be benign lesions merely indicating prior asbestos exposure. The present study concerns shipyard population of 7,000 men who have been found to have a high prevalence of pleural plaques (one third of the male population as assessed in 100 consecutive unselected autopsies), and a substantial annual incidence of malignant mesothelioma of the pleura. The clinical impression is that the occurrence of bronchial carcinoma in men showing pleural plaques is substantially increased. A group of Barrow shipyard workers with pleural plaques and a matched group of Carlisle workers from different but non-asbestos-exposed occupations are being compared in a long-term mortality study. The results to date suggest an increased incidence of bronchial carcinoma in the men with pleural plaques of approximately five times that found in the control series. After elimination of the subjects showing bias, due to being obtained from clinic sources, a residual group of 231 subjects with plaques from Barrow, together with a matched group of 231 controls from Carlisle, has been flagged on the National Cancer Registry computer in Southport. Both groups will be followed for not less than five years unless a valid result emerges sooner. The increase in the incidence of bronchial carcinoma in the plaque group after this has been allowed for, is likely to be nearer twofold than the fivefold initially estimated.
Description provided by IARC and DKFZ with ICRDB/NCI support.
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3.1564,
LONG-TERM FOLLOW-UP OF ALL WORKERS EXPOSED TO ASBESTOS IN NORTHERN IRELAND

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The objectives are to see how the changing conditions of work with asbestos are affecting the incidence of asbestosis, carcinoma of the lung and mesothelioma and whether preventive measures being taken are effective. This is a continuation of work already published and entails examining all men still at work and all men who have worked with asbestos in the past at 2-3 year intervals. If they develop illnesses or die, every effort is made to document precisely the nature of the illnesses or cause of death.
Description provided by IARC and DKFZ with ICRDB/NCI support.
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3.1565,
ANALYSIS OF DATA FROM THE HANFORD MORTALITY AND MORBIDITY SURVEY (USA)

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Factors affecting the probability of workers in the radiation industry dying from malignant disease following occupational exposures to external radiation are being studied.
Description provided by IARC and DKFZ with ICRDB/NCI support.
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3.1566,
INCIDENCE OF SKIN CANCER IN ENGLAND AND WALES AND VARIATION WITH TIME

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The aim of this study is to correlate the annual incidence of skin cancer in selected areas of England and Wales with environmental and sociological changes taking place during the period 1952 to present day.
Description provided by IARC and DKFZ with ICRDB/NCI support.
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3.1567,
CARDIFF CERVICAL CYTOLOGY STUDY

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The main objective of the Cardiff Cervical Cytology Study is to evaluate screening for cervical cancer. The study is based on a defined population: all women who have ever been married, aged 25-69, resident within the Cardiff City area. The basic design objective was that all eligible women should be screened three times. The defined population was enumerated by house-to-house visiting, and eligible women were offered appointments for a cervical smear test at specially organized clinics. The study

began in late 1965 and the first round of visiting the city finished early in 1971. The defined population numbers some 71,000 women of whom 46,000 (65%) accepted the offer of the test. Subsequent to the first smear women were re-called for second and third smears at two to three yearly intervals. Some 38,000 have so far had second smear and over 30,000 have had a third. The study should provide estimates of the prevalence and incidence of the various pathological states, and estimates of false negative and false positive error rates. Death and registration rates for invasive cancer in the Cardiff City area are being monitored.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.1568,

NATIONAL REGISTRY FOR RADIATION WORKERS

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The purpose of this study is to investigate by long-term follow-up studies any relationship between occupational exposure to radiation and age-specific causes of death. Any worker who is monitored regularly for exposure to radiation and for whom dose records are kept is entered in the Registry. It is expected to include over 50,000 current workers in addition to those who leave the industry whether by death, retirement or change of job. Once sufficient data on mortality has accumulated, periodic analyses will be carried out with several different control groups chosen from among those workers on the Registry with very low lifetime radiation doses.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.1569,

INCIDENCE OF LEUKEMIA AND LYMPHOMA IN AN EXPLOSIVES FACTORY

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A cohort of workers at an industrial plant producing explosives has been enumerated. The incidence and mortality of leukaemia and lymphoma amongst the workers in the subsequent ten years is higher than expected when compared with age-matched general population rates over the period. Investigations to identify common features from detailed occupational histories and proximity to potential carcinogenic hazards, together with other suspected aetiological factors which occur outside the work environment, are being carried out.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.1570,

CASE-CONTROL STUDY OF SMOKING AND DRINKING HABITS IN LUNG CANCER AND OTHER SMOKING-RELATED DISEASES

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A case-control study recording detailed histories of smoking, drinking and stress factors is being carried out in Scotland as part of an international comparison to correlate lung cancer incidence with underlying smoking and drinking patterns in the different countries. Local information will be available on smoking and drinking for other known smoking-related diseases and the hypothesis that different components of these habits predispose the individual to different diseases is being investigated.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.1571,

THE EFFICIENCY OF CERVICAL CANCER SCREENING IN WEST YORKSHIRE

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The project covers areas of West Yorkshire with varying levels of the incidence of cervical cancer and aims to collect data on a 1:10 sample of all cervical smear examinations performed, with follow-up on all abnormal tests. Incidence data for clinically manifest carcinomas will be obtained from the Cancer Registry. Information on levels of screening, together with the results in the population studied, will be available for comparison with data collected elsewhere. It is intended to mount intervention studies to influence the degree and location of screening, with simultaneous monitoring of the results obtained.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.1572,

EPIDEMIOLOGICAL STUDIES OF THE RELATIONSHIP BETWEEN RE-USE OF WATER AND HAZARDS TO HEALTH

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The aim of the studies is to investigate the effects on the health of populations of drinking water derived from water sources contaminated with domestic and industrial waste, with particular reference to cancer of the digestive system, and of the genitourinary system. The first stage of the studies is to examine the association between cancer mortality and the source of water supply in terms of the history of pollution and degree of re-use. The hypothesised association arises mainly from the Mississippi River study although other studies have also examined this association. Possible disease outcomes other than cancer will also be investigated to provide a basis for formulating further hypotheses.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.1573,

THE EFFECT OF ORAL CONTRACEPTIVES ON MAMMARY TISSUE

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This investigation has been in progress for 4 years. It is essentially a clinical study with long-term follow-up of women who are taking a form of oral contraceptive. The study includes clinical examination of the breasts, mammography where appropriate and biopsy excision, also where appropriate. The study is a prospective one, without controls, and it is hoped that it will provide useful long-term information on the effects of oral contraceptives on mammary tissue.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.1574,

GASTRIC CANCER AND NITRATE INGESTION - NITRATE IN DRINKING WATER

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Evidence is accumulating that populations ingesting large amounts of nitrate have a high mortality from cancer, particularly of the stomach, due to the formation in vivo of carcinogenic nitrosamines. Nitrate levels in some water sources in the eastern regions of England are rising steadily due to extensive use of fertilizer. Mortality from gastric cancer within these regions in 1969-73 is being examined in relation to the nitrate concentration in drinking water 15 to 20 years previously. The objectives of this study are: 1) to establish whether there is an increased risk of gastric cancer in populations exposed to moderately high levels of nitrate in drinking water and 2) to determine a safe level for nitrate in drinking water.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.1575,

STUDY OF FERTILIZER MANUFACTURERS

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The hypothesis that high nitrate ingestion causes cancer is being examined in workers exposed to nitrate-containing dust in the manufacture of fertilizer. A census-based study links occupational data from the 1961 and 1971 censuses of England and Wales to mortality data from the National Health Service Central Register.

Description provided by IARC and DKFZ with ICRDB/NCI support.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.1576,

EPIDEMIOLOGY OF LARGE BOWEL CANCER

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The epidemiology of large bowel cancer is being compared with that of non-malignant 'diseases of affluence' in the context of diet and bowel pathophysiology.

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3.1577,

GLOUCESTERSHIRE STUDY

P.N. Lee, (No Performing Organization Reported), *United Kingdom*

In 1963-1967 information on respiratory symptoms, residential, occupational and medical history, as well as full details of smoking habits, was obtained from 2,377 people in hospitals in Gloucestershire. Those selected formed six groups, namely lung cancer, chronic bronchitis, other chest diseases, cardiac, orthopaedic and other cancer cases. Between 1974 and 1977 an attempt was made to reinterview those still alive and to determine their current smoking habits and respiratory symptoms and to find the cause of death of those who had died. In addition a sample of the living population in Gloucestershire in 1974 was interviewed to determine their smoking habits and respiratory symptoms. The data is now being analysed with four main objectives. Firstly, to determine how the six hospitalized groups differed on factors recorded on the original questionnaire. Secondly, to determine within disorder groups how survival is related to the information recorded originally. Thirdly, to test how representative the survivors are of the living population in Gloucestershire. Fourthly, to investigate changes in symptoms and in smoking habits in the survivors and examine how the progression of the former is related to changes in the latter.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.1578,

INCIDENCE OF BREAST CANCER IN WOMEN WHO HAVE HAD A TOTAL COLECTOMY AT AN EARLY AGE

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There is a high correlation between the intake of dietary fat and the incidence of cancer of the colon and breast. It has been suggested that the amount of dietary fat affects the composition of the gut flora and the concentration of biliary steroids in the gut and that certain bacteria might be able to produce carcinogens in the colon from these steroids. The production by intestinal bacteria of steroidal oestrogens from the biliary steroids has also been demonstrated and suggests a possible role for these bacteria in breast cancer. The purpose of this study is to test the possibility of a relationship between the production or modification of oestrogenic steroids by gut

bacteria and the development of breast cancer by seeing whether there is a decreased incidence of breast cancer in women who have had a total colectomy at an early age. It is hoped to follow up about 2,000 women who had a total colectomy and compare the observed number of breast cancers in the group with the number expected if their colons were retained.

Description provided by IARC and DKFZ with ICRDB/NCI support.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.1579,

CONTROLLED TRIAL OF SMOKING CESSATION

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The effects of smoking cessation on mortality from cardiorespiratory diseases and cancers are being studied. Some 1,400 male cigarette smokers aged 40-64 were randomly allocated to an intervention group (50% gave up cigarettes for 3 years or more) and a control group. All-causes mortality results were reported in December 1978 and cause-specific results will be reported in 1980.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.1580,

ROYAL COLLEGE OF GENERAL PRACTITIONERS - ORAL CONTRACEPTION STUDY

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This study comprises a long-term prospective survey of the health of a large number (initially 23,000) of oral contraceptive users throughout the United Kingdom. Comparison is made with a control group of similar size consisting of women who have never used oral contraceptives. Analyses are based on reports from about 1,200 general practitioners. The study began in April 1968.

Description provided by IARC and DKFZ with ICRDB/NCI support.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.1581,

EPIDEMIOLOGICAL ASPECTS OF HODGKIN'S DISEASE IN GREATER MANCHESTER

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The hypothesis that Hodgkin's disease is transmissible is being explored in two ways. (1) The importance of a recent report that links such as having attended the same school or work place are no more common between Hodgkin's disease cases than between controls (Smith et al., Lancet 1977, II, 59) is being assessed by seeing whether excesses of such links can be demonstrated between either infectious hepatitis or infectious mononucleosis patients who have been in hospital. (2) Fifteen years cases of Hodgkin's disease in Greater Manchester are being tested for space-time interaction by Knox's method, in order see whether there is any tendency for patients who live close together to develop symptoms either at around the same time or (as might be expected if there was a long incubation period) at intervals of a particular length.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.1582,

AN EPIDEMIOLOGICAL STUDY OF STOMACH CANCER IN NORTH STAFFORDSHIRE

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The mortality from stomach cancer in Stoke-on-Trent is one of the highest recorded in the United Kingdom, but the reasons for this are unknown. Some positive associations between stomach cancer and occupation have been observed, in particular with certain dusty trades; and there is also an association with suspended particulate air pollution. For many years in the past, the North Staffordshire area has been noted for its high level of air pollution, which was predominantly caused by smoke emission from local major industries, especially pottery manufacture. Coal mining also predominates and there are many other dusty occupations. The main objective of the study, which is in two parts, is to examine whether occupational factors (especially dust exposure) play a part in the aetiology of stomach cancer in the Stoke-on-Trent area. The investigation will encompass firstly a detailed examination (in epidemiological terms) of each case of stomach cancer (both male and female) that occurred in the County Borough District of Stoke-on-Trent within the fifteen year period 1961-1975. In addition, prospective case-control study on each person newly presenting with stomach cancer within the succeeding three years (beginning in 1977) will be undertaken. A detailed whole life occupational history will be obtained at interview and matched against that obtained from four controls chosen at random from the population at large. The data will be compared and contrasted for statistically significant differences in the dust exposure between cases and control groups.

Description provided by IARC and DKFZ with ICRDB/NCI support.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.1583,

LUNG CANCER IN THE ANTIMONY INDUSTRY

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A prospective epidemiological survey of workers engaged in the production of antimony metal, antimony oxide, and antimony sulphide is being undertaken to ascertain whether there is an excess of lung cancer by comparison with local death rates and death rates in other occupations. The survey includes all persons working at the plant on 1/1/1961 or joining after that date, and is likely to continue until 1985 or later. Persons leaving employment are traced. The calculations of expected deaths are age-specific and related to man-years of exposure. The survey covers an adjacent zircon plant, as a control. Other factors studied are smoking, sulphur, arsenic and area of residence.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.1584,

BREAST CANCER AND ORAL CONTRACEPTIVES

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This case-control study was designed to study the possible relationship between oral contraceptives and breast cancer. Our case group consists of women of 45 years of age or younger with breast cancer; controls are matched on the basis of age at first birth. The final case group will consist of 300-400 women. The questionnaire is self-administered and requires full contraceptive and reproductive histories. This study is nearing the end of the data collection stage. The association of prior benign breast disease and oral contraceptive use with breast cancer is currently being analyzed. Family history and oral contraceptive use in relation to breast cancer is also being examined.

Description provided by IARC and DKFZ with ICRDB/NCI support.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.1585,

URANIUM EPIDEMIOLOGY STUDY

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4,071 uranium miners with at least one year's underground experience since 1957 in the Grants, New Mexico uranium belt will be studied to examine health effects of low level radiation exposures for which only extrapolations are now available. Since mining in this district began, precision of radiation measurement and stringency of radiation standards have increased. Of the 4,071 miners in the study, 1,800 started work before 1961, at mean radiation levels near 40 working level months (WLM) per year. Another 1,300 started in 1961-1970, at mean radiation levels declining over the years from 40 to 4 WLM per year. The remainder started in 1971 or later, at mean radiation levels of 2.5 WLM per year and not exceeding the allowable 4 WLM per year. Standard physical examinations, with cigarette smoking and previous mining histories, are available from the beginning. Of the 139 miner deaths reported to date, 84 were from accidents, poisonings or violence. Of the 55 other deaths, 22 were due to lung cancer, all in miners employed before 1961 in Grants or elsewhere and concentrated in miners with over 200 cumulative WLM. 20 of the 22 lung cancer deaths were in cigarette smokers. Proposed work for 1980-1981 includes determining current status of miners through the US Social Security Administration, etc., refining their amounts of radiation exposure, and planning a very long-term cohort study.

Description provided by IARC and DKFZ with ICRDB/NCI support.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.1586,

HEALTH OF FORMER THORIUM WORKERS

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The study population is comprised of about 4000 persons (mostly males) who worked at a thorium processing plant from the mid 1930's until 1973. Mortality and causes of death (from death certificates) are being studied with internal comparisons (by job classification and length of employment) and external comparisons (using U.S. mortality rates specific for sex, age, time and cause). For morbidity studies, subgroup of 558 males (who worked for one year or longer in jobs probably involving highest exposure levels to thorium) has been selected, and questionnaires on medical and occupational history, respiratory symptoms and personal habits (smoking and alcohol consumption) have been sent to those not known to be dead. A random sample of 100 of these 558 men has been selected for a pilot study which involves measurement of radioactivity levels, and a medical examination (including pulmonary function tests). Interest in the health of thorium workers stems mainly from the potential importance of thorium as an energy source. Lung cancer and other lung diseases (e.g., pneumonoconiosis) are of particular interest in these studies, since the major hazard involved in the thorium extraction process is believed to be related to inhalation of airborne thorium and thorium daughter products.

Description provided by IARC and DKFZ with ICRDB/NCI support.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.1587,

ATLANTA CANCER SURVEILLANCE CENTER

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The Atlanta Registry is one of eleven funded and sponsored by the National Cancer Inst. of the United States. Each represents a unique set of persons with respect to climate, race, industrialization, lifestyles, and heritage. Atlanta represents a growing but not particularly industrialized city in the southeastern USA with a large black population and whose long-time resident white population is largely Anglo-Saxon. The study's overall objective is registration and follow-up of every case of cancer in the Atlanta Standard Metropolitan Statistical Area and a separate ten county rural area whose population is largely black. Patients are identified through hospital medical record departments, pathology laboratories, radiotherapy facilities, and death certificates. Collected by specially trained abstractors are demographic information, birthplace, census tract of residence, occupation, use of tobacco and alcohol, site and histological type of malignancy, diagnostic tests and procedures undertaken including surgery, radiotherapy, chemotherapy, and immunotherapy and the name of the physician following the patient. Patients are followed through re-admissions to hospitals, by information from the follow-up physician, and through death certificates. It is hoped that these data will identify persons at unusually high or low risk of cancer through various factors of environment and background. Because the registry is population-based, it will be able to produce incidence data and patterns of diagnostic and therapeutic care for the area. Survival information will be calculated and the effectiveness of different modes of therapy evaluated. Cooperation with special studies such as the

relationship of bladder cancer to the use of saccharin and other dietetic or occupational hazards, a study of black women with breast cancer, and the role of antigenic stimulation to multiple myeloma and chronic lymphocytic leukemia is planned.

Description provided by IARC and DKFZ with ICRDB/NCI support.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.1588,

PROSPECTIVE AND RETROSPECTIVE STUDY OF THE POSSIBLE RELATIONSHIP BETWEEN HERPESVIRUS TYPE II INFECTION AND GENITAL CANCER

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Since 1964, more than 1,500 women were detected during routine cytological screening as having herpesvirus infection. These individuals are followed clinically and cytologically in a special herpes clinic: the incidence of cervical cancer was found to be approximately 10 times higher than in general populations cytologically screened. The main objectives of this study are to investigate the degree of this association and explain the nature of the association and related factors. The incidence of anaplasia was found to be higher in patients with primary herpesvirus type II infection.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.1589,

THE JOHNS HOPKINS LUNG PROJECT FOR THE EARLY DETECTION, LOCALIZATION AND THERAPY OF LUNG CANCER

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This study began in 1969 when the Johns Hopkins Medical Institution was asked to (1) develop improved methods for the cytological detection of lung cancer, (2) develop improved methods for the localization of lung cancers that are not detectable by chest X-rays, and (3) test these screening techniques in a population sample. The procedures which evolved are now being employed in Phase II of The Johns Hopkins Lung Project and by the other two centers in the Early Lung Cancer Cooperative Study - The Memorial Sloan-Kettering Hospital for Cancer, and Mayo Foundation. The three collaborating centers are assisted in uniform data collection and analysis by the University of Cincinnati. The goal of the cooperative study is to determine the effect of early cytological or X-ray detection, followed by surgical therapy, on long-term survival in lung cancer, as measured by lung cancer mortality in the survey populations. The Johns Hopkins Lung Project has recruited 10,390 male smokers, aged 45 or over, from the Baltimore metropolitan community. Volunteers were randomized into (a) a group screened by annual chest X-ray, and (b) a group screened by sputum cytology in addition to their annual chest X-ray. All chest X-ray examinations include independent double reading. In addition, all sputum cytology screenees receive an annual examination of an aerosol-induced sputum specimen plus an examination of mailed morning sputum every four months. Subjects in whom cancer is detected may be admitted to the Johns Hopkins Hospital for localization and therapy. Curative resection is undertaken where possible, otherwise therapy includes chemotherapy and radiotherapy. All ten thousand subjects will be followed for at least five years to determine survivorship or cause of death.

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3.1590,

MORTALITY AMONG DRY CLEANERS

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Workers in dry cleaning shops are exposed to such chemicals as tetrachloroethylene, trichloroethylene, petroleum solvents, and carbon tetrachloride, some of which are carcinogenic in animals. A cohort follow-up study of 10,000 members of a dry cleaning union between 1940-1977 is being conducted. Cause-specific mortality rates will be compared to expected rates from the general and local populations, and title and duration of membership will provide an indication of exposure gradients and latent periods.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.1591,

MORTALITY AMONG US VETERINARIANS, 1950-1965

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Although transmission of oncogenic viruses from animals to humans has not been clearly demonstrated, this hypothesis continues to receive considerable support. Veterinarians represent a group with routine exposure to animals with viral diseases, as well as to chemicals and drugs. Using the obituary notices listed in the Journal of the American Veterinary Medical Association, the numbers of veterinarians dying from leukemia and Hodgkin's disease and cancers of the brain and skin between 1966 and 1977 were greater than expected, particularly among clinical practitioners (with expected numbers based on the US patterns). The distribution of the causes of death among 3,000 additional veterinarians dying during earlier years (1950-1965) is being analyzed to evaluate these intriguing patterns and to further identify high risks.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.1592,

CANCER MORTALITY AMONG STRUCTURAL PEST CONTROL WORKERS

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The objective of the study is to determine whether persons applying various kinds of pesticides in non-agricultural settings experience unusual mortality patterns for cancer at specific sites that may be indicative of exposure to carcinogenic agents. The study group consists of approximately 5,000 persons who were employed by pest control firms in the state of Florida in 1965. The cohort will be followed for mortality to the present time and its site-specific cancer mortality rates will be compared to the general population of the area. Duration of employment and time since first employment in the trade will be considered in the analysis. Information on type of pest control work and general classes of pesticides used is also available.

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3.1593,

COMPUTER-BASED, EXPOSURE-ORIENTED OCCUPATIONAL EXPOSURE CODE

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The purposes of this study are: 1) To develop a computer-based system whereby, given a job title and specification of industry, a list of possible occupational exposures to chemicals and other possible carcinogenic agents will be made available, 2) to evaluate the system as a tool for the study of occupational carcinogenesis using large data sets from a cancer registry.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.1594,

CASE-CONTROL STUDY OF MALIGNANT GLIOMA

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This is a case-control study of 230 newly diagnosed cases having malignant (grades II-IV) glioma. The controls (230) are the 'best friends' of the cases of the same sex and similar age. The controls are further specified by an algorithm. Information is gathered primarily by a mail questionnaire followed by a telephone contact. Interest is in exposure to radiation, childhood diseases and industrial compounds. To date 153 cases and 90 controls have been evaluated.

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3.1595,

SURVIVORS OF CHILDHOOD CANCER

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A registry has been established of 5-year survivors of childhood cancer. To date, 600 patients have been enrolled. These patients and their progeny are being followed for development of new tumors and for evidence of late complications of cancer therapy. The study includes the physiological, psychological, oncogenic and genetic sequelae of successful cancer therapy in man.

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3.1596,

DIETHYLSTILBESTROL-ADENOSIS PROJECT - GENITAL TRACT ANOMALIES AND CANCER IN FEMALES EXPOSED IN UTERO (ABBREV)

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Young women exposed in utero to diethylstilbestrol are known to be at risk for the development of clear cell adenocarcinoma of the vagina and cervix. A large proportion of the exposed population is also known to have developed adenosis of the vagina, ectropion of the cervix, and variety of structural anomalies of the cervix and vagina, which have been described as ridges, rims, hoods or pseudopolyps. There is speculation that these women are also at a higher risk for the development of squamous cell dysplasia and carcinoma. The goal of this prospective study is to investigate the incidence and natural history of the above lesions. One thousand exposed women were identified through review of prenatal records, physician referrals and patients who presented themselves for examination. Controls for the cohort of subjects identified through review of prenatal records comprise a similar but non-exposed cohort. All subjects were examined initially in 1974-76 and will be re-examined at yearly intervals for a minimum of five years.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.1597,

CORRELATION OF EPIDEMIOLOGICAL AND METABOLIC PARAMETERS - THE POSSIBLE ROLE OF VITAMIN A IN UTERINE CERVICAL DYSPLASIA

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In this study of carcinoma of the uterine cervix the primary focus is on the possible interrelationships of diet, with emphasis upon vitamin A, social environmental epidemiological factors, and the cellular changes which are detectable clinically by routine cytology and biopsy of the uterine cervix. The availability of the Papanicolaou test permits screening of large population groups and the finding of a positive or suspicious smear identifies 'women at risk'. Such women are being studied intensively in terms of (1) diet, with computer coding and scoring of nutrient values, (2) ethnic and socioeconomic background and (3) personal life-styles including educational performance as well as (4) measurements of specific blood and tissue retinol and retinoic binding proteins.

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3.1598,

EPIDEMIOLOGY OF CANCER OF THE TESTIS IN UPSTATE NEW YORK

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The literature on cancer of the testis suggests a number of hypotheses dealing with possible relationships with cryptorchidism, occupational activity, clothing styles, sexual behavior, fertility, exposure to high temperatures, and the like. In our earlier demographic study of testis cancer it was found that the risk of testicular cancer was increased for persons who were in professional occupations, of several generations in this country, were rural or suburban dwellers, and had married early. We planned to interview all testis cancer cases from Upstate New York, beginning in autumn 1977. Names of cases will be made available to us as they are reported to the New York State Tumor Registry. To control for the fact that cancer of the testis appears to be a disease of high socioeconomic status, controls, matched on age (within 5 years), who reside in the neighborhoods of cases will be interviewed. It is anticipated that approximately 100 cases will be reported each year. Thus, in 3 or 4 years sufficient cases and neighborhood controls will be available for a definitive analysis. Data collection is under way. We have completed 76 case and 43 neighborhood control interviews.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.1599,

RADIATION-ASSOCIATED THYROID CARCINOMA

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A program has been instituted to screen annually by clinical and laboratory examinations those persons who have received radiation therapy to the head and neck areas for benign conditions. Those found to have goiter are further evaluated and treated by suppressive therapy with thyroid hormone. Those who respond are continued on long-term drug therapy, while those whose goiters increase in size are offered thyroidectomy. The natural history of radiation-associated benign and malignant thyroid diseases is being studied.

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3.1600,

OCCUPATIONAL LUNG CANCER IN THE RUBBER INDUSTRY

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This study was prompted by conflicting findings in relation to occupational lung cancer in the industry. While an overall excess of lung cancer was found in Great Britain, an overall deficit was observed by us in the U.S. Accordingly, it was decided to investigate the relationship between mortality from this disease and specific occupational exposures. The main objective of this study is to identify, retrospectively, specific groups of workers who may experience an excess risk of mortality from lung cancer. In addition, the British report of an association between this disease and employment in areas where curing of green rubber products is performed is being evaluated and other published findings on a relationship between lung cancer and work in jobs involving compounding and mixing of raw rubber stocks is being examined. A case-control study design with over 100 cases and 400 controls is being used, matched on pertinent variables to eliminate confounding factors unique to occupational studies. The analysis involves examination of detailed employment records to determine whether cases were more likely to have worked in specific areas within the plant under study, which may now contain (or which may have contained in the past) respiratory system carcinogens. The design also includes an examination of certain non-occupational factors which may be responsible for the observed excess.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.1601,

STOMACH CANCER AMONG RUBBER WORKERS - A CASE-CONTROL STUDY

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Whereas the incidence of stomach cancer has been steadily declining in the U.S. during the past few decades, our analyses have indicated that rubber workers remain at a considerably higher risk than the general population. Because of the diverse chemicals to which these workers are being exposed, many of which are known or suspected carcinogens, an analytical study is being conducted to determine whether this excess risk may be caused by industrial exposures to polycyclic hydrocarbons, nitrosamines, asbestos, or carbon black. All of these substances have been, or are being, used or generated by the industrial processes in the rubber industry.

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3.1602,

FATAL LYMPHOMAS IN RUBBER WORKERS, A CASE-CONTROL STUDY

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Recent descriptive mortality analyses in five major US rubber companies have demonstrated a consistent excess of deaths among rubber workers from malignant neoplasms of the lymphatic and hematopoietic system (LHS). A case-control study has demonstrated an association between lymphatic leukemia and a history of having worked in jobs entailing solvent exposure. 87 persons, dying in period 1964-1973 with an LHS neoplasm diagnosed as lymphoma, have been individually matched with two pairs of controls, selected from non-cases within the source population from which the case derives. Complete work history information will be utilized for all study subjects. Analysis of case-control differences in work history will examine the association of leukemia types with solvent exposure and similarities and differences between exposure histories of fatal cases of lymphoma and leukemia.

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3.1603,

IMMUNOPROPHYLAXIS OF CANCER WITH BCG VACCINE

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The aim of this study is to determine retrospectively the long-term effect of BCG vaccination in black children vaccinated in the first week after birth and followed up for 20 years. Death records of children born at Cook County Hospital are being examined. Cross-checking of records for the entire United States for any deaths among the study population is being made to prevent loss of data.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.1604,

PESTICIDE MANUFACTURER/FORMULATOR MORTALITY STUDY

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This study is seeking to determine if selected groups of workers in the pesticide manufacturing/formulating industry experience excess cause-specific mortality. Although a number of epidemiological studies have been carried out to examine the relationships between chronic pesticide exposure and morbidity and mortality, most have not included sufficient population numbers, length of exposure and latency periods in the study design. A cohort of approximately 4,000 workers who were employed in the pesticide manufacturing/formulating industry for a minimum of 12 months prior to 1960 will be studied and their mortality experience will be compared to that of the general population for 60 causes of death. In addition, attention will be directed to various categories of malignant and non-malignant lesions specifically associated with exposure to organo-chlorine pesticides. A prospective cohort of workers in the pesticide industry will also be identified.

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3.1605,

IDENTIFICATION OF HIGH RISK FACTORS IN THE ETIOLOGY OF BREAST CANCER

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Certain epidemiological indices for the development of breast carcinoma have been developed in the past decade. These include race, family history, age at menarche, parity and age at first parity, previous benign breast lesions and the pathology found. These indices, and others, are being studied in four groups of patients: (1) Women who have developed breast cancer without previous breast disease; (2) women developing breast cancer after a previous benign biopsy; (3) women who have not developed breast cancer but have had single or multiple benign breast biopsies, and (4) women who have been examined at their place of employment and show no evidence of breast cancer.

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3.1606,

MORTALITY AND INDUSTRIAL HYGIENE STUDY OF PCE WORKERS

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Perchloroethylene (PCE) is used extensively throughout the dry cleaning industry (100,000 workers). Tests for carcinogenicity in the Bioassay Program of the National Cancer Inst. show an increase in hepatocellular carcinomas in mice. To date, the effects on humans from long-term low level exposure to PCE are unknown, and the study will assess these by analysis of cause-specific mortality among an identified group of dry cleaning workers. A cause of death for each individual in the cohort will be determined retrospectively and the observed deaths will be compared to those expected based on a standard race-, sex- and age-specific population. Worker exposure to PCE in the dry cleaning industry will be characterized by industrial hygiene surveys. The Stanford Research Inst. (SRI) is conducting the mortality study under contract. Personnel records from four labor unions have been used to assemble a cohort of approximately 1,659 dry cleaning workers who were employed for at least one year prior to 1960 in a facility where the primary solvent was PCE. All of the demographic and work history coding has been completed and vital status follow-up through the Social Security Administration (SSA) has been accomplished. Once the SSA data is processed, it will be determined how much more vital status follow-up is necessary. Industrial hygiene surveys have been conducted in 30 dry cleaning facilities in San Francisco, Oakland, Detroit and Cincinnati. An additional 15-20 surveys are planned in New York City and Chicago, and a final report will be ready in early 1980.

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3.1607,

CORRELATION OF WATER TRIHALOMETHANE LEVELS IN SELECTED CITIES WITH CANCER MORTALITY

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This project involves statistical correlation of available data on trihalomethane levels in water with age- and sex-adjusted site-specific cancer mortality data. The water was that collected during the 80 city National Organic Reconnaissance Survey supported by the Environmental Protection Agency (EPA), the National Organic Monitoring Survey (113 cities) and the EPA Region V Survey. The mortality statistics were those supplied by the National Center for Health Statistics to the National Cancer Institute.

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3.1608,

COMPARISONS OF OCCURRENCE AND LEVELS OF DRINKING WATER CONSTITUENTS AMONG PAIRS OF HIGH AND LOW CANCER MORTALITY COUNTIES IN OHIO

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The basic study procedures and goals of this project are similar to those of the national study. As a result of at least two independent epidemiological studies attention has been focused on Ohio because of the high cancer mortality rates for counties supplied with drinking water from surface sources. Since Ohio counties represent wide contrasts in water sources, geology, industrialization, socioeconomic levels, and cancer mortality rates, it was judged that a study limited to Ohio would be worthwhile. The selection of study counties will be based on the county mortality data available from Ohio State University and the industrial data available from the Ohio Environmental Protection Agency and various publications.

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3.1609,

MORTALITY, MEDICAL, AND INDUSTRIAL HYGIENE STUDIES OF CHLORINATED HYDROCARBONS

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In conjunction with industrial hygiene surveys under contract, NIOSH is determining the feasibility of conducting a mortality study of workers exposed to one or more of the chlorinated hydrocarbons, benzyl chloride, monochlorobenzene, methylene chloride and methylchloride. The posibility of doing such a study will in large part be determined by the existence of a sizable exposed worker population and appropriate personnel records. It has been found that it is not practical to study benzyl chloride because few workers are or have been exposed and also because adequate records on past workers are not available. A hygiene study has been conducted in a cross-section of the industry to document current exposure patterns to this chemical. The feasibility of doing epidemiological studies on workers exposed to the other three chemicals is currently being determined.

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3.1610,

MORTALITY OF WORKERS IN THE NORTHWEST PAPER, PULP AND PLYWOOD INDUSTRY

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In order to follow up an indication of excess cancer among workers in the wood processing industries in state and national mortality statistics, a retrospective cohort mortality study of workers in the Northwest paper, plywood and pulp industries will be conducted. Recent mortality studies conducted by Dr. S. Milham, Jr. show an excess of lymphatic and hematopoietic cancers in wood processing industry employees. Data from a NIOSH contract, 'Occupational Mortality in Washington State, 1950-71', suggest that persons working in the plywood, paper and pulp industries may be at particular risk. The present project aims to substantiate and refine the earlier occupational mortality findings. An effort will be made to localize any excess mortality within selected plants and to indentify agents and processes associated with this. General historical environmental descriptions for each plant will be developed. In-depth industrial hygiene surveys may be conducted if any excess mortality is observed. Nine plants were selected for study, including four plywood mills and five pulp and paper mills. Data on the study population have been collected, coded, and keypunched. After the data are edited and follow-up is completed, NIOSH will begin analyses of the mortality patterns of the study population.

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3.1611,

REPRODUCTIVE HAZARDS AMONG WOMEN EMPLOYED IN THE PHARAMACEUTICAL RESEARCH INDUSTRY

C.F. Robinson, U.S. Dept. of Health & Human Services, Public Health Service, Center for Disease Control, National Inst. for Occupational Safety & Health, Division of Surveillance Hazard Evaluation & Field Studies, *4676 Columbia Pkwy., Cincinnati, Ohio* 45226

An ongoing study of women working in the pharmaceutical research industry is being conducted to determine whether or not these women are at excess risk of miscarriages, stillbirths, transplacental carcinogenesis, malformations or other reproductive problems. The female workers' reproductive history will be obtained using a structured interview questionnaire. Other working women who are not exposed to hazardous substances will be interviewed to provide a control population.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.1612,

RETROSPECTIVE MORTALITY STUDY OF BRAKE LINING REPAIR AND MAINTENANCE WORKERS EXPOSED TO SHORT ASBESTOS FIBERS (5 MICRONS)

C.F. Robinson, U.S. Dept. of Health & Human Services, Public Health Service, Center for Disease Control, National Inst. for Occupational Safety & Health, Biometry Section, *4676 Columbia Pkwy., Cincinnati, Ohio* 45226 (D-IARC-79-1009)

A feasibility study is being conducted to determine the availability of a population of brake lining repair and maintenance workers with a relatively pure exposure to small asbestos fibers (approximately 5 microns) from brake linings. Their environments will be characterized - in the past, and in the present. The possible presence of other exposures which might introduce confounding effects will be determined. The exposure must be primarily to 'wear' dust fibers. If a suitable population is located, a retrospective cohort analysis will be performed to examine the mortality experience of these workers.

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3.1613,

MORTALITY, REPRODUCTIVE, AND INDUSTRIAL HYGIENE STUDIES OF CARBON DISULPHIDE WORKERS

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Carbon disulphide is used in a variety of industries; it is used in the xanthenation of cellulose to produce viscose rayon and cellophane and as a solvent for sulphur chloride in vulcanizing rubber. Additional uses are as a solvent for rubber cement, phosphorus, fats, oils, resins, and waxes, as an insecticide and also in the manufacture of optical glass. The toxicity of carbon disulphide has been recognized for many years and it has been generally associated with central nervous system effects, such as loss of memory, excessive irritability, vertigo, melancholia and, in severe cases, dementia. More recent studies indicate an increased mortality and morbidity from cardiovascular diseases and effects on the reproductive systems of both men and women. A study of this agent conducted by the National Institute for Occupational Safety and Health has the following phases: (1) A mortality study under contract; (2) a study of mutagenesis by administering reproductive history questionnaires to wives of workers; (3) a cross-sectional study to investigate the adverse health effects in workers exposed to carbon disulphide, and (4) an industrial hygiene study to determine present carbon disulphide exposure levels and estimate working lifetime exposures.

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3.1614,

MORTALITY, MEDICAL AND INDUSTRIAL HYGIENE STUDIES OF WORKERS EXPOSED TO SYNTHETIC ESTROGENS

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Synthetic estrogens are a group of synthetic hormones having serious potential effects on exposed workers. Women taking oral contraceptives have an increased risk of thromboembolism, cerebral vascular disease, and myocardial infarction. A study by the National Institute for Occupational Safety and Health (NIOSH) carried out in an oral contraceptive plant indicated that problems are occurring in both males (gynecomastia) and females (menstrual changes). Also, it has been noted that estrogens may be carcinogenic. A cross-sectional medical/environmental study is proposed to investigate health problems resulting from exposure to synthetic estrogens and to attempt to determine a safe level of exposure to these agents. A mortality study of workers occupationally exposed to oral contraceptives will be performed to determine if an excess number of carcinoma deaths have occurred in exposed workers.

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3.1615,

A STUDY OF CANCER AND THE PUBLIC DRINKING WATER SUPPLIES IN MISSOURI

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This project involves setting up a data base of mortality, morbidity, and environmental information for rural postal routes grouped into rural water supply areas. This technique permits comparison of cancer rates for water supply areas which differ considerably in terms of water quality, industrial exposures, geology, and socioeconomic characteristics. County units which are often used may not coincide with water utility service areas. This project should permit an evaluation of the health and environmental (primarily drinking water) consequences of existing or newly established industrial and/or mining operations within rural areas.

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3.1616,

RETROSPECTIVE STUDY OF CANCER IN BLACK AND WHITE POPULATIONS

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It is recognized that certain cancers differ in white and black populations with respect to extent of disease at diagnosis and survival. The purpose of the present study is to characterize the 10 most frequent

cancers in the black and white populations. The study is concerned with incidence, histological types, organ distribution (where applicable), extent of the disease at diagnosis, treatment and survival. These characteristics are being studied over a period of time, not less than years, to determine whether any changes have occurred. This study is also designed to determine whether Detroit is similar to other areas or whether there are regional differences.

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3.1617,

GASTRIC CANCER IN SAN MARINO

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The purpose of this project is to define the genetic and environmental factors causing the high frequency of gastric cancer observed in San Marino. Initial studies have revealed a higher percentage of patients with first degree relatives affected than in the controls. Screening of segments of the population by gastroscopy is being undertaken in attempts to detect the neoplasms early. The project is a cooperative one between physicians in San Marino and in Detroit, Michigan, USA which has a large San Marinese population. Further interim results have been published in Cancer, 1980. Salmonella mutagenicity testing of urine of patients and relatives as well as that of controls and ingested material is planned.

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3.1618,

THE EPIDEMIOLOGY OF MULTIPLE MYELOMA

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The major objective of this case-control study is to learn more about the epidemiology of multiple myeloma. Surprisingly little is known about the epidemiology of this disease, available information is dated, and there are few aetiological hypotheses. The study will have two major components: a medical record review of 450 multiple myeloma cases and an interview study of an additional 150 patients, both components involving matched hospital controls. In addition to examining for associations with available demographic variables, associations between multiple myeloma and socioeconomic class, occupation, environmental exposures, diet, and diseases causing 'immune stimulation' will be evaluated. Particular attention will be paid to evaluation of the association between socioeconomic class and multiple myeloma. Paradoxically, multiple myeloma is reported as being positively associated with high socioeconomic class whereas incidence rates are twice as high in blacks as in whites.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.1619,

CLINICAL CANCER GENETICS

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The objectives of this study are to identify unusual familial aggregations of childhood cancers, associations of childhood cancer and congenital anomalies, or the occurrence of rare tumours in childhood for further aetiological study. Patients are referred from clinical departments. All cancers or other disorders in families under study are documented by medical records and/or vital statistics. Documented familial cases are compared with nonfamilial cancer cases with respect to age at onset, anatomical site, multiplicity of cancers, congenital and chromosomal abnormalities or other predisposing conditions. Within affected families, various clinical and genetic markers are being evaluated.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.1620,

GENETIC CONSEQUENCES OF CHILDHOOD CANCER

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The objective of this study is to identify genetic effects of cancer and therapy, including both the primary factors predisposing to cancer which may lead to subsequent tumors in the patient or heritable tumors in offspring, and treatment-induced mutations which may lead to subsequent tumors or heritable disease in the offspring of patients who have had childhood cancers. A registry of long-term survivors of childhood cancer and their offspring is being established, including data concerning congenital anomalies, predisposing conditions, family history, primary cancer treatment, and other medical or social history. Multiple factorial analysis of risk factors of second tumors and of genetic disease in the offspring will be undertaken.

Description provided by IARC and DKFZ with ICRDB/NCI support.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.1621,

WISCONSIN CANCER REPORTING SYSTEM - CANCER SURVEILLANCE AND RESEARCH

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The overall objective of the epidemiological study section of the Wisconsin Cancer Reporting System is the identification of high risk population groups, environmental factors and potential carcinogenic agents. This is a long-range plan currently directed toward developing the tools necessary for providing a mechanism for identifying cancer morbidity and mortality events or patterns significantly deviating from past trends. A computer program will be written to indicate such occurrences. Specific epidemiological studies will determine the factors involved, should the unusual event or pattern not be the result of changes in reporting habits. A computer program will also be developed to correlate an ongoing basis on various environmental conditions with cancer morbidity and mortality. (For example, a study of the degree of correlation of cancer mortality by distance from a taconite mine with measurements of asbestos in air, water and soil by distance from the mine.) It is anticipated that such computerized surveillance will substantially increase the ability to recognize changes early and to set in action the analytical epidemiological studies required.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.1622,

PHYSIOLOGICAL CORRELATES OF LEUKEMIA

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All tumors classified by the Connecticut Tumor Registry in 1968-1972 (Cancer Incidence in Five Continents III, IARC, 1976), with the exception of chorionepithelioma, were divided into two classes. Class tumors, representing 76 of the 83 tumor types classified by the Registry, exhibit similar patterns of incidence as a function of age with peak incidence occurring at ages greater than 50. It is suggested (J. Theoret. Biol, in press) that the incidence of all class I tumors is determined by mutations which become more probable with advancing age. Evidence suggests that the incidence of cancer declines at ages greater than 80 and it is known that cells lose the ability to divide in old age and we suggest that neoplastic mutations occurring in such cells would not produce a tumor. Class II tumors (acute lymphocytic leukemia, Hodgkin's disease, and tumors of bone and testis) exhibit maximum incidence at ages less than 35. In analogy to the class I tumors, we propose that neoplastic mutations become most probable in tissue of origin of class II tumors at the ages of maximum incidence. We propose to explain the decline in incidence of class II tumors at later ages as premature senescence; the tissues of origin lose the ability to carry out cell division. We are currently seeking experimental support for this theory. Since acute lymphocytic leukemia belongs to class II and the other leukemias belong to class I, we are focussing our efforts on developmental differences between lymphocytes and the other hematopoietic cells. We hope to correlate our findings with the neoplastic process in bone, testis, and Hodgkin's disease.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.1623,

EXPOSURE TO HALOGENATED ORGANIC CHEMICALS FROM DRINKING WATER

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Methods for determining trihalomethanes in human blood and adipose tissue have been developed. Animal models have been used to determine the sensitivity of the technique in assessing exposure to chloroform, carbon tetrachloride, trichloroethylene, bromodichloromethane and p-dichlorobenzene. A body burden survey of persons exposed to various levels of trihalomethanes in their drinking water is in progress. Persons living in the environs of Miami, Florida, having different levels of trihalomethanes in their drinking water are participants in the study. Each participant is interviewed and a blood sample drawn for trihalomethane level determination. So far levels of chloroform have been observed in all participants in the range of 2-400 parts per billion. No bromomethanes have been detected in serum.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.1624,

CONNECTICUT TUMOR REGISTRY - FORTY YEARS OF CANCER INCIDENCE

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A compilation of the incidence and mortality data of the Connecticut Tumor Registry (CTR), 1935-1974, has been prepared to make the data generally available. Because of the uniquely long history of the population-based CTR, its data are of particular value in the study of secular trends. The introduction will present information on factors in the Registry operation and its development which may have influenced registration. For 60 major cancer sites or types and 14 important subsites, as classified in the 'International Classification of Diseases for Oncology, 1976' (ICD-O) (WHO), tables of frequencies and rates of incidence by sex, 5-year age groups, and 5-year time periods are presented. For all sites of greatest frequency, tables have been included for annual frequency, percentages of cases histologically confirmed, cases registered first at autopsy, and cases registered from death certificate only. For other sites, the latter tables will be available upon request. Each table is presented by ICD-O title and number, the comparability of rubric inclusions over the registration period having been checked. Summary tables of age-adjusted rates (US 1950 and 1970) by sex and quinqennia for the major sites are presented. This report will be an in-house publication in 1980, and it is anticipated that it will be available on tape.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.1625,

COLORECTAL CANCER - FACTORS RELATED TO SURVIVAL

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Cancer of the colon and rectum have the second highest cancer incidence among women and the third highest among men in the United States, the median survival time being about 2.2 yr and 2.0 yr respectively. This project will investigate prognostic factors for survival from colorectal carcinoma using cases on file in the Connecticut Tumor Registry, which is a member of the Cancer Surveillance, Epidemiology and End Results (SEER) Group. Statistical methodology will be developed so that survival analysis with covariates can be done for cancer registry data. The analysis will simultaneously consider, using a regression-like approach, the effect of several factors on survival so that the interrelationships can be

investigated. The variables of interest include age, race, and sex, treatment, and extent of disease. In addition, information on socio-economic status, environmental factors, and associated lesions will be investigated to determine their effect on survival.
Description provided by IARC and DKFZ with ICRDB/NCI support.
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3.1626,
ESTROGEN AND GENITAL CANCERS - AN EPIDEMIOLOGICAL STUDY
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This is a case-control study of women in the age range 45-74 years which seeks to determine if use of oestrogen replacement therapy during and following menopause or use of oral contraceptives during the reproductive years alters the risks for cancer of the breast, ovary, or corpus uteri. Particular attention is being paid to specific histological types and to the stage of the disease. Statistical analysis will include consideration of such variables as total length of use, date when first used, and specific compounds used; the possibility of different risks in subgroups of women will also be considered.
Description provided by IARC and DKFZ with ICRDB/NCI support.
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3.1627,
MULTIPLE RISK FACTORS IN BREAST CANCER
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This case-control study has two primary aspects: (1) determine whether hair dye use is associated with breast cancer, and (2) using multivariate techniques examine the additive and interactive effects of various risk factors for breast cancer, including history of thyroid disease, reproductive factors, and family cancer history. Breast cancer cases and controls were drawn from a screening program.
Description provided by IARC and DKFZ with ICRDB/NCI support.
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3.1628,
RADIATION AS A CAUSE OF BREAST CANCER WITH PARTICULAR REFERENCE TO ACNE TREATED BY RADIATION
N. Simon, City University of New York, Mount Sinai School of Medicine, School of Medicine, Dept. of Radiation Research, *1 Gustave L. Levy Pl., New York, New York* 10029
Women who had previous radiotherapy for acne should be added to the radiation exposures previously known to cause breast cancer - young women fluoroscoped for tuberculosis, survivors of atomic bomb explosions and post-partum irradiated mastitis. 43 patients with cancer of the breast who have had previous irradiation for acne have been identified in our department. The number of women who have had radiation for acne is now being investigated, to attempt to determine the incidence of cancer of the breast in such women. This survey of a population of women has been started as a feasibility study of 1,000 women in New York. The survey will concentrate on radiation histories of patients with cancer of the breast.
Description provided by IARC and DKFZ with ICRDB/NCI support.
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3.1629,
RISK FACTORS FOR OVARIAN CANCER
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Failure to develop techniques for early diagnosis of ovarian cancer leads to the late presentation of most cases at a time when cure is impossible. No risk factors for this disease have been established. Patients undergoing treatment for both early and late stage ovarian cancer are being surveyed for factors in personal, medical, social, occupational and other environmental conditions that may exert a carcinogenic effect with expression in the ovaries.
Description provided by IARC and DKFZ with ICRDB/NCI support.
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3.1630,
EPIDEMIOLOGY OF GASTROINTESTINAL TRACT CANCERS
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The purpose of this hospital-based case-control study is to examine suspected risk variables in relation to all organ sites of the gastrointestinal tract. 1,000 cases and appropriate controls will be interviewed and personal, medical, surgical and nutritional histories will be obtained. Analyses will be site-specific with site comparisons on selected factors, primarily nutritional. Selected assays of blood and feces will also be undertaken.
Description provided by IARC and DKFZ with ICRDB/NCI support.
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3.1631,
COLON CARCINOMA, DIET AND THE MICROFLORA
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Populations with a low incidence of cancer of the colon (African, Indian and Japanese) consume a low fat, high fiber diet and exhibit differences in their fecal microflora and fecal acid and neutral steroids excretion when compared to populations with a high incidence of colon cancer. This study is examining differences between these factors in patients with colon cancer, patients with cancer other than gastrointestinal, and control subjects, all from a population with a high incidence of colon cancer. The comparison of dietary factors obtained through dietary histories indicates no significant differences between the three groups. The predominant fecal flora of the colon cancer group shows an increase in aerobic bacteria compared with controls. No differences are observed with regard to species of the organisms. The comparison of the non-gastrointestinal cancer patients with controls also shows significant variations (decrease in total anaerobes and Eubacterium species). Total bile acid and neutral steroids excretion is not significantly different in the three groups. The colon cancer group does, however, excrete less lithocholic, coprostanol, and coprostanone compared to the control group. Final evaluation of follow-up medical data is presently being undertaken.
Description provided by IARC and DKFZ with ICRDB/NCI support.
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3.1632,
AN EPIDEMIOLOGICAL STUDY OF THE LONG-TERM EFFECTS OF GRISEOFULVIN IN MAN
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This study examines epidemiologically the anti-fungal drug griseofulvin. The study has been initiated as a result of recent findings by the Eppley Cancer Institute indicating that griseofulvin induces thryoid tumors in rats. The drug had previously been found to induce liver neoplasms in mice. Based upon available information the objectives are: (1) To identify, locate and establish groups of persons throughout the United States, and possibly some Western European countries who have, in the past 18 years or so, used griseofulvin for treatment of various skin diseases and other illnesses, and (2) to evaluate the possible carcinogenicity and teratogenicity of the drug.
Description provided by IARC and DKFZ with ICRDB/NCI support.
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3.1633,
CASE-CONTROL STUDY OF WATER QUALITY AND CARCINOGENESIS IN PENNSYLVANIA
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This is a case-control retrospective study of colon cancer in four counties - Philadelphia, Delaware, Chester, and Bucks - of Pennsylvania. Decedent cases (colon cancer) and controls (deaths due to causes other than cancer) will be drawn from the state mortality records and the next-of-kin listed on the death certificates will be interviewed. Live cases will be selected from hospital records and controls will be randomly selected from the counties. For each case and control information will be obtained concerning residence, occupation, and medical histories, smoking habits, dietary patterns and medicine usage. Detailed chacterization of water sources, treatment methods and chemicals will be obtained. Relationship(s) between routine water analyses and the detailed organic analyses will be investigated for use in historical extrapolation of specific organic contaminant levels in the water. A further major goal of the project is to investigate and compare alternative case-control study methods. Effectiveness of using next-of-kin of decedents for determining relevant exposure will be compared with the use of live cases. Effect of time between death and interview in reliability and usefulness of data will be evaluated. The methodological information obtained will be useful in future investigations of the role of water constituents in the development of chronic diseases.
Description provided by IARC and DKFZ with ICRDB/NCI support.
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.1634,
EPIDEMIOLOGY OF GASTRIC CANCER AND PRECURSOR LESIONS
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The possible relation between nitrites in the environment and gastric carcinogenesis is being investigated. Nitrites and nitroso compounds are being estimated in the gastric juice and in local foods of the population of Narino, Colombia, where a high prevalence of gastric cancer and precursor lesions has been found. The role of chronic atrophic gastritis in carcinogenesis is being investigated in prospective studies of the population.
Description provided by IARC and DKFZ with ICRDB/NCI support.
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3.1635,
WATER SOURCES AND CHARACTERISTICS AND RISK OF MALIGNANCIES OF SELECTED SITES IN SELECTED LOUISIANA PARISHES
M.S. Gottlieb, Tulane University of Louisiana, School of Medicine, Dept. of Biostatistics & Epidemiology, *1430 Tulane Ave., New Orleans, Louisiana* 70112
In order to determine whether certain drinking water sources predispose individuals to cancer, deaths from cancer of selected sites will be matched to control deaths from non-cancer (non-related causes) within groups of selected parishes with similar characteristics except having differing water sources (river and ground). Matching will be for age, sex, race, and year of death. Cases and controls will be characterized by place of birth, ancestry (Acadian or otherwise), water source and characteristics, occupation and industry, and distance from industry. Length of time on water source for individuals will be determined from residence data, characteristics of the water during the last ten years of life, as well as distance of the residence from local industries characterized by type, size and length of exposure time. These factors will be compared for cancer deaths and non-cancer deaths to determine the contribution of single and multiple variables to the likelihood of dying from cancer. An incidence study will follow for selected sites and parishes where the mortality risk is high. This will be followed by a case/control interview study, including carcinogen screening for selected parishes at high risk for selected sites.
Description provided by IARC and DKFZ with ICRDB/NCI support.
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3.1636,

CASE-CONTROL STUDY OF GASTROINTESTINAL AND URINARY TRACT CANCER MORTALITY IN RELATION TO DRINKING WATER CHLORINATION

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Based on previous research which indicated that females residing in areas with chlorinated water had higher risks of dying of gastrointestinal and urinary tract cancer than their counterparts receiving non-chlorinated water, a case-control mortality record study has been initiated in 19 stable New York counties, to see if gastrointestinal and urinary tract cancer mortality can be related to urban or rural residence, mean income, population density, raw water quality, pH, nitrate concentration and color of the water provided for consumption.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.1637,

EFFECT OF EARLY DETECTION AND TREATMENT ON SURVIVAL FROM LUNG CANCER

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This study was undertaken to determine whether systematic, periodic examinations of sputum cytology, supplementing chest x-ray, could lead to earlier detection of lung cancer in a high risk group and to a reduction in death rate. The population chosen for study is volunteer men, in the New York metropolitan area, over the age of 45 years, who smoke more than one pack of cigarettes daily. A total of 11,000 men will be recruited into the study and all will have posteroanterior and lateral chest x-rays annually; approximately half will also have sputum cytology examinations at four-month intervals. The study is expected to require 5-10 years, and is being conducted in cooperation with the Mayo Clinic Foundation and Johns Hopkins University where additional populations are being surveyed in the same fashion.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.1638,

EPIDEMIOLOGY OF MINIMAL BREAST CANCER IN INITIALLY ASYMPTOMATIC WOMEN

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The goal of this study is to determine, by means of risk factor analysis, whether minimal breast cancer in initially asymptomatic women is essentially different from clinical breast cancer or whether it is an early manifestation of the same disease. Demographic and medical data recorded at the Guttman Breast Diagnostic Institute, which has been offering free breast examinations to women living in New York City since 1968, will be utilized. The study group will consist of an estimated 1,000 cases detected up to the end of 1979 and a random selection of approximately 2,700 controls. Two independent histopathological diagnoses will be obtained. Cases will be compared according to three tumor criteria: invasiveness (minimal vs. clinical), aggressiveness (prevalent vs. incident), and histological type. Controls will be used to confirm relative risk estimates for study factors. Comparison of all cases to controls should result in estimates of relative risk within the range found at other screening centers, whereas the comparison of clinical cases to controls should provide estimates within the same order of magnitude as registry data.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.1639,

MORTALITY STUDY OF OCCUPATIONAL EXPOSURE TO HALO ETHERS

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Chloromethyl-methyl ether (CMME) and his-chloromethyl ether, an impurity (2-8%) in commercial CMME, are alkylating agents having diverse use in the chemical industry. Animal studies have demonstrated that both compounds are potent lung carcinogens. A retrospective cohort study of occupational exposure to CMME was initiated in 1972 to evaluate the human carcinogenicity of these compounds. The initial survey showed a clear excess of respiratory cancer among the CMME-exposed workers, and a strong exposure-response relationship. Other findings among the exposed workers were a considerable number of respiratory cancers at early ages (before age 45), an excess among both smokers and non-smokers, and an inverse relationship between dose and respiratory cancer latency. Particularly because of the latter finding, another mortality survey is underway to better characterize the risk for those with lower exposure levels. The survey will include all seven major CMME producer and user firms in the USA for the time period 1948-1979. An estimated 2,000 CMME-exposed workers and 3,500 unexposed workers will be available for study.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.1640,

STUDY OF ENVIRONMENTAL CARCINOGENS

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The relationship between the level of environmental pollution with benzo(a)pyrene, zinc, cadmium, lead, beryllium, arsenic, and selenium and lung cancer incidence among workers and citizens is being investigated in a large plant of ferrous metals.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.1641,

INCIDENCE OF SKIN AND LIP CANCER IN USSR, ROLE OF SOLAR ULTRAVIOLET RADIATION IN AETIOLOGY OF SKIN CANCER, MELANOMA AND LIP TUMORS

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The main aim of this study is the establishment of incidence rates for skin and lip cancer in different regions and selected ethnic groups of the USSR. To determine the role of solar ultraviolet radiation in the causation of skin and lip cancer, correlation analysis of different climatic factors and the incidence of these cancers in the various republics and regions of the USSR will be undertaken. It is proposed to complete special questionnaires for patients with skin and lip cancer and appropriate controls. Using cancer incidence data for the most frequent sites, it is proposed to study time trends for the periods 1960-1975 for Ukrainian SSR and selected regions thereof.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.1642,

RISK FACTORS IN BREAST CANCER

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The main purposes of the study are to determine, by prospective methods, the most important risk factors for women with breast cancer in the Russian Federation of Soviet Socialist Republics and determine the effectiveness of mammography and thermography in the diagnosis of breast cancer.

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SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.1643,

CARCINOGENIC RISK IN ASBESTOS-CEMENT INDUSTRY

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This retrospective and, perhaps in the future, prospective study is to determine the comparative carcinogenic risk by type of dust inhaled by workers in different parts of asbestos-cement plants. There are three types of exposure - asbestos, which in this country is chrysotile, cement alone, and asbestos-cement. In the past, a minor fibrogenic potential for cement and asbestos-cement was established and compared to that of asbestos.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.1644,

ESTONIAN TUMOR REGISTRY

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This population-based tumor registry covers the territory of the Estonian SSR of 45,215 square kilometers which had, in 1976, a population of 1.4 million. The aim of the registry is to obtain information on total cancer incidence, mortality, prevalence and survival. Reasonably reliable incidence data for cancer have been available since 1967. The cancer registration system is being improved. Active follow-up of patients is in process.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.1645,

RELATIONSHIP BETWEEN ENDEMIC NEPHRITIS AND KIDNEY CANCER

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The aim of the project is to establish the age-adjusted incidence of malignant neoplasms for a seven year period and the relationship between endemic nephritis and cancer of the kidney in an area with 265,000 inhabitants situated in the Serbian Republic on the Morava river.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.1646,

CENTRAL CANCER REGISTRY - POPULATION-BASED

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Broadly the aims of the Central Cancer Registry are (1) to describe the nature and extent of cancer in the New South Wales population by appropriate preparation of data; (2) to provide information for use in control and prevention of cancer, including the audit of public health programs; (3) to provide a basis for education programs for the public and for professional people; (4) to explore the etiology of cancer by analysis of the data with regard to time trends and spatial relationships and by initiating and collaborating in specific studies; (5) to help assess the cost and adequacy of therapeutic facilities and care systems within and external to hospitals; (6) to help inquire into the natural life history of cancer types and the modifications of survival times by various types of treatment; (7) to provide a central source of information for follow-up of cancer patients both routinely and on request. Notification is a statutory obligation for all hospitals and ratiotherapy departments.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.1647,

A STUDY OF CANCER FOLLOWING MULTIPLE FLUOROSCOPIES

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This cohort study is designed to evaluate the carcinogenic risk from ionizing radiation in the dose range 0 to 100 rad and for the major cancer sites to establish if there is a possible dose-response relationship. The study population consists of patients first admitted to Canadian tuberculosis sanitaria between the years 1930 and 1952. A substantial proportion (40 to 50%) were fluoroscoped regularly in conjunction with artificicl pneumothorax treatment and consequently accumulated a substantial radiation dose consisting of many exposures over a period of time. Information on the admission and treatment records of these patients has been extracted from the original sanitaria files. The data, consisting of approximately 130,000 records, have been keypunched. Two computerized record linkage steps using the identifying information present on the records are currently being undertaken. The first is to internally link the records so that admissions referring to the same individual will be brought together to form a composite record. Th3 second step is to link these composite records to the mortality data base maintained by Statistics Canada for the years 1950 through 1974, in order to ascertain the mortality experience of the cohort. A dosimetry study has been completed and published (Health Physics 35(2):259-70, 1978) which determines the dose experienced by various body organs exposed to radiation from fluoroscopies. The dosimetry information will be applied to the individual patient records in order to estimate the radiation dose received by each patient. The analysis will consist of estimation of relative risks with respect to mortality for different cancer sites as a function of dose calculated relative to those members of the study population who are not fluoroscoped.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.1648,

A STUDY OF LONG-TERM CANCER SURVIVORS

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The main objectives of this study are to determine the incidence of long-term survivors among patients with selected malignant disorders in Israel; to attempt to establish whether long-term survivorship is related to such factors as ethnic origin, disease type, and/or early detection; and to attempt to define early predictors that would permit prospective identification of patients with long-term survival. The study will be based on patients surviving ten years or more, with selected malignant disorders, diagnosed in any general hospital in Israel during the period of 1960-1964. Three controls surviving less than two years will be chosen for each case. The first control will be random, the second matched for age, and the third matched for age and sex. The crucial issue is whether we can, at an earlier stage, predict who will be the patients who are likely to become long-term survivors. The possible identification of these patients is of utmost clinical importance, since these patients should be approached differently, with either more or less vigorous therapy.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.1649,

SPATIAL AND TEMPORAL VARIATIONS IN FOUR COMMON CANCERS IN BLACK GOLD MINERS FROM SOUTHERN AFRICA

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In previous work on the gold miners, the pattern of cancer in Black gold miners over the eight-year period 1964-71, constituting 2,926,461 man-years of employment, was studied. Of the 1,344 cancers found, primary liver cancer accounted for 52.8%, oesophageal cancer 12.1%, cancer of the respiratory system 5.4%, and cancer of the bladder 4.8%. Analysis of the spatial distribution of these four cancers, both on subcontinental and local scale, showed distinct gradients of significantly higher and lower incidence than expected. In the case of primary liver cancer in Mozambique and oesophageal cancer in Transkei, the spatial distribution reflects closely that found in the general resident population of each territory. The crude incidence rate of primary liver cancer in gold miners from Mozambique dropped sharply over the period of the survey. The survey continues.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.1650,

ANGIOSARCOMA OF THE LIVER

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All deaths from angiosarcoma of the liver in the UK are verified by supplying pathological material to a panel of pathologists. Those confirmed by the panel are investigated for occupational exposure to vinyl chloride.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.1651,

CANCER EDUCATION AND SCREENING PROGRAM FOR TEXTILE AND FURNITURE INDUSTURIES

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The first project, the Cannon Mills Cancer Education and Screening Program in Kannapolis and Concord, North Carolina was completed in 1977, while other industries are presently participating in similar programs. One of the objectives is to detect specific industrial cancer risks in the textile and furniture industries (e.g., bladder cancer, lung cancer, nose cancer). So far, none of these cancers have shown any appreciable accummulation, i.e., the risk of developing these cancer types appears no higher in the two industries compared to the general population of North Carolina. A description of the first completed project follows: cancer education and screening program was conducted among 19,000 Cannon Mills workers in North Carolina. Lectures were presented on company time for all employees within each of the three 8-hour shifts. This group education contained information on six cancer types felt to be amenable to screening and in which early detection can be expected to increase survival: breast, cervix, colon, bladder, prostate and oral cavity. After the completion of lectures employees were offered a screening examination. Thirteen thousand employees accepted and were screened between 2/1/76 and 1/31/78. The cost of screening was ten dollars per person.

Thirty-two asymptomatic patients who participated in the screening were discovered to have cancer. The compliance among those who had positive findings, and who were advised to see their M.D.'s was 90% among female and 81% among male employees.

The program received unanimous approval of the Carbarrus County Medical Society, which has recommended it for other counties. The state of North Carolina has also adoptedthis program as a pilot program among 10,000 state employees, with the assistance of Blue Cross/Blue Shield.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.1652,

GEO-CANCEROLOGICAL STUDY OF BELGIUM

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Cartographic analysis of the distribution of cancer mortality and morbidity is being used as the basis for a statistical correlation study examining geographical, socio-economic and environmental factors. Particular emphasis is placed on the influence of urban environment.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.1653,

CHILDHOOD CANCER

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Factors affecting a child suffering from malignant neoplasms will be studied under the auspices of the Bangladesh Cancer Epidemiology Research Program (BCERP). The aim of the study is (1) to determine the occurrence and age, sex and religious distribution of childhood neoplasms (primarily lymphomas and leukemias); (2) to study the geographical distribution of these diseases in different districts; (3) to calculate mortality in the light of cases registered by the BCERP and (4) to plot an area map for the study of time-space clusters. Radiotherapy, hematology and histopathology units of the radiotherapy centers in Bangladesh will participate and BCERP tumor registry forms will be utilized for recording. Subsequent compilation and analysis will be done centrally at BCERP.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.1654,

EPIDEMIOLOGY OF LUNG CANCER

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Recent publications in the Bangladesh Medical Research Council Bulletin and Bangladesh Cancer Reports (Rahim, 1975; Rahim et al, 1977; Rahim et al, 1978) have shown that the highest cancer mortality rate for males is that for lung cancer. In this study the relationship between lung cancer and smoking in Bangladesh nationals will be examined. Patients will be interviewed to obtain information on the variety of tobacco smoked (Bidi, Hubblo-Bubble, country-made, processed, filter-tipped, etc.), the amount smoked and degree of inhalation. Questions have been designed to collect these data from the radiotherapy units in Bangladesh. All records will be collected by the Bangladesh Cancer Epidemiology Research Program for analysis.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.1655,

BANGLADESH CANCER EPIDEMIOLOGY RESEARCH PROGRAM

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The aim is to examine the relative frequency of all cancers. Hospitals where radiotherapy facilities are available have been selected for the study. Participation of other hospitals which lack a radiotherapy center is voluntary. Consultants attached to participating hospitals are co-investigators. After interview and examination a clinical report is prepared, one for each patient, in the ad hoc tumor registry of BCERP. The records are collected centrally for compilation and statistical analysis. Three articles have been published and results show that cancer of the larynx, lung and oropharynx is frequent in males, and cancer of the cervix, breast and oral cavity frequent in females.

Description provided by IARC and DKFZ with ICRDB/NCI support.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.1656,

HISTORICAL REVIEW OF MALIGNANT MELANOMA IN ALBERTA 1967-1976

J.M. Birdsell, Southern Alberta Cancer Centre, Dept. of Epidemiology, *2104 2nd St. S.W., Calgary, Alberta, Canada* T2S 1S5

Records of all patients diagnosed as having melanoma of skin or eye during the past ten years were identified from the Alberta Cancer Registry. These files were reviewed and information collected on sex, age, residence history, method of diagnosis, site, pathological features, stage at diagnosis, duration of stages, sites of metastases, treatment and survival. Analysis of data on 99 ocular melanoma patients showed that ocular sites constituted 16% of all melanomas for that period, and 70% of ocular malignancies were melanomas. Female patients had a much higher incidence of the more malignant mixed

cell type tumors than males, while the converse was true of the less malignant spindle cell melanomas. Within each cell type, females survived significantly longer than males. The actuarial five year survival rate of males and females combined was 62%. Metastases occurred in 29 of the 99 patients, with liver being the sole or concomitant initial site of metastases in 22 of these cases. There was no improvement in survival rates over the ten-year period. Analysis of data of skin melanoma patients is underway and will provide information on the incidence, treatment given, recurrence and survival rates and the correlation of various factors with prognosis.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.1657,

EPIDEMIOLOGICAL ASPECTS OF CARCINOMA OF THE CERVIX

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The low income female population constitutes the major portion of those attending the clinics of general hospitals in Brazil for screening for cancer of the uterine cervix. This study aims to characterize, in this low revenue population, those that are at 'high risk' for cervical cancer utilizing 18 variables obtained from complete gyr.ecological examination, cervical cytology, colposcopy and biopsy. The preliminary work of collection of the data has been undertaken over the past two years. The data will now be processed by discriminative analysis to determine which of the variables examined could be a contributing factor to cervical cancer.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.1658,

EPIDEMIOLIGY OF CANCER IN THE NATIVE INDIAN POPULATION OF ALBERTA

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Native Indian populations are in cultural transition. The movement away from aboriginal patterns of adaptation is accompanied by changes in lifestyle and exposure to factors which may increase the risk of cancer. Risk factors include changes in reproductive patterns, a diet based on processed foods, occupational exposure to toxic substances, and increasing use of alcohol, tobacco, and drugs. Published information on cancer incidence and morality among native populations is relatively scant. The pattern of incidence of cancers among native Indian and Eskimo popualtions is different from that among other residents of North America. Malignant disease may once have been rare in native Indian and Eskimo populations. Cancers of the gallbladder and nasopharynx are significantly more frequent among native Indians. Cancers of the cervix and lung appear to have increased in relative prevalence. The Government of Canada maintains records of registered Indians through the Departments of Indian and Northern Affairs and Health and Welfare. There are approximately 32,000 registered Indians who are residents of Alberta. Lists of registered Indians will be matched with files of the Alberta Cancer Registry and with death certificates. An historical prospective study of cancer incidence and mortality among native Indians will be undertaken. It is estimated that for the study period 1974-78 there will be about 100 cancer deaths.

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3.1659,

CANCER INCIDENCE ATLAS

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This study is concerned with the observed geographical variation in the incidence of all malignant diseases in Alberta. The objective of the study is to provide a tool to researchers which will allow them to test various environmental, occupational and genetic hypotheses, provide grounds for developing new hypotheses regarding cancer etiology, and serve as a planning tool for administrators. The methods involve an analysis of county age-sex adjusted incidence rates, calculated from Alberta registry data for the years 1961-1977. In all, some 68,000 malignancies are to be studied. A series of maps will be published in monograph form, showing geographical variation by site.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.1660,

CARCINOMA IN SITU AND DYSPLASIA OF UTERINE CERVIX IN RELATION TO AGE, PARITY AND BEGINNING OF SEXUUAL RELATIONS

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The aim is to determine the age at which carcinoma in situ and dysplasia occur for comparison with findings of authors elsewhere, using a sample group consisting of all 'healthy' patients seen at the Department of Gynecology. Data concerning the age at disease onset will be taken from the Registry. At the beginning of this study only age was considered; in the last months, parity and beginning of sexual relations have been added.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.1661,

RETROSPECTIVE MORTALITY STUDY OF NICKEL WORKERS

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A retrospective mortality study of roughly 12,000 men who have worked in the nickel industry since 1950 is being conducted. Mortality will be ascertained and cause-specific death rates calculated. Different occupational groups will be compared and we hope to make use of environmental data. The aim is to determine any occupational health risks and, hopefully, to identify environmental agents responsible.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.1662,

A MORTALITY STUDY OF NICKEL WORKERS IN ONTARIO

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This study ultilizes a fairly conventional historical prospective design to compare mortality patterns in nickel workers over a 27 year follow-up period. The study cohort consists of approximately 70,000 men working at Sudbury and Port Colborne. Eligible subjects are males with six months or more of accumulated service who worked for the company (or who were receiving a pension) on or after 1 January 1950. The mortality experience of these men through to the end of 1976 will be ascertained from the Statistics Canada registry of death certificates using a record linkage procedure based on full name, date of birth and 'last known alive' date. A series of tactics are being undertaken to estimate the accuracy of the matching. The analysis of this data will relate features of the detailed occupational histories of these men to cause-specific mortality. Of particular interest are the relationships of cumulative nickel sulphide and nickel oxide to respiratory cancer, but other cancers and contaminants will also be considered. In addition, exposure in terms of years of duration in particular occupations (i.e., the sinter plant) will be analyzed.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.1663,

A STUDY OF MALIGNANCY AND OTHER ASBESTOS-RELATED DISEASES IN RELATION TO CROCIDOLITE MINING AND ENVIRONMENTAL EXPOSURE AT WITTENOOM GORGE

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The aim of the study is to determine the incidence of mesothelioma, bronchogenic carcinoma and other malignant tumors in workers previously employed in mining and milling crocidolite at Wittenoom Gorge, Western Australia, between 1942 and 1966, in relation to duration of exposure and smoking habits. The risk of mesothelioma in the relatives of workers and other Wittenoom Gorge residents not directly involved in mining crocidolite will also be assessed. Work is continuing to determine the vital status and present whereabouts of approximately 6,500 men formerly employed at Wittenoom Gorge through electoral rolls, other population registers and cancer and death registers in different Australian States. Commencing in 1979 a questionnaire will be sent to all former Wittenoom Gorge workers so far located to obtain further details concerning occupation and smoking habits. Respondents will be followed for as long as necessary to determine the interaction between crocidolite exposure and smoking in relation to the development of bronchogenic carcinoma. This questionnaire will also seek information concerning relatives of former asbestos workers also living at Wittenoom Gorge. This will be supplemented, if possible, by information from local government and school records to establish a roll of persons not directly involved in processing crocidolite but possibly at risk of developing mesothelioma from environmental exposure. Procedures will be established to monitor this cohort for the future development of mesothelioma.

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3.1664,

INCIDENCE OF TESTICULAR TUMORS WITH EMPHASIS ON POSSIBLE RURAL PREPONDERANCE AND OCCUPATION

T.F. Sandeman, Peter MacCallum Hospital, Urological Service, *278 William St., Melbourne, Victoria 3000, Australia*

Previous surveys of the testicular tumor population presenting to the Peter MacCallum Clinic have suggested an increased incidence of patients from rural areas. Articles published since then have confirmed this trend overseas. Futhermore, evidence in the literature indicates occupational risks for a large number of cancers. Two studies are being carried out: (1) A survey of all testicular neoplasms in the State of Victoria from 1950 to 1978, using records from pathology laboratories, to determine any increase in incidence and possible rural preponderance. (2) A case-control study of cases at Peter MacCallum since 1952, investigating residence (metropolitan, town or rural), occupation, place of birth, religion and possible exposure to carcinogens. All cases have been histologically classified to reveal relationships according to classification. Retrospective studies covering all the available case material are being carried out (a) to increase the numbers and (b) to detect any change in trends, and a survey of pathologists' records is being conducted.

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3.1665,

THE INCIDENCE OF CANCER IN CHRONIC GASTRIC ULCEP PATIENTS

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This is part of a prospective case - control study of 700 peptic ulcer patients who are being followed sequentially. Many variables related to peptic ulcer are being studied, and the number of these patients who develop cancer in the subsequent 10 years will be noted.

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3.1666,

ANALYSIS OF COMPUTERIZED DATA ON MALIGNANT MELANOMA

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A detailed study of malignant melanoma is being made from two points of view: factors in the host and tumor that influence the behavior of the tumor, i.e., disease-free periods and site and type of metastases when they develop. The factors being investigated from the existing records include: (1) identification of high risk individuals; (2) role of sunlight exposure. Studies from the United States and Europe indicate an inverse relation between incidence of melanoma and geographic latitude. However, there appears to be little correlation between morbidity and mortality. Because morbidity has increased more than mortality, there is a need to establish whether: (a) the increase in incidence is indeed a real effect or an artifactual one, resulting from earlier diagnosis and the more frequent removal of superficial tumors, and (b) melanomas induced by sun exposure have a lower degree of malignancy than those always covered by clothing; (3) tumor factors possibly unrelated to sunlight exposure. Morbidity may have increased more than mortality due to changes in the biological nature of the tumor, such as histological type, grade of mitotic activity, level of invasion or tumor thickness; (4) patterns of dissemination of melanoma. It is important to determine why melanoma spreads by either rapid hematogenous transmission, by slower direct lymphatic extension or extension through successive echelons of local and regional lymphatics.

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3.1667,

AUSTRALIAN PETROLEUM INDUSTRY HEALTH STUDY

D.G. Christie, University of Melbourne, Dept. of Community Health, *234 Grattan St., Melbourne, Victoria 3053, Australia*

A twelve-month study is being carried out to determine the feasibility of setting up a data system embracing all employees in the Australian oil industry. The purpose of the system will be to link present exposure to petrochemicals with figures on cancer morbidity and mortality by means of an ongoing prospective study.

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3.1668,

QUEENSLAND MELANOMA PROJECT

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The aim of the study is to investigate the rising incidence of malingnant melanoma in Queensland: to seek etiological factors and to educate the population to reduce the effect of these factors; and to investigate treatment and prognosis in the area. Complete records and follow-up findings on 1,600 patients documented between 1963 and 1969 are maintained. Calculation of the incidence of melanoma in Queensland in the years 1975, 1976, and 1977, together with information on sex and age of patient, site and histological features of the lesion is at present being completed.

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3.1669,

DIET, ALCOHOL, AND HORMONAL STATUS IN COLORECTAL CANCER

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Consumption of alcohol in Australia varies considerably between ethnic and social groups. Diet is presumed to be more homogeneous, which makes it less amenable to analytical study than alcohol. However, some critical dietary items may vary considerably within the population. It has been demostrated that the ratio of male:female incidence rate of colon cancer is about 1, whereas that for rectal cancer is around 2. Further it has been shown that nulliparity is a risk factor for colon cancer in a way similar to that for breast cancer. A case-control study investigating the relationship of both colon and rectal cancer separately, (paying particular attention to anatomical location) with dietary fat, dietary fiber, vitamins A and C and parity and hormonal status is now being undertaken. Cases are identified using a community-based cancer registry, while controls are drawn from the general community. Approximately 400 cases and 800 controls will be studied.

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3.1670,

CENTRAL CANCER REGISTRY

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The Central Cancer Registry continually monitors hospital data from large hospitals in Victoria, covering an estimated 50% of cancers occurring. Clinical data are recorded by medically qualified registry personnel and follow-up to provide survival data is rigorous. The registry yields information on relative frequency as well as treatment trends and results, and is available as a case-identifying centre for retrospective epidemiological studies. A population-based registry is now being developed to register all cases of cancer within the State of Victoria to enable incidence and prevalence to be established. Registry data are made available to research workers on request and advice on statistical and epidemiological techniques is also given.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.1671,

MONITORING THE OCCUPATIONAL ENVIRONMENT FOR CARCINOGENS - A PILOT STUDY IN MONTREAL

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Of the thousands of chemicals in the occupational environment, only a score have at present been demonstrated to be human carcinogens. There is no human evidence one way or another for almost all of the others. The very large number of agents renders inadequate conventional 'one-factor-at-a-time' epidemiologic study methods (case-control or cohort). The objective is to establish an ongoing monitoring system capable of scanning the occupational environment to detect hitherto unsuspected human carcinogens. A case-control type methodology will be used. Cases will be adult male cancer patients hospitalized in the Montreal region. Several sites will be included and each will be analyzed separately. In the pilot study, controls for each site will be selected from among the cases with cancer of other sites. For each man a lifetime history of exposure to a large number of agents will be ascertained. An innovative approach will be developed to ascertain occupational exposures which the worker might not be able to report or recall. This will be based on a self-administered questionnaire followed by an in-depth interview and a matrix relating specific chemical exposures to specific jobs. The matrix will be developed in consultation with experts in the fields of chemical and industrial engineering. A worker's exposure history will be inferred from his job history and the matrix. The analyses will aim to identify high risk chemicals and workplaces. A two-year feasibility study will evaluate diverse aspects such as case ascertainment, data collection methods, and the statistical sensitivity of the system before a long-term system is established.

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3.1672,

OCCUPATIONAL AND NON-OCCUPATIONAL RISK FACTORS OF SQUAMOUS CELL CARCINOMA OF SKIN IN THE MONTREAL REGION

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Data from the Cancer Registry of the Province of Quebec indicate that skin cancer is one of the leading types of cancer in the Montreal region. Given that the two major risk factors of squamous cell carcinoma of the skin recognized in the medical literature are sunlight exposure and the Celtic characteristics of people and that these factors are not particularly marked in the Montreal region, the possibility exists that other risk factors, particularly occupational, could play role. The objective of this case-control study is to assess the relative risk associated with occupational and non-occupational known and suspected risk factors of squamous cell carcinoma of the skin diagnosed in the Montreal region, specifically occupational exposure to sunlight and/or to chemical agents and radiations. The cases are defined as all cases of squamous cell carcinoma of the skin diagnosed during the two years preceding the beginning of the study in the pathology departments of Montreal hospitals. Two controls matched for sex and age with each case will be selected from among pathology records at the same hospital at which the case was found. The controls will be subjects in whom a pathological diagnosis will have been made for skin condition which is non-malignant and which is not known to be related to the risk factors of squamous cell carcinoma of the skin. Cases of pemphigus vulgaris, bullous pemphigus, intradermal naevus and lichen planus will thus be included. The total number of cases in this study is estimated between 400 and 800. A postal questionnaire on occupation and exposure to environmental factors will be sent to each case and each control and telephone calls will then be made to complete missing information. Data will be analysed by means of a discriminant analysis.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.1673,

LATENT PERIODS OF LUNG CANCERS IN CHRYSOTILE MINERS AND MILLERS

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The aim of this study is to investigate the variation in period from first occupational exposure to death in 244 deaths from lung cancer up to the end of 1975 among males in the 'Quebec Asbestos Mortality Cohort' consisting of 10,939 men born 1918 through 1920 who worked for at least a month in the asbestos mines and mills of Quebec. Account will be taken of the full histories of exposure, incorporationg the proportion of each year the man was employed and the average concentration of asbestos, yearly, measured in fibers per cc, and complete smoking histories obtained by questionnaires already completed but requiring recording. Attention will also be paid to such matters as eras of birth and of death, and attempts will be made to cast light on the mechanisms of carcinogenesis.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.1674,

EVALUATION OF OCCUPATION AS RECORDED ON DEATH CERTIFICATES

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The death certificates for about 3,000 persons dying of cancer and previously included in random samples of the Canadian Labor Force have been examined to retrieve recorded information concerning major lifetime occupations. The occupations have been coded using standard occupational coding manuals prepared for use in the decennial census. The coded occupations will be compared with those previously recorded when the individuals were interviewed during the Labor Force Survey.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.1675,

LUNG CANCER MORTALITY IN ALUMINUM REDUCTION WORKERS

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The study aims to determine the lung cancer mortality of workers in three aluminum reduction plants for the 4 year period 1 January 1974 to 31 December 1977 and to examine the relationship between lung cancer mortality and length of employment and level of tar exposure. The methods to be applied are identical to those in an earlier study of lung cancer mortality (1950-1973) currently in press. The populations under study consist of 2 cohorts employed at aluminum reduction plants, one of 5,406 workers who were working at plant A on 1 January 1950 and the other of 485 workers who were working at plant B on 1 January 1951. The mortality experience from lung cancer for this population was studied to 31 December 1973. The period of observation will now be extended to 31 December 1977. The pattern of mortality for the 2 periods 1950-1973 and 1974-1977 will be examined to determine any change in the relationships between lung cancer mortality and tar exposure.

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3.1676,

POSSIBLE INFLUENCE OF ENVIRONMENTAL POLLUTION ON CANCER MORTALITY IN A POPULATION LIVING NEAR A VINYL CHLORIDE POLYMERIZATION PLANT

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This retrospective case-control study aims to determine whether exposure to a factory environment accounts for higher death rates in the population of Shawinigan, Quebec, where vinyl chloride polymerization plant is located. All men aged 25-64 who died from cancer in Shawinigan between 1965 and 1974 will be examined for occupational history, duration of residence in Shawinigan, place of residence there and alcohol and tobacco consumption; they will then be compared with men of similar age who lived in Shawinigan and died at the same time from another cause.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.1677,

CANCER MORTALITY AND DRINKING WATER QUALITY

D.T. Wigle, Canadian Dept. of National Health & Welfare, Lab. Centre for Disease Control, *Tunneys Pasture, Ottawa, Ontario, Canada* K1A 0L2

Cancer mortality rates by sex and site for 104 municipalities will be correlated with water quality. Water samples have been analyzed to determine concentrations of the following: amphibole asbestos, chrysotile asbestos, trihalomethanes, total organic carbon, nitrilotriacetic acid, lead, cadmium, zinc, copper, calcium, magnesium and total hardness. For most municipalities, mortality data are available for at least the past 20 years. Cancer and other disease mortality rates will be correlated with the water quality data listed above plus other factors (year of fluoridation, source of water).

Description provided by IARC and DKFZ with ICRDB/NCI support.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.1678,

IDENTIFICATION OF OCCUPATIONAL RISK FOR COLORECTAL CANCER

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A cluster of five cases of cancer of the large intestine has been observed. The patients had several features in common, including work in the same department of a textile plant. By examining the frequency of colorectal cancer in the population, on the one hand, and these common features, in particular the same long term occupational exposure, on the other, the study attempted to determine whether this clustering was only due to chance or to occupational exposure. A study was done on occupational history, familial history of cancer, bowel habits, precursor diseases, and predisposing conditions for all colorectal cancer patients contracting the disease from 1965 to 1976, in the area where the plant is located and in the neighboring areas. Results, based on 1,600 colorectal cancer cases, show that colorectal cancer was 10 times more frequent among synthetic textile workers than in the non-exposed population (Gastroenterology, 75, 221, 1978). In order to establish the etiological nature of this association, a case-control study has been undertaken. The control groups include patients with cancer other than colorectal cancer, patients with diseases other than cancer, and matched neighborhood controls. The on-going phase of the work will establish whether or not an elevated risk of colorectal cancer is associated with employment in any particular part of the plant.

Description provided by IARC and DKFZ with ICRDB/NCI support.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.1679,

FRENCH MESOTHELIOMA REGISTER

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To date 197 proved cases of mesothelioma (mainly pleural) have been reported for the period 1965-1978, a moderate increase over time being noted. Occupational and para-occupational asbestos exposure was recorded in 77 percent and 3 percent of registered cases respectively. As the number of cases notified to the register is obviously an underestimate, it is intended to evaluate the annual incidence of this tumour by retrospective registration. Relationships with asbestos exposure and with other pollutants will be sought, and case-control studies for a dose-response relationship with asbestos carried out using retrospective inquiries and measurements of fibres in tissue.

Description provided by IARC and DKFZ with ICRDB/NCI support.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.1680,

ESTABLISHMENT OF A REGISTRY FOR DIGESTIVE TRACT TUMORS IN THE DEPARTMENT OF CALVADOS

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This Registry has been established to clarify the frequency of these cancers according to site, age, sex, occupation, alcohol and tobacco consumption; to define high risk population groups for each site; and to provide information on the current status of screening (warning signs, diagnostic means, time lag between first symptom and diagnosis and between diagnosis and death). Data are collected from physicians, gastro-enterologists, surgeons, pathologists in towns, hospitals (university hospitals, cancer centres, private and public hospitals), health insurance bodies and the Department Directorate for Health and Social Welfare. Only cases of digestive cancer which have occurred since 1 January 1978 in patients residing in Calvados are included.

Description provided by IARC and DKFZ with ICRDB/NCI support.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.1681,

CALVADOS CANCER REGISTRY

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The registry compares cancer morbidity in the Department of Calvados with that in the French regions of Bas-Rhin and Doubs, in other regions bordering France (Geneva, Lausanne, Neuchatel, Saragossa) and in more distant parts (Warsaw, Connecticut, Cuba, southern England, etc.). Morbidity time trends are estimated and compared with those observed in other registries. The geographical distribution of cancer within Calvados is examined to study possible etiological factors (e.g. predominance of lung cancer in areas with asbestos industries). The Registry records cancer cases in the Department as accurately as possible and assists with the planning of screening and prevention in Lower Normandy.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.1682,

PRECANCEROUS CONDITIONS OF THE STOMACH

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Atrophic gastritis is a well known risk factor of gastric cancer and severe atrophic gastritis of the body (SAGB) probably carries the highest risk. In the atrophic mucosa tissue metabolism is altered, the intestinal mucosa acquiring absorptive characteristics (absorption of carcinogens). Cell maturation and kinetics are disturbed leading sometimes to the development of epithelial atypia, and the associated achlorhydria may facilitate the development of carcinogenic nitroso-compounds intragastrically. The determination of serum pepsinogen group I (Radio-immuno-assay-method of Samlofi), with a very high sensitivity and specificity, is used as a screening method for SAGB. Serum pepsinogen group I determination will also be carried out in a sample of patients with gastric carcinoma to examine possible correlations between SAGB (low serum pepsinogen group I), and the localization and histological type of gastric carcinoma. 100 subjects without any major gastric pathology, such as polyps, peptic ulcer or gastric cancer, will also be studied as part of an international multicentre study proposed by IARC. Gastric biopsies from antrum and body, and samples of gastric juice and blood are taken for estimation of N-nitroso compounds in people living in low or high risk areas.

Description provided by IARC and DKFZ with ICRDB/NCI support.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.1683,

BENIGN BREAST DISEASE - NATURAL HISTORY AND RELATIONSHIPS TO BREAST CANCER

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This retrospective cohort study is designed to delineate the natural history of benign breast lesions, and to determine the ways in which the benign and malignant conditions relate in the same individuals. A cohort of 1,713 women who were biopsied between 1968 and 1973 at the Toronto Western Hospital for possible breast cancer and were found to have benign breast disease has been assembled. Genetic, epidemiological and pathological information will be obtained on these women. This data will be analyzed to assemble descriptive information about the natural history of the benign breast lesions in all patients and also in the patients stratified by histological type of the lesion, and by the presence of microcalcification in the mammogram. These women will be followed up to the year 1981 (8 to 13 years) to (1) obtain additional information about the postulated risk factors of breast cancer and (2) determine the subsequent development of benign or malignant breast diseases among them.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.1684,

EPIDEMIOLOGICAL STUDY OF BLADDER CANCER

A.B. Miller, University of Toronto, *Medical Sciences Bldg., Toronto, Ontario, Canada* M5S 1A8

A recent case-control study of the epidemiology of bladder cancer conducted by the NCIC Epidemiology Unit produced a number of important findings. The current study's objective is to re-evaluate these findings in a second case-control study conducted in different geographical areas in Canada. Areas where occupational causes may be more important, the roles of tobacco, particularly the differential effect of filter and regular cigarettes, artificial sweeteners, instant and regular coffee in males as well as females, hair dyes, and the association with non-public water supplies will be studied. The study is population-based with case and control acquisition from the whole of Alberta and from southern Ontario including the areas of metropolitan Toronto, Kingston, Windsor, London, and Hamilton. All newly diagnosed

cases of bladder cancer in the areas included in the study are being identified. An equal number of age- and sex-matched controls will be obtained from population registries. All cases and controls are interviewed in their own homes with a questionnaire similar to that utilized in the first study.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.1685,

NATURAL HISTORY OF DYSPLASIA OF THE UTERINE CERVIX

A.B. Miller, University of Toronto, *Medical Sciences Bldg., Toronto, Ontario, Canada* M5S 1A8

In most models of the natural history of squamous carcinoma of the cervix, dysplasia is regarded as the first recognizable pathological process in an orderly progression from normal to malignant epithelium. Since dysplasia does not always become malignant, there is need to clarify the extent to which regression forms part of the natural history of dysplasia. The present study aims at seeking information on the natural history of cytologically identified but untreated dysplasia in comparison with a sample of normal women with smears examined in the same laboratory. An estimated 10,000 women in the case series of moderate or severe dysplasia and 30,000 in the control series will be included. Information is also being sought on the possible association of oral contraceptive use and the risk of progression of dysplasia. Data extraction is currently under progress.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.1686,

EPIDEMIOLOGICAL STUDY OF LARYNGEAL CANCER

A.B. Miller, University of Toronto, *Medical Sciences Bldg., Toronto, Ontario, Canada* M5S 1A8

The study is designed to investigate the contribution of known and suspected aetiological factors to laryngeal carcinoma. It is hypothesized that there is an association between laryngeal carcinoma and the smoking of tobacco and that there is a reduced risk for smokers of filter cigarettes. It is also proposed that there is a synergistic effect between alcohol consumption and the smoking of tobacco. A further hypothesis is that there is an association between laryngeal cancer and exposure to asbestos in the environment and occupationally, especially for those who smoke cigarettes. It is also hypothesized that there is an association between cancer of the larynx and exposure to nickel refining and processing. The study is a case-control study with data on past events and exposure obtained from cases and controls by means of a detailed questionnaire which is administered personally to cases and controls in their homes. The study population consists of all newly diagnosed cases with carcinoma of the larynx, March 1, 1977, to April 31, 1978, resident in Southern Ontario and the Sudbury, and North Bay areas in Northern Ontario. Controls are matched to cases by age (plus or minus five years), sex, and neighborhood of residence. Controls are obtained by door to door survey. At the end of 16 months of interviewing, a total of 130 case-control pairs have been interviewed. It is anticipated that a total of 200 case-control pairs will be available for analysis.

Description provided by IARC and DKFZ with ICRDB/NCI support.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.1687,

THE PREVALENCE OF BREAST CANCER AMONG FEMALE FACULTY MEMBERS AND FACULTY WIVES

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The object is to determine the prevalence rate of breast cancer among women who are faculty members and among the wives of the male faculty members and compare it with the expected rates from provincial incidence figures. Because of their high socioeconomic class and late child bearing, this group of women may be at a high risk. The rates will be correlated with age at first pregnancy to see if there is an excess rate after correction for this has been made. All faculty members were sent a brief questionnaire and to date over 70% have responded. The data have not yet been tabulated.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.1688,

ANALYSIS OF CERVIX UTERI CANCER MORTALITY RATES IN CHILE

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The study evaluates the National Cervix Uteri Cancer Control Programme. Standardized mortality rates for this cancer in different regions of the country are related to the percentage of women screened in these regions. A reduction of more than 70% in mortality rates, taking epidemiological factors into account, has been observed in the screened population. The rates per 100,000 for women over age 20 from 1970-1977 in two areas of Santiago show, for unscreened populations, expected rates of 27.90 and 24.54 and observed rates of 47.84 and 27.46, while in the screened populations expected rates are 17.40 and 19.43 and observed 4.64 and 5.71. The study continues.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.1689,

CONTINUOUS FOLLOW-UP OF CANCER INCIDENCE IN FINLAND, BY PRIMARY SITE, SEX, AGE, AND GEOGRAPHICAL SUB-AREA

E.A. Saxen, Finnish Cancer Registry, *Liisankatu 21 B, 00170 Helsinki 17, Finland*

The Finish Cancer Registry receives information on all cancer cases diagnosed in Finland. On the basis of this information cancer incidence data will be published in annual reports. In addition, the files of the Registry are continuously used for various kinds of research purposes by the Registry staff and outside researchers.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.1690,

CHILDHOOD CANCER AND PARENTS' OCCUPATION

K.J. Hemminki, Inst. of Occupational Health, Dept. of Industrial Hygiene & Toxicology, *Haartmaninkatu 1, SF00290 Helsinki 29, Finland*

The study aims to find out whether any correlation exists between the occupational activities of parents and cancer in their children. The material consists of cancer cases in children under 15 years of age recorded by the Finnish Cancer Registry in the period 1959-1968. The parents' occupations were traced from the records of the antenatal clinics. Controls were matched for age and place of birth. The material is being analysed with regard to the occupation of the parents.

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3.1691,

ROLE OF OPIUM PRODUCTS IN THE ETIOLOGY OF ESOPHAGEAL CANCER IN NORTHERN IRAN

N.E. Day, Centre International de Recherche sur le Cancer, Unit of Epidemiology & Biostatistics, *150 Cours Albert Thomas, 69372 Lyon Cedex 2, France* (01249)

Opium dross is widely consumed in the area of high esophageal cancer incidence in northern Iran. It has been shown to be mutagenic in the Ames test. A series of studies is under way to identify the active components in the dross.

Description provided by IARC and DKFZ with ICRDB/NCI support.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.1692,

INTESTINAL MICRO-ECOLOGY IN NORDIC COUNTRIES

O.M. Jensen, Centre International de Recherche sur le Cancer, Division of Epidemiology & Biostatistics, *150 Cours Albert Thomas, 69372 Lyon Cedex 2, France* (00128)

The project continues to collect information in relation to two sets of hypotheses: (1) Metabolic hypothesis - specific dietary consituents, e.g., fat or type of meat, are related to fecal bacterial flora, metabolities of bile acids and steroids in the feces and in turn to colon cancer risk differences. (2) Fiber deficiency hypothesis - it has been postulated that high intake of fiber (especially from cereals) results in increased fecal bulk and is protective against colon cancer. These hypotheses are being examined in a collaborative project comparing urban and rural populations in Denmark and Finland. The populations are compared in terms of present diet, including dietary fiber, mouth-anus transit time, fecal bacteria, steroids and mutagenicty, other characteristics, such as fecal weight.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.1693,

DETERMINATION OF A RISK LEVEL FOR BREAST CANCER AND ITS APPLICATION TO MASS SCREENING

A.G. Bremond, Hopital Edouard Herriot, Clinique Gynecologique, *Pl. d'Arsonval, 69374 Lyon Cedex 2, France*

Nationwide X-ray screening is both impracticable and unadvisable. If high risk women were identified, this examination could be restricted to a smaller number of patients. On the basis of known epidemiological data, a double prospective survey can be carried out among cancer-free control women and those who have had breast cancer. The risk level, determined through a computer program, should select 80 percent of women with cancer and not apply to more than 50 percent of controls.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.1694,

ALCOHOL AND CANCER OF THE DIGESTIVE TRACT

A.J. Tuyns, Centre International de Recherche sur le Cancer, Unit of Epidemiology & Biostatistics, *150 Cours Albert Thomas, 69372 Lyon Cedex 2, France*

In Calvados, France, individual information on dietary, drinking and smoking habits is being collected from patients with cancer of the digestive tract and from a sample of the general population. The purpose of this case - control survey is to further study the combined effects of alcohol and tobacco on the various anatomical sites within the digestive tract.

Description provided by IARC and DKFZ with ICRDB/NCI support.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.1695,

EPIDEMIOLOGICAL INVESTIGATION ON LARYNGEAL CANCER

A.J. Tuyns, Centre International de Recherche sur le Cancer, Unit of Epidemiology & Biostatistics, *150 Cours Albert Thomas, 69372 Lyon Cedex 2, France*

Laryngeal cancer is particularly frequent in the southwest part of Europe. The role of tobacco and alcohol is being investigated in terms of a dose-response relationship and combination of these effects. The study is of the classical case-control type using population controls. Occupational factors are also being studied.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.1696,

PRECANCEROUS LESIONS OF THE ESOPHAGUS IN HIGH- AND LOW-RISK AREAS FOR ESOPHAGEAL CANCER

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The objective of this study is to determine the type and prevalence of precancerous lesions of the esophagus in populations with high and low rates for esophageal cancer. At autopsy, esophagi have been collected from patients dying of diseases other than cancer of the esophagus. The specimens have been processed and examined by the pathologists participating in the study, using standard techniques. Slides from each case are sent to the IARC for circulation among the pathologists. A blind histopathological evaluation of these will be made, using a standard protocol.

Description provided by IARC and DKFZ with ICRDB/NCI support.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.1697,

EPIDEMIOLOGY OF PRIMARY LIVER CANCER

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The study aims to analyse the transmission of viral hepatitis. Horizontal and vertical transmission of the Australia antigen and distribution of the various antigens and antibodies in primary liver cancer families are assessed as well as relationships with other known aetiological factors. The Australia antigen distribution among two population groups, one white, one black (one from the Cap Vert region and one from the borders of the Senegal river), living in the same ecosystem is compared and an evaluation of the role of genetic factors attempted.

Description provided by IARC and DKFZ with ICRDB/NCI support.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.1698,

INTERNATIONAL EPIDEMIOLOGICAL STUDY OF LUNG CANCER

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This retrospective epidemiological study now includes 600 lung cancer cases, each matched with two controls (for age and sex). Patients are particularly questioned on the following: brands of tobacco used, inhalation of smoke, alcohol consumption and occupational exposure. The same questionnaire is used in the different participating countries. The histological diagnosis of lung cancer must be checked. Controls must be free from smoking-related diseases. The objectives of the study are to examine the different risk factors in both populations (cases and controls), and to compare the findings from different countries.

Description provided by IARC and DKFZ with ICRDB/NCI support.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.1699,

HISTOLOGY, IMMUNOPATHOLOGY, AND VIROLOGY OF MALIGNANT LYMPHOMAS (EPIDEMIOLOGICAL COMPARISON BETWEEN WEST GERMANY AND COLOMBIA)

G. Krueger, Universitat zu Koln, Immunopathology Section, *Cologne, Federal Republic of Germany*

The objective of the study is to identify various histological and immunological types of malignant lymphomas and correlate their incidence with the frequency of infectious diseases in general and with EBV infection. In particular there is an obvious difference in the occurrence of various types of malignant lymphomas between West Germany and Colombia. There also appears to be a difference in the incidence of infectious diseases between both countries, both bacterial and viral. It is expected that certain types of malignant lymphomas will increase with the increased frequency of infections. The study will identify such tumours and analyse their pathogenesis by comparing the results with those from experimental studies on lymphomagenesis.

Description provided by IARC and DKFZ with ICRDB/NCI support.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.1700,

NASOPHARYNGEAL CARCINOMA

G. Krueger, Universitat zu Koln, Immunopathology Section, *Cologne, Federal Republic of Germany*

The objective of this study is to correlate the incidence of various types of nasopharyngeal carcinoma with geographical distribution, anti-EBV titers, distribution of lymphocytic types (T and B) in blood and tumour tissue, the course of the disease and prognosis. The investigations will be an extension of our earlier studies (G. Konorza et al.: Distribution of T- and B-cells and of Immunoglobulin-producing Cells in Tumor Tissue of Patients with Nasopharyngeal Carcinoma. J. Cancer Res. Clin. Oncol. 93: 195, 1979).

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.1701,

MORTALITY STUDY ON THE OCCUPATIONAL RISK OF ACRYLONITRILE PROCESSING

A.M. Thiess, Badische Analin & Soda Fabrik Ag, Abt. fuer Arbeitsmedizin und Gesundheitsschutz, *Brunckstrasse 56, 6700 Ludwigshafen, Federal Republic of Germany*

This study is designed to evaluate the possible carcinogenic potential of acrylonitrile as an occupational risk substance since evidence exists that acrylonitrile may be the cause of lung and colon cancer amongst workers exposed to the chemical. The warning of NIOSH that the product should be handled as a cancer-causing agent in humans is based on preliminary tests on animals and on an epidemiological study carried out in workers exposed to the chemical. The differential mortality of workers involved in the processing of acrylonitrile at different plants of BASF Ludwigshafen is investigated by a cohort study including all personnel ever employed at the site of manufacture taking into account the possibility of mixed exposures. This problem of mixed exposure makes the evaluation more difficult.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.1702,

MORTALITY AND MORBIDITY SURVEY OF OCCUPATIONAL RISK OF ETHYLENE AND PROPYLENE OXIDE IN CHEMICAL PRODUCTION AT BASF, LUDWIGSHAFEN, GERMANY

A.M. Thiess, Badische Analin & Soda Fabrik Ag, Abt fuer Arbeitsmedizin und Gesundheitsschutz, *Brunckstrasse 56, 6700 Ludwigshafen, Federal Republic of Germany*

Ethylene oxide (EO) is known to be a mutagen in various biological systems like bacterias, animal and human tissues. This led to a suspicion that EO might be a potential carcinogenic risk. A cohort study was designed to assess cancer incidence in those occupational groups which have been exposed to both ethylene and propylene oxide. The chemical workers ever exposed to the substance are followed up for mortality experience (cause of death) and for morbidity. The follow-up includes careful tracing of retired and resigned persons. The problem of possible mixed exposure has to be taken into consideration.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.1703,

EPIDEMIOLOGY OF GYNECOLOGICAL CANCER OF THE SAARLAND

H. Sachs, Universitaets Frauenklinik, *D6650 Hamburg, Saarlands, Federal Republic of Germany*

Time trends in gynecological cancer are being evaluated using the data of the Saarland Cancer Registry.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.1704,

THE PROPORTION OF METAL WORKERS AMONG PATIENTS WITH TESTICULAR CANCER AND AGE-MATCHED CONTROLS

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Preliminary analyses suggest that the occupational histories of patients with testicular cancer show an unusually high proportion of metal workers. The data have been collected from 64 patients treated in the Medizinische Hochschule between 1967 and 1974. The objectives of the present study are to increase the number of interviews investigating the occupational background of patients with testicular cancer, and to establish a control group consisting of patients with diseases other than cancer, of comparable age and treated in the same hospital as the patients with testicular cancer.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.1705,

ARSENICALS USED IN TREATING VENEREAL DISEASES AND SUBSEQUENT DEVELOPMENT OF CANCERS

R. Steele, Queens University, Dept. of Community Health & Epidemiology, *King St. W., Kingston, Ontario, Canada* K7L 3N6

Studies of cancers of the cervix, uterus and prostate have shown an association with venereal disease (VD). This current study of all cancer sites attempts to determine whether this association might be the result of treatment of VD with metallic compounds, especially arsenicals. Detailed records of patients treated in Kingston, Ontario in the 1930s, 40s and 50s for VD have been linked with the records of these patients who subsequently developed cancers. Analyses are under way.

Description provided by IARC and DKFZ with ICRDB/NCI support.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.1706,

RISK OF SOMATIC RADIATION DAMAGE - EPIDEMIOLOGICAL INVESTIGATIONS ON RADIATION DAMAGE IN PATIENTS TREATED WITH RA-224

W. Goessner, Gesellschaft fuer Strahlen und Umweltforschung mbH Munchen, Abteilung fuer Pathologie, *Ingolstaedter Landstrasse 1, D8042 Neuherberg, Federal Republic of Germany*

In about 2,000 persons treated with radium-224 for ankylosing spondylitis (Bechterew's Disease) or bone tuberculosis, the effects of this particular type of radiation are being investigated. In collaboration with orthopedic hospitals the patients are subjected to follow-up examination. The results of these investigations, in particular the onset of malignant and degenerative disease and causes of death, are evaluated with a view to establishing dose-response. Further knowledge about the risk of radiation cancers in general is thus gained.

Description provided by IARC and DKFZ with ICRDB/NCI support.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.1707,

STUDY OF THE POSSIBLE PREVENTIVE EFFECT OF BCG AGAINST CANCER IN ADULTS

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Studies have shown that BCG may have a non-specific preventive effect against mortality due to leukemia in children aged 0 to 4 years. This cohort study aims to determine if BCG could have a preventive effect against cancer in adults by comparing mortality and morbidity from cancer of all types among vaccinated and unvaccinated nurses. Names and addresses of all nurses graduated in the province of Quebec between 1952 and 1967 were obtained. A questionnaire was sent to each. This questionnaire included questions on age, date of graduation, marital status, BCG vaccination status, names of diseases of all kinds diagnosed since graduation, date of the event, place of diagnosis and treatment, name of physician, smoking habits, number of preg-

nancies and abortions and finally name and cause of death of classmates known to have deceased since graduation. The BCG vaccination status was verified in the central BCG record of l'Institut Armand-Frappier. Information has been received from 12,856 nurses of a possible total of 21,000, and 453 deaths have been reported. These data will be analyzed, taking into consideration vaccination status, age and time since vaccination.
Description provided by IARC and DKFZ with ICRDB/NCI support.
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3.1708,
CONGENITAL MALFORMATIONS AND NEOPLASMS IN NEWBORNS AND INFANTS
M. Hauge, Odense Universitet, Inst. of Clinical Genetics, *17 Winslowsvej, 5000 Odense C, Denmark*
A ten per cent sample of the population of Denmark is being followed from birth through infancy to provide incidence and prevalence figures for congenital malformations and malignant growths. Sources of information include: hospital case records, midwives' reports, death certificates and postmortem reports. Within the area selected all cases having been diagnosed as neoplasms will be traced. Basic population data are available in great detail.
Description provided by IARC and DKFZ with ICRDB/NCI support.
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3.1709,
CASE-CONTROL STUDY IN COPENHAGEN OF URINARY BLADDER TUMORS
J. Clemmesen, Finseninstitutet, Danish Cancer Registry, *Strandboulevarden 49, DK2100 Copenhagen, Denmark*
The aim is to undertake a case-control investigation of factors associated with lower urinary tract cancers in Copenhagen (bladder, renal pelvis, ureter, urethra). The following factors will be investigated: tobacco smoking, diet, with particular regard to intake of coffee and artificial sweeteners, use of drugs, in particular analgesics, and occupation. Qualitative and quantitative exposure among newly diagnosed cases (500) will be compared with two independent age-matched and sex-matched control groups drawn from among hospital patients (500) and the total population (1,000), respectively.
Description provided by IARC and DKFZ with ICRDB/NCI support.
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.1710,
REGISTRATION OF WOMEN WITH PRIMARY AND SECONDARY GENITAL HERPES SIMPLEX VIRUS (HSV) INFECTION
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Recent observations indicate that women suffering from primary genital HSV type 2 infection represent a high risk group for later development of carcinoma of the uterine cervix. The development of a simple, sensitive and reliable enzyme-linked immuno-specific assay (ELISA) for the exact titration of herpes simplex virus type 1 and type 2 specific antibodies in human sera has made it possible to perform serological HSV type-specific diagnosis of clinical cases of genital HSV infections and identify four categories of patients: (1) Primary genital herpes caused by HSV type 2 (HSV infection in an individual who has never had HSV infection before); (2) primary genital herpes caused by HSV type 1; (3) secondary genital herpes caused by HSV type 2 (genital HSV in an individual who has previously had HSV type 1 infection); (4) wrong clinical diagnosis (i.e., the serological result indicates that the patient did not have an HSV infection). It is planned, in a period of three years, to diagnose and register as many of the genital HSV infections as possible - hopefully at least 50% of all cases in Denmark seeking medical care. The later follow-up of the registered cases of genital HSV infection will be performed under the screening programs for cervical carcinoma presently being developed in Denmark. The objective of the study is, by a large-scale prospective investigation, to obtain valid information about: (1) The incidence of genital HSV infection in Denmark and the distribution of primary and secondary cases, and (2) the risk of later development of carcinoma of the uterine cervix.
Description provided by IARC and DKFZ with ICRDB/NCI support.
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.1711,
EPIDEMIOLOGIC STUDIES ON MALE LUNG CANCER IN NORTHERN SWEDEN
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In a study of the geographical distribution of all new male lung cancer cases in the three northernmost counties in Sweden between 1959 and 1971 great differences were found between different regions. Some communities with mining districts or other heavy industry had age-adjusted incidence rates 10-15 times higher than more rural communities. The occupational profile of te cancer cases is being compared with that of a control series matched by age and place of residence. Information about occupation is obtained both for the cases and for the randomly selected controls through the general population register. For deceased male lung cancer cases registered in the same region from 1972 to 1977, a more detailed case-control study is being performed based on questionnaires to relatives about occupation, employment and smoking habits.
Description provided by IARC and DKFZ with ICRDB/NCI support.
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.1712,
MORTALITY OF SMOKERS AMONG SWISS PHYSICIANS
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The mortality rates and causes of death for smokers, nonsmokers, and past smokers in Swiss physicians have been examined as part of a study of 1,212 deaths in 3,740 physicians from 1955-1973. All of the 40 doctors with bronchial carcinoma were smokers. The death rate for myocardial infarction in smokers was high for the age-group 35-55, returning to normal over the age of 75. The similarity of mortality rates in cigar and pipe smokers in Switzerlnd with those of non-cigarette smokers (around 20% of the total) is of special interest. The study continues.
Description provided by IARC and DKFZ with ICRDB/NCI support.
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.1713,
POSTMENOPAUSAL ESTROGEN TREATMENT AND ENDOMETRIAL CANCER
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It has been hypothesized that estrogens are related to development of postmenopausal endometrial cancer. Numerous American case-control studies have shown a substantial increase of risk in connection with estrogen replacement therapy. The present study is a prospective one which will follow a sample of some 30,000 estrogen-treated postmenopausal women during an observation period of at least five years to ascertain the incidence of endometrial cancer. The observed incidence in this cohort will be compared to the expected one which will be computed from available cancer statistics. There will be additional studies in this cohort regarding the incidence of mammary cancer and also deep vein thrombosis and gallbladder disease. The large cohort is established by collecting all estrogen prescription forms from a defined geographical region in the center of Sweden. From these prescription forms the identity-number (a ten-digit number) will be collected and stored with the help of computer facilities. All new cases of endometrial cancer will be collected from different pathology departments which serve the same geographical region. All hysterectomized women in the cohort will be excluded by referring to a special computer-based admission diagnoses register. All cases of endometrial cancer will be examined and interviewed to study the distribution of known risk factors. This will be done in samples of the total estrogen cohort and samples from a non-treated healthy population.
Description provided by IARC and DKFZ with ICRDB/NCI support.
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3.1714,
EPIDEMIOLOGY OF ANAPLASTIC ENDOMETRIAL CANCER
O.R. Kjellgren, Umea University, Dept. of Gynecological Oncology, *S90187 Umea, Sweden*
Following studies of corpus uteri cancer based on all patients in the northern part of Sweden (Acta Obstet. Gynecol. Suppl 65, 77-82, 1977) which defined risk factors such as age, body weight, menstrual and reproductive history, presence of fibroids, diabetes, hypertension, etc., anaplastic cancers occurring in the region are being compared with other corpus cancers to determine whether these characteristics are similar.
Description provided by IARC and DKFZ with ICRDB/NCI support.
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.1715,
INVESTIGATION OF THE POSSIBLE INFLUENCE OF AGE AT FIRST BIRTH ON RISK OF BREAST CANCER
L.O. Thoren, University Hospital, Dept. of Surgery, *S75014 Uppsala 14, Sweden*
With the aim of examining the possible influence of age at first birth on subsequent risk of breast cancer, information concerning this factor will be collected in all new cases of breast cancer during 10 months within an area with an expected incidence of about 1,000 cases. The same questionnaire will be used for women with breast cancer and for age-matched controls selected from the computerized population register.
Description provided by IARC and DKFZ with ICRDB/NCI support.
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3.1716,
THE EFFECT OF GYNECOLOGICAL SCREENING PROGRAMS ON THE INCIDENCE OF CERVICAL NEOPLASIA
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Cytological screening programs have a certain effect on the incidence figures of cervical neoplasia, both pre-invasive and invasive. However, a significant effect on mortality figures has been difficult to establish. Using a computerized program and the unique person identification number long accepted by everyone in Sweden, every single investigation and single individual can be easily followed. Preliminary figures indicate that a significant effect can be demonstrated much earlier than previously found among women actively taking part in a screening program.
Description provided by IARC and DKFZ with ICRDB/NCI support.
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.1717,
CANCER INCIDENCE AMONG CERTAIN GROUPS IN THE ELECTRONIC INDUSTRY
D.H. Vagerce, Huddinge Sjukhus, Dept. of Social Medicine, *S14186 Huddinge, Sweden*
The aim of this study is to examine the incidence and mortality of cancer in a group of workers in the electronic industry, and to investigate the ways in which the medical care organization inside the industry deals with occupational hazards.
Description provided by IARC and DKFZ with ICRDB/NCI support.
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3.1718,
WOOD WORKERS AND CANCER
B. Esping, University of Linkoping, University Hospital, Dept. of Occupational Medicine, *58185 Linkoping, Sweden*
An excessive incidence of cancer of the nose has been found among wood workers. There are also some indications of an excessive incidence of malignancies elsewhere, but few systematic studies are available. Malignancies of other sites, particularly of the respiratory system, will, therefore, be studied to examine the possible relationship to wood dust exposure. Both the case-control and the cohort approach will be applied in two studies. Various types of wood will be studied with regard to their potential cancer producing properties.

Description provided by IARC and DKFZ with ICRDB/NCI support.
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.1719,
HERBICIDE EXPOSURE AND CANCER INCIDENCE AMONG RAILROAD WORKERS

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An earlier report (Axelson and Sundell, Work Environ Health 11, 21-28, 1974) indicated a cancer hazard due to exposure to amitrole. Further evaluation has shown that exposure to phenoxy acids might also produce cancer (Axelson, Scand. J. Work Environ Health 4,85-89, 1978) and this is confirmed in another recent study on mesenchymal tumors and exposure to phenoxy acids and chlorophenols (Hardell, Laekartidnignen 75, 3535, 1978). It seems pertinent, therefore, to update the earlier study of a cohort of railroad workers to find out whether or not the increased cancer mortality continued after 1972.

Description provided by IARC and DKFZ with ICRDB/NCI support.
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3.1720,
MORTALITY AMONG FOREST WORKERS

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Several studies have shown an increased risk of cancer among people with exposure to various herbicides. Forest workers in Sweden have used phenoxy acids since the beginning of the 1950s and an evaluation of the mortality pattern might show particular features. The study will be descriptive in character and will show the proportional mortality for various causes of death. About 1,030 forest workers are known to have died during the study period, 1968-1977, as recorded on union registers. Using case-control techniques, a second part of the study will examine cause-effect relationships between cancer and exposure to phenoxy acids.

Description provided by IARC and DKFZ with ICRDB/NCI support.
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3.1721,
MINING, SMOKING AND LUNG CANCER

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An earlier report (Axelson and Sundell, Scand. J. Work Environ. Health 4, 46-52, 1978) has indicated a greatly increased lung cancer incidence among zinc-lead miners, as has also been found for iron ore miners in Sweden. It seems resonable to suppose that the occurrence of radon and radon daughters in the mines is primarily responsible for the increased lung cancer mortality among miners. Surprisingly it was found that non-smokers were affected as much or even more than smokers, although smokers, on an average, died of lung cancer before the age of 60, whereas non-smokers died over the age of 70. The explanation might be that smokers in underground work tend to get bronchitis, i.e. an increased thickness of the mucosa, which might protect against alpha radiation. Other mining groups are now being studied using a similar technique to confirm or refute earlier findings.

Description provided by IARC and DKFZ with ICRDB/NCI support.
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3.1722,
HOSPITAL BASED CANCER REGISTRY IN VISAKHAPATNAM

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Palatal cancer is very common in this area in both sexes. Among males, penile cancer is also very common. A hospital-based cancer registry was established in 1976 to evaluate the frequency of these cancers. All cancer cases (histologically confirmed in the Department of Pathology) coming from a defined geographical area with a population of one million are collected. The minimum rates per thousand are calculated and standardized by age according to WHO.

Description provided by IARC and DKFZ with ICRDB/NCI support.
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3.1723,
CANCER OF THE BLADDER IN OPIUM ADDICTS

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The main result of a case-control study of patients with bladder cancer at Shiraz (Pahlavi) University Hospitals was that the risk of developing cancer of the bladder in opium addicts is at least eight times greater than that of the normal population. A prospective study with screening of all opium addicts (by urine cytology for detection of early bladder carcinoma) was thus started at the University. The preliminary results indicate that the risk of developing cancer of the bladder is considerably higher in opium addicts than previously assumed. As of July 1978, 3,500 opium addicts had been screened. The controls, who do not take opium, number 1,750 and are matched by age and sex. A history of smoking habits is obtained. Fourteen histologically confirmed and previously unrecognized cases of bladder cancer have been detected. This early finding indicates that opium addiction should be considered as a carcinogenic agent for cancer of the bladder and further investigation is warranted. Schistosomiasis has not yet been reported in Fars Province and there is little industry.

Description provided by IARC and DKFZ with ICRDB/NCI support.
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3.1724,
MALIGNANT LYMPHOMA (NON-HODGKIN'S) IN EAST JAVA

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A retrospective study of non-Hodgkin's Malignant Lymphoma (nHML) in the Department of Pathology, Faculty of Medicine, Sourabaya (1973-1976) gave rise to a number of problems. There were many difficulties in investigating possible aetiological factors on nHML. The only factor that could be investigated and regarded as probably having an aetiological correlation was the socio-economic status of the nHML case. The possible correlation between the subtypes of nHML and their response to a certain mode of therapy was difficult to evaluate for various reasons including a limited budget. The study design has been changed and it is now intended to report the relative frequency of sub-types of nHML (histopathological classification), to investigate the age-distribution, to investigate the possible relation with socio-economic levels, and to investigate the geographical distribution. To increase the number of samples investigated, the anatomical site under study has been extended to the whole reticuloendothelial system and the area investigated has been enlarged from the Sourabaya area (town) to East-Java (province).

Description provided by IARC and DKFZ with ICRDB/NCI support.
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3.1725,
THE SWEDISH CANCER ENVIRONMENT REGISTRY

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The persons with tumours who are entered in the Swedish Cancer Environment Registry are those contained in the Swedish Cancer Registry for a period 1961-1973 and verified as being registered in the 1960 Population and Housing Census. During the period from 1 January 1961 to 31 December 1973, the number of cases of cancer at sites 140-205 in the Registry was 376,015. Individuals were indentified by their personal identification number. On linking the files one per cent of entries in the Cancer Registry could not be traced. The information entered in the Registry, obtained from the 1960 Population and Housing Census, concerned the following: occupation, main occupation during the year, economic activity, occupational status, gainful employment, county, municipality or parish, location of place of work (county, municipality, parish), country of birth and education.

Description provided by IARC and DKFZ with ICRDB/NCI support.
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3.1726,
UTERINE CERVICAL DYSPLASIA AND ITS RELATION TO CERVICAL CANCER

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Evidence on the etiopathogenesis and biological behavior of cervical dysplasia is mostly controversial, however, it is generally accepted that less than five percent of cases progress to squamous cell carcinoma. A multifaceted approach to the study in two phases is planned, the first collecting data on the clinical, cytopathological and virological status of dysplasia cases and matched control women and the second following up dysplasia cases and controls to understand the biological behavior of the lesions and their progression to cervical cancer. So far serum samples from 186 patients with cervical dysplasia and 98 normal matched control women have been assayed for herpes simplex virus types 1 and 2 (HSV-1 and HSV-2) antibodies by the indirect hemagglutination (IHA) test. The distribution of HSV antibodies did not vary significantly among cases and controls. Ninety-five women with dysplasia and 39 controls were followed up for periods ranging from 6 to 36 months. The clinical and cytopathological findings of patients with cervical dysplasia were correlated with HSV-1 and HSV-2 antibody profiles in serum from the same patient. It was observed that (1) the majority of dysplasias reverted back to normal cytology during this period; (2) 14 patients had persistent dysplasia of the cervix and all of them had HSV antibodies; (3) three patients developed squamous cell carcinoma of the cervix and one developed adenocarcinoma. All the squamous cell carcinoma patients had HSV-2 antibodies, while patients with adenocarcinoma did not have HSV-2 antibodies. The study continues.

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3.1727,
HEPATITIS B SURFACE ANTIGEN (HBSAG) IN LIVER DISEASES FROM DIFFERENT GEOGRAPHICAL AREAS

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Six hundred seventy-two postmortem liver specimens from patients with primary liver cancer, cirrhosis and other liver diseases, from high, intermediate, and low risk areas for liver cancer, have been examined for hepatitis B surface antigen using the Shikata orcein stain. The association between hepatitis B and primary liver cancer shown in serological studies is confirmed in these tissue studies, and, in addition, a positive association between this virus and non-alcoholic cirrhosis is observed in all geographical areas, but no association is observed for alcoholic cirrhosis.

Description provided by IARC and DKFZ with ICRDB/NCI support.
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3.1728,
EPIDEMIOLOGICAL ASPECTS OF A CANCER CONTROL PILOT PROJECT

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Within the framework of a program for the early detection of precancerous lesions and early cancer of the uterine cervix, oral cavity, and pharynx, by systematic clinical examination, cytology and biopsy, aetiological and epidemiological studies will be undertaken. The prevalence and incidence of these cancers will also be assessed. Knowledge, attitudes and practices relating to cancer are being examined in relation to a large number of factors including age, sex, religion, occupation, income, etc. Questions are asked about diet, personal habits, reproduction associated factors, etc.

Description provided by IARC and DKFZ with ICRDB/NCI support.
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.1729,

CANCER REGISTRY IN EASTERN INDIA

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There is no comprehensive cancer registry in Eastern India (West Bengal, Bihar, Assam and Orissa). Cancer patients from these states belonging to various groups with different socio-economic characteristics are referred to cancer hospitals and other hospitals of Calcutta for treatment. A cancer registry has been set up at the Epidemiology Dept. of Chittaranjan National Cancer Research Centre, Calcutta, to provide data for studying aetiology, epidemiology, treatment and end results of malignant diseases. The basic objectives of this registry include: (1) study of frequency distribution of different types of cancer in this area; (2) definition of high risk profiles; (3) determination of trends and aetiological factors.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.1730,

CHRONIC ATROPHIC GASTRITIS AND INTESTINAL METAPLASIA IN THE HUNGARIAN AND ITALIAN POPULATIONS

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Stomach cancer is very frequent in Hungary. The most important predisposing conditions are chronic peptic ulcer, chronic atrophic gastritis with or without intestinal metaplasia and gastric polyps. The main objectives of the study are to identify any links between these high risk lesions and gastric cancer, and the relation of these precancerous conditions to each other. It is proposed to undertake comparative studies in Italy including nitrosamine levels in gastric juices and their relation to the histological alterations of the stomach. Some 200 patients with the listed conditions are being followed as well as non-symptomatic controls.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.1731,

HISTOLOGICAL CLASSIFICATION OF TUMOURS IN ICELAND ACCORDING TO THE WHO CLASSIFICATION

J. Hallgrimsson, Haskola Islands, Dept. of Pathology, *Ingolfsstraeti 5, Reykjavik, Iceland*

This is a comprehensive study of tumours and tumour-like lesions in Iceland according to the World Health Organization's International Histological Classifications of Tumours. All tumours occurring in the country in the period 1955-1974 will be classified and when desirable, tumour-like lesions at some sites will be included. The results will be reported in a series of papers. This will represent a standard approach that is hoped to yield valuable data on tumours, their incidence and comparisons with other geographic areas. At the same time information will become available on the implementation of the WHO classifications. The WHO has given both scientific and financial support to this work.

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3.1732,

ETIOLOGICAL ASSOCIATION OF BREAST CANCER AND HASHIMOTO'S THYROIDITIS

N. Maruchi, University of Tokyo, Faculty of Medicine, Dept. of Health Administration, *7-3-1 Hongo, Bunkyo-ku, Tokyo 113, Tokyo, Japan*

Our recent study in Japan on the possible associations between breast cancer and Hashimoto's thyroiditis indicated that Hashimoto's thyroiditis could be one of the risk factors for breast cancer, though similar studies at the Mayo Clinic carried out by the author showed no association between the two diseases. In order to examine this discrepancy, several lines of inquiry including expansion of a prospective study of patients with Hashimoto's thyroiditis, and an autopsy study are now being conducted.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.1733,

A CASE-CONTROL STUDY OF CANCER OF THE PANCREAS IN GREECE

D. Trichopoulos, University of Athens, School of Medicine, Dept. of Hygiene & Epidemiology, *Odos Panepistimiou 30, Athens 609, Greece*

The causes of cancer of the pancreas are unknown and the descriptive epidemiology of the disease has not been adequately studied. In this project the general background of affected persons in Athens, Greece is explored in a case-control study. Questionnaries are being filled out and blood samples are being collected from about 200 pancreas patients and a similar number of hospital controls. Sera will be examined for serological markers and biochemical parameters including trace elements.

Description provided by IARC and DKFZ with ICRDB/NCI support.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.1734,

ESTROGEN PROFILES IN DAUGHTERS OF BREAST CANCER PATIENTS IN GREECE

D. Trichopoulos, University of Athens, School of Medicine, Dept. of Hygiene & Epidemiology, *Odos Panepistimiou 30, Athens 609, Greece*

To account for the major features of the epidemiology of breast cancer, a hypothesis has been developed linking breast cancer risk to oestrogen metabolism. The hypothesis postulates that women who, during the early years of reproductive life, metabolize a low proportion of their oestrogen to oestriol are at high risk of breast cancer during the remaining years of their lives. Since daughters of breast cancer patients are at increased risk of breast cancer, it should be expected that these women would have low oestriol ratios. Urine samples are being collected from 100 daughters of breast cancer patients hospitalized in Athens. Estrogen profiles and other hormone metabolites are being measured in Melbourne or Boston.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.1735,

THE CHRACTERIZATION OF RISK CONDITIONS OF GASTRIC CARCINOMA AND THEIR DYNAMIC BEHAVIOR IN REPRESENTATIVE SAMPLES

M. Siurala, (No Performing Organization Reported), *Finland* (00853)

The epidemiology and dynamic behavior of atrophic gastritis and its relation to gastric carcinoma have been studied in 301 first-degree relatives of index patients with gastric carcinoma and 358 age-and sex-matched relatives from a large Finnish population (Scand. J. Gastroenterol. 14: 129-139, 1979 and Acta Pathol. Microbiol. Scand. A 87: 457-462, 1979). The epidemiological and cell kinetic behavior of intestinal metaplasia and epithelial dysplasia are now being studied in the same population with the addition of all cases diagnosed at a gastroenterological department. The dynamics of Hydrochloric Acid (HCl) secretion on a population level are also being examined in this population. The dynamics are evaluated by mathematical methods based on stochastic assumptions and using a linear multicompartment modelling with analog hybrid computer technology.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.1736,

CANCER MORTALITY ALONG A TRAFFIC ARTERY

W. Blumer, (No Performing Organization Reported), *Switzerland* (01296)

During an observation period of 18 years it was found that cancer mortality among all persons living adjacent to a highway was six times higher than that of the inhabitants of a traffic-free quarter. The soil content of polycyclic hydrocarbons along the traffic artery was 12 times greater than in the traffic-free section, and it could be proved that these hydrocarbons originated from automotive emissions. In the course of the next few years the condition of the still surviving inhabitants adjacent to the traffic artery will be examined. The possibility that other factors could be responsible for the excessive frequency of deaths due to cancer along the traffic artery will also be considered. Further analyses will determine whether a decrease in emissions and therefore decrease in cancer mortality take place.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.1737,

AETIOLOGY OF PRIMARY SARCOMAS AND PULMONARY HAMARTOCHONDROMAS

C. Gebauer, Johannes Gutenberg Universitat Mainz, Medical Clinic, *Langenbeckstrasse 21, D6500 Mainz, Federal Republic of Germany*

The relation between carcinogenic exposures and the 104 pulmonary hamartochondromas diagnosed in 1959-1974, 192 histologically typed carcinomas of the lung in 1961 and 41 primary pulmonary sarcomas diagnosed between 1957 and 1974 in the regional pulmonary clinic of Zschadrass is being assessed. Controls are selected from a defined district, near Leipzig, with 35,300 inhabitants aged 20-80 years, which is within the area served by the clinic. This area contains an urban residential district, a rural area, and an industrial zone. Among the factors considered are the smoking of cigarettes; air pollution as determined by residence in urban, rural and industrial areas; exposure to radiation in underground mining; chronic lung diseases, notably chronic bronchitis, tuberculosis and silicosis; family history of cancer; blood groups. The various histological types of lung cancer are compared with the sarcomas and hamartochondromas.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.1738,

CIGARETTE SMOKING, THE KEROSENE STOVE AND LUNG CANCER IN HONG KONG

J.S. Leung, (No Performing Organization Reported), *Hong Kong*

The aim of this study is to further substantiate the role of the kerosene stove as a carcinogenic factor causing the very high incidence of lung cancer among women in Hong Kong (Br.J.Dis.Chest 71(4): 273, Oct 1977). Lung cancer patients seen by the Government Thoracic Services are questioned about smoking habits and cooking practices. Controls were obtained by random sampling of seven districts in Hong Kong. It is believed that Hong Kong is one of the few regions where kerosene has been extensively and regularly used in domestic cooking.

Description provided by IARC and DKFZ with ICRDB/NCI support.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.1739,

COMPARATIVE EPIDEMIOLOGICAL STUDIES

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International differences in cancer mortality in selected organs (lung, skin, stomach, breast, cervix uteri) are being studied with a view to developing causal hypotheses.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.1740,

COMPARATIVE STUDY OF ALCOHOLISM AND CANCER OF THE HEAD AND NECK

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One hundred patients with a diagnosis of head and neck cancer were investigated carefully for a history of alcoholism in the U.S.A. Most patients with cancer of the tongue, tonsil and oropharynx were alcoholics. About one half of the patients with supraglottic carcinoma were alcoholics. In the nasopharynx and true vocal cords, there was no association with heavy drinking. The study is now being extended to Ireland since the Irish ethnic group allegedly accounts for a considerable proportion of the American drinking problem. Initial results suggest that this may be ex-

aggerated at least as far as the cancer problem is concerned.

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3.1741,

EPIDEMIOLOGICAL ASPECTS OF ASBESTOSIS AND MALIGNANT TUMORS

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Chrysotile and tremolite asbestos, freely dug, sold and used by inhabitants of some villages and towns in Turkey, leads to pleural calcification with the eventual complication of malignancy of the respiratory tract. This study aims to gather information concerning malignancies of the upper and lower segments of the respiratory tract and, to some extent, of the digestive system, among people of different socio-economic levels and geographic regions. The biological effects of asbestos will also be investigated in both humans and animals using clinical, experimental and laboratory methods, electron microscopy and mineralogical analysis of the biological material. The groups to be studied are: (1) hospital cases; (2) cases found in screening of the field; (3) animals such as mules and asses (used for transport); (4) laboratory animals such as rats and rabbits. Air and water pollution studies will also be carried out. This study will involve large control groups. Since Turkey is rich in different minerals, this investigation will reveal similar effects, if any, of other elements.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.1742,

ENVIRONMENTAL FACTORS IN THE ETIOLOGY OF ESOPHAGEAL AND GASTRIC CARCINOMA

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Esophageal and gastric carcinoma incidence is highest in eastern Turkey, an area which resembles the Caspian sea region in Iran in living conditions, eating habits and socio-economic status. The climate and some geological features are also similar. Iranian and Russian studies have shown that a great number of these cancers were found in patients of Turkish origin. A study is now taking place in the Marmara region where living conditions, diet and socio-economic status are entirely different from those in eastern Turkey. A cancer map and incidence data will be compiled to compare the two different regions.

Description provided by IARC and DKFZ with ICRDB/NCI support.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.1743,

A MORTALITY STUDY OF CHRYSOTILE ASBESTOS WORKERS

H.F. Thomas, Medical Research Council, Epidemiology Unit, *4 Richmond Rd., Cardiff CF2 3AS, Wales, United Kingdom*

This study is examining the mortality, by cause, of 2,000 workers employed for at least six months between 1936 and 1977 at a factory manufacturing chrysotile asbestos construction materials.

Description provided by IARC and DKFZ with ICRDB/NCI support.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.1744,

RELATION BETWEEN REGIONAL DIETARY FIBER AND NUTRIENT INTAKES AND COLON CANCER MORTALITY IN GREAT BRITAIN

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There have been suggestions that the intake of dietary fiber is protective against neoplasms of the colon. Previous reports have dealt with international comparisons using estimates of crude fiber intake based on food production figures. This investigation explores associations between fiber intake and cancer of the colon within a defined region (Scotland, England and Wales). Figures for total dietary fiber consumption and the consumption of the components of fiber on a regional basis are computed from the National Food Survey estimates of food consumption (1969-73) and the fiber analyses of Southgate. Figures for nutrient intake and the consumption of certain foodstuffs are also included in the analysis. These are compared with truncated age-standardized death rates from cancer of the intestine (excluding rectum) for the same period.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.1745,

A FOLLOW-UP STUDY OF WORKERS IN FLAX MILLS

P.C. Elwood, Medical Research Council, Epidemiology Unit, *4 Richmond Rd., Cardiff CF2 3AS, Wales, United Kingdom*

The aim of the study is to relate mortality in flax workers to occupation and dust exposure over a 16 year period. In 1962 a study was conducted by Elwood and others of 2,528 flax workers employed in Northern Ireland. A modified form of the Medical Research Council questionnaire was administered, simple respiratory measurements were made and a detailed survey of dust levels was conducted. An attempt is now being made to trace each worker seen in 1962. If dead, the certified cause of death will be ascertained and related to occupation, dust exposure and probably some of the measurements made in 1962.

Description provided by IARC and DKFZ with ICRDB/NCI support.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.1746,

MONOGRAPHS ON CLINICAL AND EPIDEMIOLOGICAL ASPECTS OF MALIGNANT DISEASE IN A POPULATION OF 5 MILLIONS

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A series of monographs is being prepared, each one dealing with a single site, or with a group of closely related sites, where, by examining at the same time both epidemiological and clinical features in extenso, an attempt is made to provide an overall view of the occurrence and treatment of the disease in the region as a whole. By including all cases, rather than a selected series from a central hospital, the degree of variation of treatment and survival can be shown. One of the results it is hoped to obtain is an improved sense of regional solidarity, leading to greater interest and participation in region-wide schemes to up-grade treatment standards and thus improve prognosis. Comparisons of incidence by geographical or other subdivisions of the region can also be used as possible indicators of etiological factors.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.1747,

CASE STUDY OF ATAXIA-TELANGIECTASIA IN ISRAEL AND ITS RELATIONSHIP TO MALIGNANCY

S. Levin, Kaplan Memorial Hospital, Dept. of Pediatrics, *P.O.B. 1, Rehovot, Israel*

Studies of the immune system in ataxia-telangiectasia, which has high incidence in Israel are being conducted. Attempts are being made to correlate immune status and increased incidence of malignancy. Studies on lymphoblast lines from A-T are being conducted.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.1748,

HERPES VIRUSES IN CHILDHOOD CANCER

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Groups of children with various tumor types are being tested by the indirect immunofluorescence test for the presence of antibodies to Epstein-Barr virus (EBV), cytomegalovirus (CMV), and herpes type 1 and and varicella-zoster (VZ) viruses in order to obtain information on primary infections and on frequency of reactivation or reinfection with these viruses in sick as well as healthy children. Correlation analysis of serological profile with age, sex, ethnic origin and clinical data will be carried out.

Description provided by IARC and DKFZ with ICRDB/NCI support.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.1749,

CORRELATIONS BETWEEN DIETARY FACTORS AND PRE- AND POST-MENOPAUSAL BREAST CANCER

B. Modan, Chaim Sheba Medical Center, Dept. of Clinical Epidemiology, *Bitan 27, Tel Hashomer, Ramat Gan, Israel*

Epidemiological studies have shown the possible role of nutritional patterns in the etiology of breast cancer. Our study will try to determine the role of diet and/or nutritional status in the incidence, pathogenesis and natural history of pre- and post-menopausal breast cancer. This study is based on 720 newly diagnosed cases of cancer of the breast and 1,440 matched controls. Each case will be matched to two types of control: (1) non-malignant and non-gastrointestinal surgical patients from the same wards and (2) neighborhood. Controls will be matched on age and year of immigration to Israel (within five years), and country of origin. Analysis will be done separately for the main ethnic groups, as well as for pre- and post-menopausal women. Correction for such factors as age at first pregnancy, parity, weight, and height will be applied. A list of 243 food items will be included in the questionnaire, comparison of cases and controls will pertain to: (1) individual food items and (2) groups of foods combined on the basis of common nutritional components.

Description provided by IARC and DKFZ with ICRDB/NCI support.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.1750,

ROLE OF INFANT FEEDING PRACTICES AND ENVIRONMENTAL FACTORS IN DEVELOPMENT OF THE GUT FLORA

B.S. Drasar, University of London, London School of Hygiene & Tropical Medicine, Dept. of Medical Microbiology, *Keppel St., London WC1E 7HT, England, United Kingdom*

Studies in which the diet of individual adults has been changed, have failed to demonstrate those alterations in the flora that were expected as a result of comparisons of people in low and high colon cancer risk areas. The role of breast feeding, diet at weaning and environment in the establishment of the adult flora is being examined. The hypothesis being tested predicts that the flora detectable in adult life is the result of early feeding practices and once established is very resistant to change. Thus the metabolic potential of the flora and hence colon cancer risk would be fixed early in life. Breast fed infants and post weaning children in Malumfashi, Nigeria are compared with those in London, United Kingdom. Nutritional and environmental assessments are also being undertaken. Breath methane in children and adults are being evaluated as epidemiological indicators.

Description provided by IARC and DKFZ with ICRDB/NCI support.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.1751,

LONG-TERM FOLLOW-UP OF PERSONS EXPOSED TO SCALP IRRADIATION IN CHILDHOOD

B. Modan, Chaim Sheba Medical Center, Dept. of Clinical Epidemiology, *Bitan 27, Tel Hashomer, Ramat Gan, Israel*

Approximately 11,000 individuals irradiated between 1948 and 1960, for control of tinea capitis, and two matched control groups (almost 16,000 people) are being retrospectively followed through national registries and medical records. The irradiated group has been found to have a significant excess of malignant and benign head and neck tumors, especially of the brain, parotid gland and the thyroid.

Description provided by IARC and DKFZ with ICRDB/NCI support.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.1752,

BREAST CANCER MORTALITY CHANGES IN A SCREENED POPULATION

B.A. Thomas, Jarvis Breast Screening, *Stoughton Rd., Guildford, Surrey, United Kingdom*

In the Guildford Breast Screening Project, one the British Breast Cancer Screening Trials, some 25,000 women aged 45-65 are being invited to attend screening centers (fixed and mobile) for clinical examination of the breasts and mammography using the Medichrome low radiation dosage system. General practitioner age/sex registers are being used as the basis for the recruitment of all women in the age group. Personal and medical data, particularly obstetric, breast feeding, and hormonal histories, past breast problems and family histories of breast cancer are being obtained from each woman. These invitations will be repeated two-yearly from updated registers with clinical examination only, carried out by a specially trained nurse, undertaken in the intermediate years. The doctors carrying out the main screening examinations will also read the mammograms, which will be classified according to Wolfe's duct patterns with a view to the determination of mammographic high risk groups. Prevalent, incident and interval cancers will be studied and long-term follow-up undertaken. Mortality rates in this district will be compared with those in other trial and control districts.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.1753,

THE INFLUENCE OF HORMONE REPLACEMENT THERAPY ON THE INCIDENCE OF BREAST CANCER IN WOMEN

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The demand by women for hormone replacement therapy is increasing. Breast cancer is acknowledged to be hormone-dependent. This is a long-term project to assess the influence of hormone replacement therapy on the incidence of breast cancer in women. A cohort of 300 women is being screened for breast cancer by clinical examination, thermography and mammography before commencing hormone replacement therapy and re-examined at three months and annually thereafter. The control group consists of 300 women matched for age, parity, hormonal status, and family history of breast cancer.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.1754,

HIGH INCIDENCE OF CATTLE CANCER - POSSIBLE INTERACTION BETWEEN ENVIRONMENTAL CARCINOGEN AND PAPILLOMA VIRUS

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The objective is to study the possible co-carcinogenic effects of papilloma virus and bracken fern in inducing alimentary cancer and urinary bladder tumours in cattle. High incidence areas in the upland beef farms of Britain have been demonstrated and the overall incidence in beef cows appears to be of the order of 2.5 to 5 percent per year. high percentage of these animals have pre-existing multiple alimentary papillomas. Virus has been extracted, purified and transmitted from these. An epidemiological study of the farms is in progress to elucidate the latent periods for papilloma induction and to attempt to clarify the sequential stages of cancer development. The relationship between these cancers and human cancers is being examined to determine whether an increased risk is observed in affected farms.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.1755,

EPIDEMIOLOGY OF BLADDER CANCER IN WEST YORKSHIRE

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Yorkshire has one of the highest mortality rates in the United Kingdom for bladder cancer with an SMR for males in 1969-73 of 114. Incidence and mortality are unevenly distributed within the area and the aim of the project is to account for the high mortality and the variation in incidence. The study is a case-control investigation of prevalent and incident cases for certain hospital areas within the Yorkshire area, including Bradford and Kirklees. The controls are neighbourhood and hospital in type. A questionnaire has been constructed which explores personal habits, past medical history and occupational history in depth. Details of the natural history of the bladder cancer are also recorded. The first phase of the study, dealing with prevalent cases, will be complete in 1979, whilst the incidence study will continue for some years beyond that date. It is hoped that at least 600 cases will be interviewed in the first phase of the study.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.1756,

AGE-TIME-COHORT ANALYSES OF MORTALITY

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This method of mortality analysis was first described in J. Hygiene (Camb.) 71, 253-59, 1973. It consists of the simultaneous use of age, time and cohort factors. Of the three factors, age at death, epoch of death and epoch of birth, one seems almost superfluous. It is nevertheless worthwhile to include all three, allowing for the constraints that the redundancy imposes. This procedure is being applied to published data for England and Wales on breast cancer, bladder cancer and prostate cancer mortality, 1951-1970.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.1757,

CASE-CONTROL STUDY OF MALIGNANT MELANOMA

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A case-control study of women aged 16-49 with malignant melanoma has been set up. 400 cases and 800 controls with be interviewed. The main aim of the study is to examine the relationship of oral contraceptive use to the risk of developing malignant melanoma. In addition, information about exposure to sunlight, occupation and reproductive history is being collected; the relationship of these factors to melanoma risk, and their inter-relation with oral contraceptive use will be examined.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.1758,

NATIONAL REGISTRATION OF CHILDREN WITH RETINOBLASTOMA IN JAPAN

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Retinoblastoma is the most common intraocular malignant tumor in Japan. To investigate epidemiology, genetics, pathology and clinical aspects of retinoblastoma in Japan, the national registration of retinoblastoma children in Japan was started in 1975 by the Committee for National Registration of Retinoblastoma Children, consisting of 44 ophthalmologists and three other scientists. Interim reports have appeared in Acta Soc. Opthalmol. Jpn. 80: 1648, 1976, and in the proceedings of the International Symposium on Retinoblastoma, Jpn. Opthalmol. 22, No. 3, 1978.

Description provided by IARC and DKFZ with ICRDB/NCI support.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.1759,

A RETROSPECTIVE COHORT STUDY ON MALIGNANT NEOPLASMS IN WORKERS OF A CHROMATE MANUFACTURING PLANT IN TOKYO

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The plant chosen for study is the larger of the two chromate manufacturing plants in Japan. In recent years, 24 lung cancer cases have been reported among the chromate workers of the plant. Since the plant was in continuous operation during the period 1915-1975, the follow-up period of over 50 years is longer than that of previous reports. Various types of personnel records as well as payrolls were used to create the cohort; follow-up is carried out by the Japanese family registration system 'koseki'. Measurements of the working environment have been conducted in the plant since 1958, and it is expected that this study will show clearly any dose-response relationship.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.1760,

OCCULT THYROID CARCINOMA IN TSU, JAPAN

R. Yatani, Mie University, School of Medicine, Dept. of Pathology, *2-174 Edobashi, Torii-Cho, Tsu, Japan*

There is considerable variation in the reported prevalence of occult thyroid carcinomas. At autopsy, the prevalence in the continental United States varies from 0.45%-5.7%. In the native Japanese living in Hawaii it is 24% and in the native Japanese in Japan 17.9%. This variation may be due to the lack of standardized methods of examination and diagnostic criteria. In this study, all available thyroid glands from subjects over age 40 in Tsu autopsied from 1977 to 1986 will be examined, using the criteria and methods of Fukunaga et al. (Cancer 36 (3): 1095-9, 1975), to determine the relative prevalence of such carcinomas and to compare the results with the studies in Canada, Poland, Colombia, Hawaii and southern and northeastern Japan. Each thyroid will be weighed, measured, and sectioned sagittally at 2-3 mm intervals. From each tissue block a routine H- and E-stained section will be prepared for histological study.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.1761,

MORTALITY STUDY OF ASBESTOS FRICTION WORKERS

M.L. Newhouse, University of London, London School of Hygiene & Tropical Medicine, T.U.C. Centenary Inst. of Occupational Health, *Keppel St., London WC1E 7HT, England, United Kingdom*

This is an old, established plant chiefly devoted to the manufacture of brake linings. Apart from two periods of approximately two years each, more than 30 years ago, only chrysotile asbestos has been used. Identification data of current and past employees is available. With the assistence of the National Register the vital status of past employees will be established and the cause of death, as stated on the death certificate, ascertained. Mortality in this population will be compared with that of the population of England and Wales. Dust estimates are available only since 1969 but by means of simulation experiments dust exposure at various times will be estimated and a case-control study of deaths from lung cancer will be undertaken following the methods of Liddel and Macdonald. Tracing has now been completed and the vital status of approximately 98% of past employees established. Approximately 20% of the 13,000 past employees are deceased and the causes of death established.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.1762,

YOUNG PATIENTS WITH UTERINE CANCER

K. Masubuchi, Cancer Inst. Hospital, Dept. of Gynaecology, *1-37-1 Kamiikebukuro, Toshima-ku, Tokyo 170, Tokyo, Japan* (01500)

A total of 6,336 cases of cervical cancer were treated in this clinic in the period of 1949-1977. Juvenile

cervical cancer accounted for 886 (13.75) of the cases. Of these 53% were diagnosed as being stage I, and 7.4% were diagnosed as being cervical adenocarcinoma. There were 12 unmarried females and on of them was a virgin. Patients who married before the age of 19 accounted for 22% of the cases, which was found to be significantly higher than the figure for the controls. The percentage of patients who complained mainly of bleeding was 78%. 7% showed no symptom. The five-year survival rate for juvenile cervical cancer was not found to be low. During the 30 years 1949 to 1978 491 cases of endometrial carcinoma were also treated in the clinic. Juvenile corpus cancer was observed in 18 cases whose age was less that 39, the lowest age being 26. In comparing these cases of corpus cancers in ages over 40, the rate of nulliparae in the juvenile cases was as high as 78%. Also, the rate of the cases complaining of menstrual disorder and pain was as high as 61%. There was no tendency of lower survival rate over five years in the cases of juvenile corpus cancers as compared with older cases.

Description provided by IARC and DKFZ with ICRDB/NCI support.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.1763,

CANCER AND THE INDUSTRIAL ENVIRONMENT

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Environmental influences, many of them industrial, have been held to be responsible for the vast majority of human cancers. This study aims to analyze the patterns of mortality within relatively small populations in Scotland to identify areas where the incidence (or mortality) of specified cancers is abnormally high. It is intended to investigate the environment of these areas in order to try and identify possible carcinogenic factors. It is hoped that the occupational experience of the deceased can be evaluated in order to determine whether or not carcinogenic factors were in the occupational environment or in the more general environment. Evaluation of the environment will be assisted by the collaboration of the Scottish Occupational and Environmental Health Service, Ninewells Medical School, Dundee.

Description provided by IARC and DKFZ with ICRDB/NCI support.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.1764,

A STUDY OF CANCER MORTALITY IN SOUTH AFRICA

J.S. Harington, South African Inst. for Medical Research, *Hospital St., P.O. Box 1038, Johannesburg 2000, Transvaal, South Africa*

Since 1968, causes of death have been available for urban blacks as well as whites, coloureds and Asians. Mortality rates for all four groups are being calculated and will be reported in due course. Many differences are obvious between the groups.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.1765,

STUDIES ON THE ETIOLOGY OF CHILDHOOD TUMORS

H.B. Marsden, University Hospital of South Manchester, Dept. of Epidemiology & Social Research, *W. Didsbury, Manchester M20 8LR, England, United Kingdom*

This is a population-based study on the incidence of childhood malignancy. Details of all cases of malignancy occurring in the child (0-14 years) population (approximately 1 million) in the North West Regional Health Authority have been collected since 1954. Clinical records and microscopic slides are retained for study. Time-space clustering analysis is being carried out. Factors which may be of etiological significance in childhood malignancy, with emphasis on genetic and environmental aspects, including drugs in pregnancy and parental occupation, are being investigated. A detailed study of family histories is being made with particular emphasis on congenital malformations and malignancies in family members. The quality of life in long-term survivors is being assessed.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.1766,

GYNECOLOGICAL TUMOR REGISTRY

E.G. Daw, North Manchester General Hospital, Dept. of Obstetrics & Gynaecology, *Crumpsall, Manchester M8, England, United Kingdom*

All gynecological tumors seen in the northern district of Manchester are registered using a standard registration form. The data collected are subjected to systematic review. A prospective review of chemotherapy regimes used for carcinoma of the ovary is being undertaken, as well as a retrospective review of carcinoma of the cervix and corpus uteri.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.1767,

COMPLETENESS OF CANCER REGISTRATION

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Since 1972, the data recorded for cancer patients registered with the Regional Cancer Epidemiology Unit in Mancester (covering a population of over 4 million) have included first treating hospital, hospital to which referred (if any), and dates of registration as well as of first treatment and death. Various possible measures of completeness of registration are being developed and applied to these data, including: 1) Proportion of cases registered by first treating hospital among those registered by hospital to which referred; 2) Ratio of number of cases actually registered to an estimate of the total number diagnosed, calculated on the assumption that the proportion of cases diagnosed in survivors, that is not registered, is the same as the proportion of deceased cases that is only registered because of death. Several methods of estimating the later proportion are being evaluated.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.1768,

CHLOROMETHYL-METHYL ETHER STUDY

R.I. McCallum, University of Newcastle Upon Tyne, Dept. of Occupational Health & Hygiene, *6 Kensington Terr., Newcastle Upon Tyne NE1 7RU, United Kingdom*

The aim is to determine whether workers in two factories manufacturing chloromethyl methyl ether in United Kingdom have an excess lung and nasal cancer mortality.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.1769,

BLADDER CANCER MORTALITY IN CERTAIN AREAS AND INDUSTRIES

J.M. Davies, Inst. of Cancer Research, Division of Epidemiology, *Clifton Ave., Sutton SM2 5PX, England, United Kingdom*

A number of towns have been selected, most of which are important centers for industries suspected of giving rise to a bladder cancer risk. As a first step male and female bladder cancer mortality rates in these towns over some 25 years will be compared with national and regional rates. As a second step a total of some 3,000 death certificates of male residents dying with bladder cancer ('cases') will be matched with 'control' death certificates of male residents dying from other causes at the same ages and dates; the occupations of cases and controls will be compared, using the occupations recorded on the death certificates.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.1770,

TRIAL OF EARLY DETECTION OF BREAST CANCER

J. Chamberlain, Inst. of Cancer Research, Division of Epidemiology, *Clifton Ave., Sutton SM2 5PX, England, United Kingdom*

This is an observational trial which aims to determine the effectiveness of alternative early detection programs in reducing mortality from breast cancer. Two populations of approximately 25,000 women aged 45-64 will be offered screening by clinical examination and mammography, two further populations of the same size and age distribution will be offered intensive education in breast self-examination, and at least four additional similar populations, serving as comparisons, will be offered no additional detection services over and above what is normally provided as good current practice. The field-work of the trial will continue for eight years and mortality from breast cancer will be measured in all populations for at least ten years.

Description provided by IARC and DKFZ with ICRDB/NCI support.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.1771,

EVALUATION OF OCCUPATIONAL HAZARD MONITORING SYSTEMS

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The establishment of information systems for monitoring health of employees (particularly in the oil and chemical industries and those using their products) is under consideration and, in some cases, implementation. However, it is not clear a priori what data must be collected and how they should be analyzed to highlight hazards. Computer simulation of an industrial hazard monitoring system is proposed to answer these questions and to evaluate the potential usefulness of the various systems that have been suggested.

Description provided by IARC and DKFZ with ICRDB/NCI support.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.1772,

ASBESTOS LUNG AND MESOTHELIOMA SURVEY IN THE UNITED KINGDOM

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The aims of this program are to: (1) determine the number of patients dying in 1976 from primary pleural or peritoneal mesothelioma in the United Kingdom, (2) obtain samples of tumor from each autopsy to confirm the diagnosis and determine histological types, (3) examine lung tissue from each autopsy in order to estimate whether asbestos is present and, if present, the amount and type(s), (4) examine control material for the presence of asbestos comprising (a) tumor and lung tissue from the next case of bronchial carcinoma to come to post mortem, of the same sex and within five years of age of the mesothelioma patient(s) and (b) lung tissue from the next case of cerebrovascular accident to come to post mortem, of the same sex and within five years of age of the mesothelioma patient(s), in 1977 samples of lung alleged to be associated with asbestos exposure, from surgical cases of lung cancer and from post mortem cases with pleural plaques seen at two centers.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.1773,

FOLLOW-UP STUDY OF WOMEN EXPOSED TO DIETHYLSTILBESTROL IN PREGNANCY AND THEIR OFFSPRING

M.P. Vessey, University of Oxford, Dept. of Social & Community Medicine, *S. Parks Rd., Oxford OX2 6HE, England, United Kingdom*

In the early 1950s, a randomized double-blind controlled trial of the prophylactic use of stilboestrol in pregnancy was conducted at a London teaching hospital. The study involved over 1,000 primigravidae and the treatment group received stilboestrol according to the Smith and Smith regimen. The participants in the study and their offspring are now being identified and traced, and death certificates are being ob-

tained for those who have died. Information about the health of survivors is being sought from general practitioners.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.1774,

EPIDEMIOLOGY OF OVARIAN CANCER

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This is a case-control interview study with 200 cases and 400 matched controls (patients with other cancers and patients with non-malignant, non-gynecological conditions) to investigate risk factors for ovarian cancer with particular reference to reproductive factors (fertility and use of oral contraceptives).

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.1775,

MORTALITY IN CHRYSOTILE ASBESTOS TEXTILE WORKERS - IMPLICATIONS FOR HYGIENE STANDARDS

J. Peto, Imperial Cancer Research Fund, Cancer Epidemiology Unit, *9 Keble Rd., Oxford OX1 3QG, England, United Kingdom*

The eventual risk of developing mesothelioma, lung cancer or asbestosis at the current asbestos hygiene standard (2 fibers/ml in the UK) is not known. Dust levels were rarely measured more than 20 years ago, and more recent exposure has not yet caused a detectable excess of cancer. Dust measurements have been made routinely in this factory since 1951, however, and levels from 1933 to 1950 have been estimated. The principal objective is the study of dose and time relationships for mesothelioma and lung cancer, so that the eventual effects of low asbestos exposure can be predicted from the observed effects of relatively high exposures. 1,100 workers exposed for 10 or more years are being followed up through factory and national records. In addition, mesotheliomas in 25,000 previous and current employees are being traced by matching employment records with the UK National Mesothelioma Register to relate incidence to level of exposure and period and duration of employment. Employment records of mesothelioma cases and matched controls will be compared to assess the risks associated with particular processes in the factory.

Description provided by IARC and DKFZ with ICRDB/NCI support.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.1776,

CANCER INCIDENCE AMONG EMPLOYEES IN THE CHEMICAL INDUSTRY

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The aim of the study is to assess the association between chemical exposure at work and leukemia and brain tumors. The study is based on the Swedish Cancer Registry. This was linked to the census of 1960 which included information about occupation. The material consists of cases reported to the Registry during the period 1961 to 1973.

Description provided by IARC and DKFZ with ICRDB/NCI support.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.1777,

AFLATOXIN AND LIVER CANCER IN SWAZILAND

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Prior studies in Swaziland in 1971 and 1972 established a correlation between liver cancer and dietary aflatoxins, the exposure and disease incidence varying in four topographical areas (Peers et al., Int. J. Cancer, 17, 167-176, 1976). Since then, extensive efforts have been made by the Grain Storage Unit of the Swaziland Ministry of Agriculture to improve 'on farm' storage and, in particular, to prevent rodent and insect damage. Studies will be made to evaluate how much this improved storage has affected the fungal contamination of dietary staples and hence the dietary aflatoxin exposure and whether this is likely to have a significant effect on the liver cancer incidence. Additional studies will be made to determine the primary sources of the aflatoxin in whole diets, and whether intensive efforts at controlling fungal contamination of dietary staples can be economically effected. Studies will also be made of likely confounding factors, and whether aflatoxins in body fluids can be used as a more direct epidemiological assessment of exposure.

Description provided by IARC and DKFZ with ICRDB/NCI support.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.1778,

INVESTIGATION OF MORTALITY AND MORBIDITY PATTERNS IN CADMIUM WORKERS IN THE UNITED KINGDOM

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Cadmium is a metal shown to be carcinogenic in animal experimental studies. Limited observations in man suggest that there may be an increased mortality from cancer of the prostate and of the lung in cadmium workers. The study will, in the first instance, seek to ascertain causes of death in cadmium workers, with particular reference to malignant disease and renal pathology. All persons who have worked with regular exposure to cadmium for a minimum period of one year in selected industries will be included in the study. A retrospective register of cadmium workers from records held by the respective companies will be compiled, and mortality data on this defined population obtained and compared with that of an appropriately matched control group.

Description provided by IARC and DKFZ with ICRDB/NCI support.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.1779,

SECOND PRIMARIES POSSIBLY ASSOCIATED WITH CIGARETTE SMOKING

S. Dische, Mount Vernon Hospital, Regional Radiotherapy Centre, *Northwood HA6 2RN, England, United Kingdom*

A series of patients with bladder cancer have been treated using radio-sensitizing methods. Ninety-six percent of the males have a history of cigarette smoking. These patients are followed with special care to determine the frequency of other diseases. Carcinoma of the bronchus has been the most frequent cause of death other than carcinoma of the bladder. The experience of the general population is used for comparison purposes.

Description provided by IARC and DKFZ with ICRDB/NCI support.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.1780,

LONG-TERM SURVEILLANCE OF MORTALITY AND CANCER INCIDENCE IN WOMEN RECEIVING HORMONE REPLACEMENT THERAPY (HRT)

S.A. Adam, University of Oxford, Dept. of Social & Community Medicine, *S. Parks Rd., Oxford OX2 6HE, England, United Kingdom*

In the proposed investigation women seen at 20 menopause clinics in different parts of the country who (1) are currently using HRT and have been using it continuously for at least one year, or (2) are no longer using HRT, but used it in the past for six months or less, will be recruited and followed up indefinitely using the facilities of the National Health Service Registries. Mortality rates and cancer incidence rates of the short-term and long-term users of HRT will be computed from time to time and comparisons will be made with national mortality and cancer incidence data. Cancer of the endometrium and cancer of the breast are sites of particular interest, as well as cardiovascular disease. It is hoped to recruit around 10,000 women over the next three years for the study. So far 1,544 'long-term' users and 234 'short-term' users have been recruited.

Description provided by IARC and DKFZ with ICRDB/NCI support.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.1781,

ETIOLOGICAL FACTORS IN MALIGNANT MELANOMA OF THE SKIN

S.A. Adam, University of Oxford, Dept. of Social & Community Medicine, *S. Parks Rd., Oxford OX2 6HE, England, United Kingdom*

A case-control study is being conducted to investigate the role of light, genetic factors, and certain drugs, including oral contraceptives, in the etiology of melanoma of the skin. Cases among women under 50 years of age are to be identified through cancer registries, hospital discharge records, and death certificates. The general practitioner of the case will be interviewed and three controls, matched for age, sex, and marital status, will be selected from his records. All cases and controls will be sent a postal questionnaire.

Description provided by IARC and DKFZ with ICRDB/NCI support.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.1782,

STUDY OF THE RELATIONSHIP IN INDIVIDUALS BETWEEN CERTAIN CANCERS AND OTHER DISEASES

J.A. Baldwin, University of Oxford, *S. Parks Rd., Oxford OX2 6HE, England, United Kingdom*

The files of linked medical records of the Oxford Record Linkage Study, covering an 8-year period, are being analyzed to ascertain whether persons with certain cancers are at increased risk of having or having had other diseases or disorders. Expected numbers are computed after standardization for variables such as age, sex, period at risk, variation with time and migration out of the area. It is hoped that the study will be able both to identify events or long-standing diseases which might be associated with subsequent malignancy and to ascertain conditions which by their association with the cancer might be considered as having a common etiology with the cancer.

Description provided by IARC and DKFZ with ICRDB/NCI support.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.1783,

A STUDY OF THE EPIDEMIOLOGY, ENDOCRINOLOGY, PATHOLOGY AND RESPONSE TO ENDROCINE TREATMENT FOR BREAST CANCER IN BRITISH AND JAPANESE WOMEN

J.L. Hayward, Imperial Cancer Research Fund, Breast Unit, *Lincolns Inn Fields, London WC2A 3PX, England, United Kingdom*

Breast cancer is less common in Japan than in the United Kingdom, occurs predominantly in young women and probably carries a better prognosis. To obtain more information this collaborative study has been set up to investigate the epidemiology, endocrinology, pathology and response to endocrine therapy of breast cancer in British and Japanese women. In addition, endocrine function in normal Hawaiian-Japanese women and patients with breast cancer and the pathology of breast tumors in Hawaii are being studied.

Description provided by IARC and DKFZ with ICRDB/NCI support.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.1784,

EPIDEMIOLOGY OF ORAL SQUAMOUS CELL CARCINOMA

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Over 300 cases of oral squamous cell carcinoma treated at the London Hospital Medical College are being analyzed in a case characteristics study which aims to determine high risk groups and to establish what factors affect prognosis (e.g., site, age, sex, etiology, size of lesion at presentation, rate of tumor growth and histopathological category). The study is both retrospective and prospective. A modification of the TNM grading and staging system is being evaluated. Data are analyzed using the statistical package for the social sciences with corrections for age employing both the Peto and Peto method and the Cox method.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.1785,

EPIDEMIOLOGY OF PRECANCEROUS AND EARLY NEOPLASTIC LESIONS OF THE UTERINE CERVIX AND CORPUS

S. Munteanu, Institutul Oncologic Cluj-Napoca, Dept. of Early Diagnosis of Uterine Cancer, *34-36 Republicii, 3400 Cluj-Napoca, Romania*

The objective is to examine the relationship between age at first sexual intercourse, age at first birth, marital status, number of births before age 19 and other known aetiological and epidemiological factors and cervical and corpus neoplasia. A form containing 38 groups of questions, all coded, is filled in by any patient attending the Colposcopy Early Diagnosis Clinic, an out-patient clinic in the Oncological Institute. The following investigative methods are used: Physical examination, various cytological and biopsy examinations, colposcopy, and a thorough inquiry into sexual activity. These are repeated periodically. About 2,500 patients with various benign and malignant cervical lesions and 300 patients with endometrial carcinoma have been recorded and are involved in a long-term follow-up study.

Description provided by IARC and DKFZ with ICRDB/NCI support.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.1786,

SCREENING OF HIGH-RISK GROUPS FOR EARLY DETECTION OF PRIMARY LIVER CANCER USING MULTIPLE TUMOR MARKERS

C.J. Oon, University of Singapore, Dept. of Medicine, *Outram Rd., Singapore 3, Singapore*

The high-risk groups consist of members of primary hepatocellular carcinoma (PHC) families who are examined for HLA typing and hepatitis status, normal male Chinese hepatitis B carriers over the age of 40 years, and males and females who are on long-term anabolic estrogen and progesterone therapy. The tumor markers being used are alpha-fetoprotein (by counter-immunoelectrophoresis), alpha-1-antitrypsin, alpha-1-acid glycoprotein I, gamma glutamyl transpeptidase, isocitrate dehydrogenase. Individuals with two or more abnormal tests (with or without a raised AFP) will subsequently be examined radiologically for evidence of small PHC. This is a prospective study involving approximately 9,000 individuals.

Description provided by IARC and DKFZ with ICRDB/NCI support.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.1787,

CANCER OF THE OESOPHAGUS

D.G. Hamilton, South African Inst. for Medical Research, Dept. of Morbid Anatomy & Histopathology, *Hospital St., P.O. Box 1038, Johannesburg 2000, Transvaal, South Africa*

Cancer of the oesophagus is one of the commonest tumors in African Blacks but it is infrequent in Whites. Recent work indicates that there may be a difference in tissue trace elements between these two population groups and this might affect serum antioxidant activity. The study aims to quantitate trace elements in White and Black patients by analysis of serum, hair and tissues. Trace elements of particular interest are zinc, iron and calcium. A special subgroup of the Black patients are those with cancer of the oesophagus. Atomic absorption spectrophotometry and neutron activation analysis are being used for trace element studies. A technique measuring the ability of serum to inhibit oxidation in brain tissue assesses its antioxidant activity. Possible further developments of this study will be the effects of dietary modification on tissue trace elements and serum antioxidant activity.

Description provided by IARC and DKFZ with ICRDB/NCI support.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.1788,

OCCUPATIONAL CANCER RISK ESTIMATION IN CHEMICAL INDUSTRY

B. Barhad, Academia de Stiinte Medicale, Inst. of Hygiene & Public Health, Dept. of Occupational Medicine, *Strada Biserica Amzei 29, Bucharest, Romania*

A survey to establish the number of workers exposed to carcinogenic chemicals has been carried out in several large plants in the chemical industry. The data have been correlated with levels and lengths of exposure and cancer morbidity. The study aims to develop better methods of circulating information about workers exposed to carcinogenic substances, taking into account movement of the worker population, retirement and the expansion of the chemical industry, and to apply primary and secondary preventive measures to exposed individuals.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.1789,

CYTOLOGICAL SCREENING FOR LUNG CANCER USING THE SPUTUM OF WORKERS EXPOSED TO CHROMATES AND ASBESTOS

L. Melinte, Academia de Stiinte Medicale, Inst. of Hygiene & Public Health, Dept. of Occupational Medicine Cytopathology, *Strada Biserica Amzei 29, Bucharest, Romania*

The aim of the study is to monitor workers at high risk and to estimate the method of cytological screening of sputum for the early discovery of lung cancer as well as of the epithelial disorders which may precede the development of a tumor. Biennial cytological screening of sputum collected for three consecutive mornings and kept in fixative solution was carried out. Paraffin was added and the sputum was dyed with HE, PAS and Pearls. Correlations were made with age, sex, smoking habits, pulmonary antecedents, exposure length, exposure levels and pulmonary radiography. First results show that cytological changes such as bronchial squamous metaplasia are directly proportional to length of exposure and smoking habits.

Description provided by IARC and DKFZ with ICRDB/NCI support.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.1790,

CYTOLOGICAL MONITORING OF WORKERS EXPOSED TO AROMATIC AMINES IN A SYNTHETIC DYES PLANT

L. Melinte, Academia de Stiinte Medicale, Inst. of Hygiene & Public Health, Dept. of Occupational Medicine Cytopathology, *Strada Biserica Amzei 29, Bucharest, Romania*

Biennial cytological screening, together with wet urinary sediment examination and the urological control (cystoscopy), has been conducted since 1970 to study the effect of occupation on urinary bladder cancer. The results are correlated with age, sex, smoking habits, length of exposure and exposure levels. The cases discovered in the early phase have a high survival rate.

Description provided by IARC and DKFZ with ICRDB/NCI support.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.1791,

MORBIDITY SURVEY IN RELATION TO OCCUPATIONAL EXPOSURE TO VINYL CHLORIDE

A. Tarpa, Ministry of Chemical Industry, Labour Protection & Hygiene Centre, Dept. of Prevention of Occupational Diseases, *59 Pop de Basesti, 73244 Bucharest 3, Romania*

Since 1975, over 700 workers exposed to vinyl chloride at three industrial plants in Romania have been examined every year. The survey entails health questionnaires, medical examinations, biochemical, immunological and other health indices, such as respiratory and X-ray investigations and genetic studies. Serum are estimated AFP and CEA. The aim of this study is to define the general effects (including carcinogenic properties) of vinyl chloride exposure.

Description provided by IARC and DKFZ with ICRDB/NCI support.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.1792,

RISK IN WORKERS EXPOSED TO BENZENE

A. Tarpa, Ministry of Chemical Industry, Labour Protection & Hygiene Centre, Dept. of Prevention of Occupational Diseases, *59 Pop de Basesti, 73244 Bucharest 3, Romania*

The aim of the study is to develop a prospective study of workers exposed to benzene in several petrochemical and insecticide plants in Romania. It is proposed to examine especially blood pathology by haematological, biochemical and radioimmunological methods, and to correlate these results with the levels and lengths of exposure. The group, at present consisting of over 600 workers, will be followed up for the next few years.

Description provided by IARC and DKFZ with ICRDB/NCI support.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.1793,

GASTRIC CARCINOMA IN THE NORTH OF PORTUGAL - A RETROSPECTIVE STUDY

D. Serrao, Hospital de S. Joao, Dept. of Pathology, *Asprela, 4200 Porto, Portugal*

Patients with the intestinal type of gastric cancer and those with the diffuse type will be questioned about diet and place of residence, occupation and socio-economic status. The answers will be compared with those obtained from patients with colo-rectal cancer. Immunological status in both groups will also be examined.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.1794,

LUNG CANCER MORBIDITY IN WORKERS EXPOSED TO INDUSTRIAL CHEMICALS

R. Maties, Academia de Stiinte Medicale, Inst. of Hygiene & Public Health, Dept. of Occupational Medicine, *Strada Biserica Amzei 29, Bucharest, Romania*

The aim of the study is to evaluate the relation between lung cancer and occupational exposure to chromium salts and asbestos. Parameters of exposure which may have an influence on morbidity levels are identified and the relation of possible risk factors other than occupation (smoking habits, residence, previous morbidity) to lung cancer morbidity examined. The project consists of a retrospective study on lung cancer morbidity and mortality among workers exposed to asbestos and bichromates in two plants which have been in operation for more than 30 years, and a prospective follow-up of workers actually exposed. The results of periodical screening (standard chest radiographs, sputum cytology, clinical examination) are recorded and offer a comprehensive description of the changes in the health status.

Description provided by IARC and DKFZ with ICRDB/NCI support.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.1795,

URINARY CYTOLOGICAL INVESTIGATIONS FOR DETECTION OF BLADDER CANCER AMONG RUBBER WORKERS EXPOSED TO PHENYL-2-NAPHTHYLAMINE

R.M. Herivan, Ministry of Chemical Industry, Labour Protection & Hygiene Centre, Cytology Laboratory, *59 Pop de Basesti, 73244 Bucharest 3, Romania*

The objective is to monitor the incidence of urinary bladder cancer in subjects exposed to phenyl-2-naphthylamine in the rubber industry. Cytological exfoliative screening with Giemsa stain and Papanicolaou's classification is used for early detection.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.1796,

PRIMARY LUNG CANCER INCIDENCE IN A HIGH RISK GROUP IN AN INDUSTRIAL POPULATION

R. Krzysko, Regional Lung Diseases Control Centre, Unit of Operational Research, *Szamarzewskiego 62, 60569 Poznan, Poland*

The study group of an estimated 40,000 persons has routine cytology and mass miniature radiography (MMR) every four months following collection of a personal medical history. These individuals will be followed for the next five years as well as a control group of some 50,000 persons with a routine yearly MMR examination. A pilot study involving 1,500 persons randomly selected from the study population and of 1,00 controls has now been completed.

Description provided by IARC and DKFZ with ICRDB/NCI support.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.1797,
RELATION BETWEEN URBAN AND INDUSTRIAL FACTORS AND MALIGNANT NEOPLASMS IN AN UPPER SILESIAN CITY
B. Zemla, Inst. of Oncology, Cancer Epidemiology Unit, *Armii Czerwonej 15, 44100 Gliwice, Poland*
The city of Zabrze has been divided into ten districts differing in level and character of industrialization. Correlations are made between stomach and lung cancer incidence in native and migrant populations, classified by sex, age, residence, and quality of water supply (including hardness, content of nitrite, nitrate, iron, magnesium, manganese, silicon), as well as air pollution, mainly levels of aromatic hydrocarbon emissions, and other environmental factors.
Description provided by IARC and DKFZ with ICRDB/NCI support.
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.1798,
MALIGNANT TUMORS IN A NATIVE POPULATION UNDER MEDICAL SURVEILLANCE
P.A. Rolon, Registro Nacional de Patologia Tumoral, Dept. of Pathology, *G. Arias y Tte. Rodi, Asuncion, Paraguay*
The relationship between cultural factors, social habits and cancer is being studied in a primitive ethnic group of 10,000 persons under the care of a qualified medical doctor. This population is stable and utilizes hospital service provided by the Mennonite settlers in the Paraguayan Chaco. Relative frequency data for cancer for each five-year age-group will be determined. The information available consists of clinical and laboratory records as well as histopathological diagnosis. The frequency of cancer will be compared with the habits of this population and with data available in the National Registry of Tumour Pathology. It is realized that results could be biased by excess of easily accessible lesions. However, the regular surveillance and the possibility of examining deep-seated organs should reduce such bias.
Description provided by IARC and DKFZ with ICRDB/NCI support.
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3.1799,
MALIGNANT MELANOMA AND GEOGRAPHICAL SITUATION
P.A. Rolon, Registro Nacional de Patologia Tumoral, Dept. of Pathology, *G. Arias y Tte. Rodi, Asuncion, Paraguay*
The geographical location of the Republic of Paraguay, in the same latitude as South Africa and Australia, permits study of the anatomical localization of malignant melanoma and the relative importance of cultural and racial characteristics. The Tumour Pathology Registry of Paraguay and the Institute of Pathological Anatomy centralize all histologically diagnosed cancers in the country. Previous study of this material concentrated on the frequency of localizing on the sole of the foot, as the habit of walking barefoot is frequent among the rural population. Cases and clinical details from 1960 are in the Institute files and the period 1976-1980 is now being studied.
Description provided by IARC and DKFZ with ICRDB/NCI support.
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.1800,
CERVICAL CANCER EPIDEMIOLOGY IN PANAMA
W.C. Reeves, Gorgas Memorial Lab. of Tropical & Preventive Medicine, Dept. of Virology/Epidemiology, *P.O. Box 2016, Balboa Heights, Canal Zone*
Uterine cervical cancer rates have been increasing in many developing countries. This is particularly marked in the Republic of Panama, which has the highest reported cervical cancer incidence in the world (130/100,000 per year). In addition to this high overall risk, cervival cancer clusters in one province and invasive disease involve an unusually young age cohort. This study aims to identify and evaluate the risk factors associated with the disease in Panama. All hospital and clinic charts from cervical cancer cases treated in all hospitals in Panama between 1974-1979 are being reviewed and key epidemiological information and clinical data are abstracted onto a standardized cancer registry form. This information will be used to define and describe the marked geographical clustering consistently observed in Panama. Results from this initial analysis may be used to augment or modify a case-control study to be conducted in Herrera Province.. The case-control study will collect detailed epidemiological infomation and sera from all surviving cervical cancer cases diagnosed between 1974-1977 and neighborhood/age-matched controls. The information will be gathered and used to test the association of past herpes group virus infection, prior sexual practices, patient drug exposure (including in-utero), geographical and other factors with the occurrence of cervical cancer. It is anticipated that all cases will be registered by March, 1980 and that the field work will begin at that time.
Description provided by IARC and DKFZ with ICRDB/NCI support.
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.1801,
POPULATION-BASED PANAMANIAN NATIONAL CANCER REGISTRY
W.C. Reeves, Gorgas Memorial Lab. of Tropical & Preventive Medicine, Dept. of Virology/Epidemiology, *P.O. Box 2016, Balboa Heights, Canal Zone*
Cancer has been recognized as one of the three principal causes of death in Panama since 1968. In recognition of this, Panama initiated National Cancer Registry in 1974. This existing registry records all histologically diagnosed cancers in the Republic by annually reviewing all tissue diagnoses from medical facilities which operate pathology services. The registry includes only minimal clinical/epidemiological information which is recorded on index cards. This study intends to convert the current National Cancer Registry into an internationally standardized format and to maintain the registry on a computer system. Hospital and/or clinic charts from all patients with diagnosed cancer between 1973-1979 are currently being reviewed, abstracted and put into the standardized format. Clinical data obtained from charts of patients diagnosed after 1977 will be recorded immediately in the registry. The standardized registry includes all the information recommended in the WHO Handbook for Standardized Cancer Registry as core data, most of the information recommended as optional data, and additional locally important information. Information from registry forms is punched on cards for computer-based storage and data processing. The computer system currently in operation is the Conversational Computer Statistical system developed at the University of Washington, Seattle. Such conversation will allow a detailed epidemiological description of cancer incidence throughout the Republic of Panama. It is specifically intended to investigate the etiology of uterine cervical cancer, which has an inordinately high incidence in Panama. It is anticipated that all cervical cancers will be registered by March, 1980. It is also hoped to have registered all cancers of the head and neck, and all female genital cancers including breast by April or May, 1980.
Description provided by IARC and DKFZ with ICRDB/NCI support.
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.1802,
INCIDENCE OF PRIMARY CARCINOMA OF THE LIVER IN METROPOLITAN MANILA
J. Baltazar, University of the Philippines, Inst. of Public Health, Dept. of Epidemiology & Biostatistics, *625 Pedro Gil St., Ermite, Manila, Philippines*
The marked international variation in the incidence of primary liver cancer probably indicates environmental differences in the population-at-risk. In the Philippines, although autopsy studies had suggested a higher frequency of liver cancer compared to other tumors, incidence data are not available. This population-based study aims to describe the incidence pattern of the disease in a metropolitan area where medical facilities are adequate. From the records of the Central Tumor Registry of the Philippines and from death certificates primary liver cancer cases which were diagnosed during a two-year period, 1975-1976, and which were residents of the study area will be identified. The minimum criterion for diagnosis is clinical evidence of the disease. Overall disease rates as well as those specific for age, sex and administrative subdivisions within the study area will be estimated.
Description provided by IARC and DKFZ with ICRDB/NCI support.
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.1803,
FREQUENCY OF PRIMARY LIVER CELL CANCER (PLCC) IN A VILLAGE POPULATION IN RELATION TO CARRIAGE OF HEPATITIS B VIRUS (HBV) AND ITS MARKERS
Y.M. Fakunle, Ahmadu Bello University, University Hospital, Dept. of Medicine, *Zaria, Nigeria*
The aim of this study is to determine the frequency of hepatitis virus and PLCC in a population. It is assumed that other environmental factors, mycotoxins, etc., will exert a similar influence on the population. Individuals with and without markers of HBV will be followed over a long period to detect the development of PLCC. It is hoped that the study will throw light on the role of HBV in the causation of PLCC.
Description provided by IARC and DKFZ with ICRDB/NCI support.
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.1804,
ANALYSIS OF NORWEGIAN DIETARY SURVEY DATA
E. Bjelke, Universitetet i Bergen, Inst. of Hygiene & Social Medicine, *5016 Bergen, Norway*
The aim of the study is to examine data on diet, alcohol intake, chewing of tobacco or use of snuff, and data on height and weight to assess the relationships of these factors to subsequent cancer incidence and mortality. Data obtained on other variables, such as place of residence, smoking and physical activity will be considered in the analysis. In this on-going prospective study in Norway, about 1,000 new cancer cases among men are now available for diet-cancer analyses. About 1,000 additional cancer cases in females are available for the height/weight analyses. These analyses are part of a larger project, encompassing case-control studies on diet and gastrointestinal cancer carried out previously, other analyses of the prospective study data, and a parellel prospective study in the USA.
Description provided by IARC and DKFZ with ICRDB/NCI support.
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.1805,
NORTHERN BREAST GROUP - BREAST CANCER SURVEY
R.G. Kay, Auckland University, School of Medicine, Dept. of Surgery, *P.O. Box 2175, Auckland, New Zealand*
The purpose of the study is to study the epidemiology of breast cancer in a multi-racial society in New Zealand. This comparison of case characteristics is both between races and within a race. The controls for the latter are 1,000 women attending general practices in Auckland, New Zealand. They will be matched by age and locality with the breast cancer cases. An average of 260 new cases of breast cancer per annum occur in Auckland. Importance is attached to socio-economic groups, height-weight ratios, diet, parity, history of contraceptive practices and previous breast disease. High risk families in Caucasian and Polynesian communities are under review.
Description provided by IARC and DKFZ with ICRDB/NCI support.
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.1806,
POPULATION SCREENING FOR CERVICAL CANCER
P.G. Voojs, Katholieke Universiteit Nijmegen, Lab. of Cytopathology, Dept. of Pathology, *Geert Grooteplein Zuid 24, Nijmegen, Netherlands* (01507)
Cytological screening of the uterine cervix has proved to be a reliable method for detection of early cervical cancer. The degree of acceptance and effectiveness of such a screening program in the Dutch female population is still unknown. To investigate this question, 3 test regions have been created in the Netherlands. One of these is the region around the city of Nijmegen, where women in the age group of 35-54 years are screened every 3 years. The first screening, examining a total of 72,500 women, was done between 1976 and 1979. A second 3-year period will start in August 1979. The accuracy of cytodiagnosis, acceptance of the screening test by the female population, reasons for non-participation and efficacy of organizational procedures are examined. In a long-term follow-up the effects on morbidity and mortality will be calculated.

In the whole area (300,000 inhabitants) cervical cancer morbidity is registered. A report of the results of the screening in the first three year period, in the three test regions was published in 1980.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.1807,
ESOPHAGUS CANCER IN KENYA

A. Wasunna, University of Nairobi, Dept. of Surgery, *P.O. Box 30197, Nairobi, Kenya*

This is a study of case characteristics of carcinoma of the esophagus in Kenya. It is a collaborative project including the Department of Surgery and Pathology, University of Nairobi. Data are collected from all patients with esophageal cancer in Kenyatta National Hospital, Nairobi, and in the provincial hospitals of Kisumu, Western Kenya, and Nyeri in Central Kenya, where the disease appears to be especially frequent. Questionnaires are administered to all histologically confirmed cases. A standard protocol suitable for computer analysis is being used in the study. In the last 12 months 60 new cases of the disease have been documented at the Kenyatta National Hospital alone. There is now clinical follow-up data on 550 patients at the Kenyatta National Hospital.

Description provided by IARC and DKFZ with ICRDB/NCI support.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.1808,
CARCINOMA ARISING IN THE STUMP; STATUS AFTER RESECTION OF THE STOMACH

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An increasing incidence of gastric carcinoma following operation for benign ulcer disease has been reported. The probability of cancer developing in a gastric remnant has been stated to be as high as 10%, especially when a Billroth II reconstruction was performed. It is presumed that the constant reflux of bile and pancreatic juice is related to the cause of this cancer. The aim of this study is to assess the incidence of stump carcinoma, using patient records over the last 20 years, and to examine treatment results and survival. Billroth II procedures have been performed for many years in the State Hospital of Leyden, Netherlands, therefore adequate information should be available for examination.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.1809,
LEUKEMIA AND LYMPHOMA IN KOREA

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Chronic lymphoid leukemia and Hodgkin's disease have a very low incidence among Koreans. However, some recent reports indicate an increase in Hodgkin's disease. The study aims to identify the true genetic background and immunological characteristics.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.1810,
NUTRITION AND CANCER OF THE COLON - A CASE-CONTROL STUDY IN SPECIFIC GEOGRAPHIC REGIONS OF THE NETHERLANDS

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Mortality rates for cancer of the colon have been increasing in the Netherlands, as in most Western countries. The standardized mortality rates for colon cancer have been reviewed for the different regions of Holland, and an excess mortality was found in the southern part of the country as compared to the northern part. Dietary differences between the northern and southern provinces could in part be responsible for this variation. A study has been designed to investigate in selected geographic regions the role of nutrition in the causation of cancer of the colon. Nutrient intake data from newly diagnosed colon cancer patients obtained by means of a dietary history questionnaire will be compared to that obtained from hospital and population controls. The effect of socio-economic factors on dietary habits is taken into consideration. Microbiological and biochemical investigations are being considered. A pilot study has been completed.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.1811,
DISTRIBUTION OF SITE-SPECIFIC CANCER MORTALITY IN THE NETHERLANDS

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The objective of the study is to utilize mortality figures to define geographical variations in cancer mortality within the Netherlands. Mortality rates will be standardized for age and sex. Probability testing will be done to assess the significance of high and low mortality rates. The country has been divided into 80 units to make it possible to control for different socio-economic factors. A graphic representation in maps will be made automatically. Computer programs are being developed.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.1812,
PRENATAL EVENTS AND CANCER RISK IN THE OFFSPRING

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The objective is to examine the relationship between use of anti-epileptic drugs or viral infection during pregnancy and cancer risk in the offspring. A follow-up study has been done of the outcome of 249 pregnancies in epileptic women undergoing treatment with anticonvulsants. The children were born between 1963 and 1977. Three children were stillborn, nine died subsequently. Postmortem examination in six cases showed multiple congenital abnormalities, no signs of malignancy. In the remaining group of 237 children, one boy, born in 1966, developed Hodgkin's disease (stage I) in 1973. His mother had used phenytoin, phenobarbital and primidone in high dosages during the entire pregnancy. No other malignancies were found in the group.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.1813,
MASS SURVEYS OF TOKYO METROPOLITAN GOVERNMENT EMPLOYEES BY X-RAY AND IN HIGH RISK CASES BY SPUTUM CYTOLOGY

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The aim is to detect lung cancer, hopefully at an early stage. Chest X-rays have been performed since 1953 on employees of the Tokyo Metropolitan Government, and 1,975 lung cancer cases have been detected among a total of 1,717,385 examinees. The overall detection rate per 100,000 was 10.2, 26.6 in males 40 years and over and 9.7 in females 40 years and over. Among these 31.8 percent were stage I, 12.5 percent stage II and 55.7 percent stage III. Resectability rates were 87.6 percent, 82.4 percent and 25.5 percent, and five-year survival rates were 62.2 percent, 28.0 percent and 6.9 percent respectively. There are currently three groups of examinees: a high risk group examined twice year, a group examined annually and a group of cases which was not examined the previous year. The rate of early stage lung cancer detection was 33.3 percent in the semi-annual group, 11.7 percent in the annual group and 7.1 percent in the third group. There were also significant differences between the three groups in resectability and five-year survival rates. Since 1974 sputum cytology surveys have been conducted in a high risk group of 1,295 examinees to detect cancer and atypical squamous metaplasia cells, and cases with squamous metaplasia cells are followed up at four month intervals. Metaplastic cells are examined for DNA-content. Evaluation of squamous metaplasia cells and/or DNA analysis results were based on serial findings in several canine experimental series, in which lung cancer was induced in the major bronchi by intramucosal administration of 20-methylcholanthrene. The work continues. The high risk group is defined as those with a cigarette index of over 400, aged 45 or more, those involved in occupations involving exposure to pollution, and those with cough or bloody sputum.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.1814,
RADIATION-INDUCED MALIGNANCIES DUE TO MASS SURVEY OF THE STOMACH

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Mass X-ray for detection of cancer of the stomach has been widely used in Japan. The study aims to estimate possible risk due to such low level diagnostic exposures. An exposed population with more than 5 million man-years is registered at the Cancer Detection Center, Miyagi Cancer Society, Miyagi Prefecture. Statistical analysis of the exposed population and dosimetry of every individual will be undertaken and the prospective risk of subsequent malignancies will be estimated in rem per man. The non-exposed population of Miyagi Prefecture will be used as control population.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.1815,
HEPATITIS B VIRUS AND HEPATOCELLULAR CANCER

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The distribution of hepatitis B-associated antigen and antibody and the incidence of hepatocellular cancer in Yamaguchi Prefecture are being examined. The data obtained will be compared with those from Taiwan where there are a greater number of hepatitis B antigen carriers and a higher incidence of hepatocellular cancer in the population.

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3.1816,
EPIDEMIOLOGY OF NASOPHARYNGEAL CARCINOMA IN JAPAN

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The incidence of nasopharyngeal carcinoma is highest in the populations of Southern China, while in Japanese it is very low. This descriptive epidemiological study of nasopharyngeal carcinoma in Japan aims to discover the reason for this difference. The nasopharyngeal carcinoma cases, observed in the major hospitals of the whole of Japan are reported to this laboratory each year. Age and sex distributions, geographical variation and ethnic background will be examined. Histological sub-classifications of the reported cases are being made, and relationships to Epstein-Barr virus infection (anti-VCA-antibody titers, etc.) examined.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.1817,
ESTIMATION OF PREVALENCE OF CANCER IN JAPAN

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A one day nation-wide survey of all patients of all hospitals (835) and 1/100 of all dispensaries (734) randomly selected throughout Japan was conducted in 1976. A one month survey of all patients discharged from the same medical facilities in June was carried out at the same time. A total number of 264,945 patients, excluding those reported from dental clinics, was reported in the one-day survey. This total included 7,397 cancer patients. To estimate the prevalence of cancer by site, the reported

numbers were corrected by the sampling ratios, by treatment status, in- or out-patients, and also by the average daily number of patients for a week. The interval of attendance at the clinics was also used for correcting the prevalence for the out-patients. The first visit patients were excluded from the estimation of prevalence. The estimated number of cancer patients of all sites was 278,910 (crude rate per 100,000: 248.1 for both sexes, 211.1 for males and 282.1 for females). The ratio of the estimated prevalent cases to that of the deaths from cancer of all sites in 1976 was 1.7 for male and 3.1 for females. The estimated number of stomach cancer patients was 52,900 (crude rate 95 per 100,000) for males and 33,700 (crude rate 59 per 100,000) for females and the ratio of the prevalent cases/death was 1.7 for males and females. The 1977 survey will be examined.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.1818,
CASE-CONTROL STUDY OF ESOPHAGEAL CANCER

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A high death rate for esophageal cancer has been recorded in Wakayama Prefecture, where some dietary factors are suspected as carcinogenic agents. Aichi Prefecture has had low death rates for the same three decades. The purpose of this case-control study is to clarify the role of dietary factors, such as hot tea gruel, bracken-fern and others, and also of socio-economic factors in features between patients in Wakayama and Aichi will be compared. 150 cases of esophageal cancer and 300 controls in Aichi and 100 cases and 200 controls in Wakayama will be interviewed. Cases are the patients admitted into major hospitals in Nagoya and Wakayama cities. Controls are selected from all patients admitted to the same hospitals, matched for age, sex, residence, and date of admission. Preliminary results on 100 controls show that esophageal cancer patients had a high intake of pork and chicken treated with soy sauce, salted foods, tea gruel and alcohol in Wakayama, and a high intake of pork, a light breakfast such as bread and tea or coffee and Japanese noodles in Aichi. The risk-reducing factors include a high intake of tomatoes, fruit juice, peaches and bean sprouts in Wakayama, and of cabbage, medicated wine and coca-cola in Aichi. Esophageal cancer appears to occur more commonly in low socio-economic groups in Wakayama, and in nutritionally deficient groups in Aichi. The common risk factor in both areas is smoking.

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3.1819,
EPIDEMIOLOGICAL STUDY ON CANCER PATIENTS

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In cooperation with large hospitals in Kyushu, pilot case-control studies are under way, inquiring about exposure to unusual chemicals, employment in unusual occupations and medical exposures.

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3.1820,
GEOGRAPHICAL VARIATIONS AND TIME TRENDS OF CANCER MORTALITY IN JAPAN

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Mortality from some malignant neoplasms in Japan shows marked variations in geographical distribution and secular trends. This study aims to describe mortality from cancers of 18 sites for each prefecture and smaller administrative districts in Japan (1969-1976) and to find possible cancer risk factors by examining geographical and chronological relationships between mortality from cancers of various sites and various environmental factors, such as air pollution, food intake, smoking, socioeconomic factors, etc.

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3.1821,
ANALYSES OF GEOGRAPHICAL VARIATIONS AND TIME TRENDS OF MORTALITY FROM MALIGNANT LYMPHOMAS IN JAPAN

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The aim of this study is to discover etiological factors in malignant lymphoma. As a first stage the geographical distribution of mortality from reticulum-cell sarcoma, lymphosarcoma, Hodgkin's disease and other neoplasms of the lymphoid tissue was generally high in the south-western parts of Japan for both sexes in 1969-1976. The geographical distribution of malignant lymphoma was similar to that of lymphatic leukemia in the same period in Japan. The mortality rate of Hodgkin's disease has been calculated for each city and town in two prefectures with a high mortality and several clusters were found in districts around a bay or in small islands in southern parts of Japan. It is considered that these malignancies of the lymphatic and hematopoietic tissue might be caused by similar agents. Pathological information has been collected from Japan Autopsy Reports and this will be analyzed to explore causal factors of the disease. It is also planned to collect and analyze the medical records of malignant lymphoma patients in the Aichi Cancer Center Hospital.

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3.1822,
LUNG CANCER MORTALITY AND AUTOMOBILE EMISSIONS

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To examine the causal association between exposure to vehicular emissions and lung cancer, the mortality rates for lung cancer (1969-1974) were analyzed among inhabitants living in the areas within 100 meters from main streets on which more than 1,000 cars pass daily from am to 7 pm in Nagoya city. Traffic volume was regarded as an indicator of the degree of exposure to exhaust gas. The preliminary results show an increase in the standardized mortality ratio (SMR) of lung cancer in parallel with the traffic volume for males. However, for females the SMR was highest in the intermediate areas and did not parallel the traffic volume. No apparent relationships were observed between proximity to streets and lung cancer mortality. Mortality adjusted by smoking history, history of hazardous exposure and residential history showed similar results. The relationship between lung cancer mortality and traffic volume will be analyzed according to the histological type of lung cancer.

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3.1823,
RELATIONSHIP BETWEEN AIR POLLUTION AND CANCER IN JAPAN

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This study aims to clarify the relationship between air pollution and cancer mortality. Sulphur dioxide (SO2) and nitrogen oxide (SO2) levels and dustfall were used as indexes of air pollution. The average value of each pollutant for each of the 46 perfectures (1967-1975) was related to the age-adjusted mortality rates of cancers of the lung, esophagus, stomach, breast and uterus (1975) for the corresponding prefecture. In examining relationships between air pollution and cancer mortality, smoking was also taken into account. The relationship between SO2 and lung cancer and breast in females and those between NO2 and lung cancer in both sexes and breast cancer in females was statistically significant after taking into account the proportion of smokers. Analysis continues.

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3.1824,
RELATIONSHIP BETWEEN CANCER MORTALITY AND CONSUMPTION OF FOOD, ALCOHOL AND TOBACCO

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Food, alcohol and tobacco are thought to be the dominant causal agents of cancer. To elucidate the relationship between cancer mortality and the consumption of these elements, the age-adjusted death rates from cancer by sex for 1972, the per capita supply of food and alcohol from 1960-1962 in 27 countries of the world and 46 perfectures of Japan, and the per capita supply of cigarettes in 1965 in Japan were analyzed by factor analysis. Two major factors emerged, one called the 'western-urban' factor and the other the 'alcohol-related' factor. The geographical distributions of these factor scores were also examined. Time trend analyses are now under way.

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3.1825,
EPIDEMIOLOGY OF CANCER OF THE MAXILLARY SINUS

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Cancer of the maxillary sinus is a rare disease, but its incidence in Japan is the highest in the world and 86.9% of these cancer cases diagnosed in Osaka during 1967 and 1977 were epidermoid. A case-control study was performed to study the relationship between maxillary sinus cancer and chronic maxillary sinusitis. 312 cases were observed at the hospitals in Osaka, and 314 matched controls were selected from healthy persons examined at the Center for Adult Diseases. A history and physical signs of the chronic sinusitis, and abnormal x-ray findings were much more frequent among cancer cases than among controls. A follow-up study of patients diagnosed as having chronic maxillary sinusitis is planned. 478 cases have been registered and a further 500 cases will be collected in 1980.

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3.1826,
ESTIMATION OF UNREPORTED SURVIVING CANCER CASES IN A REGISTRY AREA

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The estimation of the number of unreported surviving cancer cases in the registration area is always an important subject for all population-based cancer registries, because this information cannot be obtained from death certificates. By using two methods developed in the registry, it was estimated that Osaka Cancer Registry has been covering 88-92 percent of the total cancer cases in the Osaka area. Completeness of registration will be estimated for selected sites in Osaka and in areas of other registries.

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3.1827,
THE LATE RADIATION EFFECTS OF ATOMIC BOMB EXPOSURE IN THE POPULATION OF HIROSHIMA AND NAGASAKI, JAPAN

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The Atomic Bomb Casualty Commission (ABCC) in Japan was organized in 1947 under the supervision of the U.S. National Academy of Sciences (NAS) to detect late radiation effects in the people of Hiroshima and Nagasaki exposed to the 1945 atomic bombs. In 1975 ABCC was reorganized as the Radiation Effects Research Foundation (REFEF), a private non-profit foundation funded equally by Japan and the United States. The RERF offices, laboratories, and examination facilities are maintained in both Hiroshima and Nagasaki, where adult health examinations, autopsies, clinical research, and epidemi-

ological studies are conducted. The basic population for the epidemiological and autopsy studies numbers about 109,000 survivors and their controls and 54,000 of their children. Biennial clinical examinations are conducted on about 15,000 survivors and their controls in the two cities. A number of important radiation-related clinical disorders and abnormalities have been detected in the atomic bomb survivors, including increased frequency of lenticular opacities, thyroid tumors, leukemia, chromosome aberrations in the peripheral lymphocytes, and slight impairment of growth and development of those exposed in utero, especially if significant exposure occurred during the early period of gestation. Recent findings indicate an increased incidence of solid tumors among the more heavily irradiated survivors most apparent for breast and lung cancers; this may extend to cancer of the stomach and other sites. The RERF plans to continue its health examination, mortality, and autopsy programs. Particular attention in the clinical examination population is now being focused on early cancer detection, cancer education, alteration of immunological competence, and acceleration of aging. The tumor and tissue registry programs in Hiroshima and Nagasaki complement the RERF studies for the detection of radiation-induced tumors.

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3.1828,
ANALYSIS OF MASS HEALTH EXAMINATION FOR UTERINE CERVICAL CANCER IN JAPAN

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The effectiveness of mass health examinations for uterine cervical cancer is being evaluated with the aid of mathematical models based on the standard examination system widely employed in Japan. Epidemiological data such as incidence and prevalence rates of early and later stages, and mortality rates from cervical cancer were collected from 18 local cancer institutions. Evaluation of the mass examination is performed according to the interval between examinations, coverage rate in the population, and selection of high risk populations.

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3.1829,
PATHOLOGICAL SURVEY OF TUMORS OCCURRING IN NARA PREFECTURE

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The frequency of the various types of tumors occurring in Nara Prefecture are surveyed by the registration of pathological autopsies and surgical specimens. The anatomical and age distribution of these neoplasms in Nara Prefecture is being compared with that in Japan as a whole and other countries.

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3.1830,
A PROSPECTIVE SURVEY OF CANCER IN LESOTHO 1970-1974

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One thousand two hundred twenty-three cases of cancer have been collected between 1970 and 1974. The crude rates and epidemiology of the main cancers (cervix, breast and liver) have been determined with the help of the recently published Lesotho Census of 1976. Analysis of the questionnaires completed by the patients shows that they are more traditional, less educated and poorer than a similar group of healthy controls. Furthermore, cervix cancer patients ingest substantially more fermented porridges and drinks which have been recently shown to contain the mycotoxin zearalenone. A recent publication appeared in S. Afr. J. Sci. 75, 501-511, 1979.

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3.1831,
LEUKEMIA IN SUDAN

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Only a few preiminary studies, consisting of small numbers of cases, have been published on the incidence of leukemia in the Sudan. This vast country has unparalleled variations in environment and ethnic backgrounds. The present study aims to assess the incidence of the different types of leukemia by age and sex and their regional distribution within the Sudan and to find out whether there is any association between environmental factors and the incidence of leukemia. A personal history which includes the locality and the patient's tribe is taken for all the leukemia cases seen during the period of the study. These cases are examined by one or more of the study collaborators and clinical diagnosis is made. The latter is confirmed by peripheral blood count and a bone marrow examination which are carried out in the hematology department of the University of Khartoum. Cytochemical staining is used in the controversial cases. The findings are recorded on special cards and at the end of the first part of the study 256 cases have been collected.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.1832,
COHORT STUDY OF CHROMIUM-EXPOSED WORKERS

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In the Liguria region there is a factory that produces both hexavalent and trivalent chromium salts. The workers in the factory are exposed to large doses of chromium. An investigation of the causes of death among about 1,300 workers employed in the period 1 January 1958 to 1 January 1978 is being undertaken. The expected deaths will be calculated on the basis of the death rates for the people living in the two villages surrounding the factory.

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3.1833,
MORTALITY EXPERIENCE AMONG POLYCHLORINATED BIPHENYL WORKERS

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Animal experiment studies and some human data support a possible association between polychlorinated biphenyls (PCBs) exposure and cancer in man. The aim of the study is to assess mortality in the period 1955-1975 among workers employed in a capacitor and transformer industry operating since 1947. The personal records of the 2,317 workers employed since the beginning of manufacture have been obtained from the factory. For each subject date and place of birth, date of entry and leaving the industry and type of work performed are available; date, place, and primary cause of death will be ascertained from death certificates. The sex, age and cause-specific mortality of people living in the same city where the factory is located will be used for comparison.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.1834,
PRIMARY INTRACRANIAL TUMORS IN TRIESTE

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Cases in which a diagnosis of primary intracranial tumor is made at biopsy or autopsy in the Province of Trieste will be collected. Detailed personal and medical data will be obtained for each case from the patient or relatives by personal interview. In this, attention will be focused on the following points: diet, tobacco and alcohol habits, residence during different periods of life, occupational history, contacts with animals, vaccinations, viral diseases, diagnostic and therapeutic radiations, drug use, etc.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.1835,
A FOLLOW-UP STUDY OF LEPROSY PATIENTS

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It is known that there is a high cell-mediated immune response in tuberculoid leprosy, whereas such a response is absent in lepromatoid leprosy. Recently DDS (diamino-diphenyl-sulfone), which is used to treat leprosy, has been found to be carcinogenic in animal experiments. The aim of this study is to examine the mortality of leprosy patients with special reference to malignant neoplasms. Some 2,000 patients admitted to a leprosarium, from 1956 to 1977, are analyzed by types of the disease and their mortality experience is compared with that of the general population in Japan. The data will also be analyzed in terms of possible carcinogenicity in patients treated with the drug.

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3.1836,
EPIDEMIOLOGY OF MALIGNANT LYMPHOMAS

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Sardinia is an island in the Mediterranean. Its inhabitants, due to geography, history and socio-economic conditions, could be considered as homogeneous in genetic characteristics and customs. Beta-thalassemia and Echinococcus granulosus infection are endemic diseases. The incidence of malignant lymphomas in sardinia will be studied to evaluate incidental clustering and relationship to endemic pathology. The survey will use the diagnoses from the three departments of pathology on the island.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.1837,
EPIDEMIOLOGY OF CHILDHOOD CANCER IN THE PROVINCE OF TORINO, ITALY

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A special childhood cancer registry (children aged 0-14) for residents in the province of Torino (total population at the time of the 1971 census: 2,287,016, of whom 497,223 were aged 0-14) has been operating since 1965. Cases are recorded according to ICD and histological types. Data for the 1967-74 period have been published (Rivista Italiana di Pediatria 5: 337-345, 1979). The collection of cases and their analysis have been completed for the period 1975-78. Incidence rates are similar to those of other industrialized countries in the Western World. Incidence rates have been calculated for residents in the city of Torino and residents in the rest of the province as well as for different areas within the province. The incidence rate for all cancers and for neurogenic tumors was higher in the city of Torino than in the rest of the province in the period 1967-74, but not between 1975 and 1978. By 1982 collection of cases will be completed for the period up to December 1981. Trends in incidence, mortality and lethality are being investigated, as well as the distribution of cancer in children among the indigenous population as compared to the population immigrating from other parts of Italy.

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3.1838
EPIDEMIOLOGY OF BREAST CANCER

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The incidence of breast cancer in Sardinia will be studied in order to identify incidental clustering and the relationship to other pathology. The survey will use the diagnoses from the three departments of pathology on the island.

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3.1839,

EPIDEMIOLOGY OF KAPOSI'S SARCOMA IN SARDINIA

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The main goal of the present research is to analyze the incidence of Kaposi's sarcoma in Sardinia and to establish whether generalized forms of the disease, like those described in Uganda, are present and to what extent. Kaposi's sarcoma in Sardinia does seem to be more frequent than in other parts of Italy and is certainly more frequent than in the other countries of Europe. The study will investigate the distribution of Kaposi's sarcoma in Sardinia to see if the disease is more common on the coast or in the interior part of the island and if the disease is associated with other diseases such as diabetes, malaria, tuberculosis, Mediterranean anemia, Hodgkin's disease or other lymphomas. An examination of cell-mediated immunity in patients affected by Kaposi's sarcoma has been started to investigate whether there is a correlation between the generalization of the disease and a possible impairment of the cell-mediated immunity.

Description provided by IARC and DKFZ with ICRDB/NCI support.
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3.1840,

ENVIRONMENTAL FACTORS AND THE DEVELOPMENT OF SKIN CANCER

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There is ample evidence that environmental factors and particularly prolonged exposure to the rays of the sun play a significant role in the development of skin cancer. This study intends to determine the actual incidence of skin cancers in Sardinia, and the degree to which environmental and constitutional factors are involved. A questionnaire, developed for the present study, collects information from skin cancer patients on place of birth, place of residence during last ten years, place of present residence, color of the skin, eyes and hair, capacity to tan and time of exposure to the sun. Patients treated are followed up in order to establish if people who develop skin cancer are prone to develop new cancers of the skin or inner organs in the future.

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3.1841,

SURVIVAL OF BREAST CANCER PATIENTS RELATED TO RISK FACTORS

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Survival rates for patients with breast cancer have been reported to be different not only due to the extent of the disease and efficiency of the treatment but also in connection with some other factors. This research is based on 500 breast cancer cases who received initial treatment in the period 1967-1973. The aims of the study are to evaluate the relationship between certain risk and biological factors (family history, age at first birth, age at menarche, some allied diseases, histology) and probability of survival. The surveillance system is introduced by the population-based Estonian Cancer Registry. All the data are being processed by different methods in order to analyze survival experience.

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3.1842,

IS ANGIOSARCOMA OF THE LIVER ASSOCIATED WITH VINYL CHLORIDE MONOMER EXPOSURE IN SOUTH AFRICA?

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In South Africa the main producer of polyvinyl chloride plastic has two factories. It has been manufactured at Umbogintwini since 1950, but at the Midlands factory for only eight years. The present labor force is being monitored by liver tests and clinical and radiological examinations. Ex-employees are being traced, especially those from Umbogintwini, in whom, if they were exposed to vinyl chloride monomer, the possible latent period of 20-30 years has now been reached.

Description provided by IARC and DKFZ with ICRDB/NCI support.
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3.1843,

THE PECULIARITIES OF MALIGNANT TUMORS SPREADING IN THE BYELORUSSIAN SSR AND STUDY OF FACTORS INFLUENCING THE RISK OF THE DISEASE

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The aim of the investigation is to study high-risk population groups for the early detection and prevention of cancer. A system of centralized data processing of all patients with malignant tumors detected in the Republic is maintained with the help of a computer and special forms of medical documentation containing the necessary information of the basis of 31 points (sex, age, residence, nationality, profession, diagnosis, stage, histological type, form of treatment, outcome, etc.).

Description provided by IARC and DKFZ with ICRDB/NCI support.
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3.1844,

INCIDENCE OF SELECTED CANCERS IN SERBIA

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The incidence of neoplasms of bone, connective tissue, skin and breast is being studied by age and sex in an area with 265,000 inhabitants in the Serbian Republic.

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3.1845,

LUNG CANCER IN THE TAMPERE CENTRAL HOSPITAL DISTRICT 1965-1972

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The aim of this study is to investigate some factors related to the frequency, diagnostics, cure and survival of the lung cancer patients. The material consists of all lung cancer cases diagnosed in the Tampere Central Hospital district between 1965 and 1972. The population of the district is about 400,000 people, and the number of cases was 1,162.
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.1846,

INFECTIOUS COMPLICATIONS IN CHILDHOOD LEUKEMIA - A RETROSPECTIVE AND PROSPECTIVE STUDY

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Infectious complications in patients under 15 years of age with leukemia or lymphoma treated in Tampere Central Hospital between 1963 and 1979 are being reviewed. The information is being applied for more effective specimen collection and laboratory studies in the prospective part of the study. New patients entering the study are being screened for immunity against various viruses and protozoa. In addition to studies on acute infections, the occurrence of latent cytomegalovirus infection will be followed in the patients by repeated serological testing of CMV early antigen-antibody and by virus isolation. At the same time the patients are being studied for cell-mediated immunity by lymphocyte stimulation and skin testing.
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.1847,

HLA ANTIGENS AND HEPATOCELLULAR CARCINOMA IN GREECE

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Greeks, as it is known, show an increased frequency of hepatocellular carcinoma (HCC) in comparison with other Europeans. This fact caused us to study in our country the possible relationship of this disease with genetic factors and we chose HLA system for study.

Our material consisted of 52 unrelated Greek adults with histologically proven HCC. 54 antisera detecting 27 HLA (A and B) specificities (11 and 16, respectively) were used according to the standard two-stage NIH microlymphocytotoxicity technique. The results were compared with those of 400 unrelated healthy Greek individuals. To evaluate the observed differences between the two groups chi-square analysis with Yates' correction was applied and P values were corrected for the number of comparisons (Pc).

In our material there is a statistically significant deviation of the antigen HLA-B12 (Pc less than 0.015) with a relative risk of 3.23. HLA-A9 also shows a deviation (P less than 0.01, RR equals 0.32) which, however, becomes insignificant when corrected (Pc greater than 0.05).

According to our results it would seem that the antigen HLA-A9 protects from, while the antigen HLA-B12 predisposes towards, the disease. It would be interesting to see whether analogous relationships exist in other populations.
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3.1848,

INVESTIGATION OF INFANT AND PRESCHOOL DIETS AND THEIR RELATIONSHIP TO DENTAL HEALTH

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PURPOSE: To determine the incidence of nursing bottle syndrome (deep carious lesions in the upper primary incisors and the upper and lower primary first molars) in Vancouver preschool children; and to examine their health and diet histories to determine what factors might correlate with the incidence of the disease.

SUBJECTS: As many preschool children as possible, ages 9 months to 5 years, of either sex, secured from the records of the Vancouver Health Department and child health centers.

METHODS: Mothers consenting to participate will be interviewed as to the health and dietary history of their children in order to complete a detailed questionnaire. The child's teeth will be examined, using a mouth mirror and flashlight, to determine whether or not the child exhibits the typical lesions of nursing bottle caries.
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.1849,

ACCIDENTAL EXPOSURE TO DIMETHOATE AND ITS DERIVATIVES

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Contradictory results have been found in experimental animals regarding the carcinogenicity of Dimethoate (positive in Wistar rats, negative in Osborne Mendel rats and B6C3F1 mice). This phosphorate pesticide has proved to be mutagenic within diverse systems and its derivatives are more toxic than demethoate itself. In April 1979, an exothermic reaction occurred in Buenos Aires in a cistern where Dimethoate was being formulated. Gas leakage lasted four hours until the product in the cistern was exhausted. Two persons died and 30 had intoxication symptoms, shown in 76% of the exposed by respiratory or digestive tract or central nervous system symptoms. One month later, smell persistance in 23% and decrease in libido in 35% were striking. Twelve months post-accident all the individuals were asymptomatic.

It is intended to follow up a cohort composed of 25 firemen, who were the most exposed, to date of death.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.1850,

EPIDEMIOLOGICAL ASPECTS OF VULVAR CARCINOMA IN ISRAELI JEWISH PATIENTS

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While the low incidence of squamous carcinoma of the uterine cervix (SCC) in Jewish women is well known and other epidemiological aspects have been widely studied abroad as well as in Israel, no epidemiological studies of squamous carcinoma of the vulva (SCV) in Jewish women have so far been performed. The purpose of this investigation is to perform a population-based study of SCV in Israeli Jewish women in order to investigate whether epidemiological data with regard to age pattern, relative incidence and ethnic distribution follow data on squamous carcinoma of the uterine cervix in view of the multicentric origin concepts of malignancies of the lower genital tract.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.1851,

DISTRIBUTION OF COLONIC NEOPLASMS IN TURKEY

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Incomplete data collected from several sources in Turkey indicate that colon cancer occurs more frequently in western regions of the country. This may be due to socio-economic and, in particular, dietary differences between the populations living in high mountain plateaus and coastal areas. Diet in the mountainous regions consists mostly of carbohydrates and starch. On the coast, meat, vegetables and citrus fruits are eaten in greater quantities. Diet in both regions will be studied in relation to incidence figures.

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3.1852,

EPIDEMIOLOGICAL STUDIES ON POPULATIONS EXPOSED TO MUTAGENIC AND CARCINOGENIC AGENTS

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Committees of the International Commission for Protection against Environmental Mutagens and Carcinogens (ICPEMC) will collect and report on findings in the field of epidemiology, with a view to the evaluation of (1) the interrelation between mutagenic and carcinogenic effects and (2) the validity and applicability of testing procedures. Attention will be paid to retrospective and prospective studies of individuals and populations proven to be or suspected of being exposed to mutagenic and carcinogenic compounds or procedures.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.1853,

COLLABORATIVE STUDY OF NEOPLASIA AND STEROID CONTRACEPTIVES

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This is a collaborative case-control study of malignant neoplasms of the breast, corpus uteri, gallbladder, liver and ovary in relation to oral contraceptives. Approximately 200 cases and double the number of controls are expected to enter the study each year. All study subjects will be interviewed in hospital. The interview schedule contains questions on prior use of oral contraceptives and other methods of contraception, medical history with an emphasis on gynecological and obstetrical history and family medical history. Pathology slides from all cases will be obtained and reviewed by a reference pathologist. This study is also being conducted in Chile, the Philippines, Mexico, Nigeria, Thailand and Australia.

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3.1854,

CANCER EPDIEMIOLOGY IN JAPANESE AND THEIR DESCENDANTS RESIDENT IN SAO PAULO

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Distribution of cancer incidence among the Japanese resident in Japan, the Japanese who have migrated to Sao Paulo, the non-Japanese living in Sao Paulo, and in descendents of Japanese residents in Sao Paulo will be studied and the results compared. Data from the Cancer Registry of Sao Paulo, complemented by interviews, will be used. The period will cover the years 1969-1973. Information will be recorded on age, sex, civil status, occupation, time of residence, primary site of tumor, means of diagnosis, histology, date of migration, food habits. The number of cancer cases in the Japanese and their descendants is estimated to be 1,000 and the duration of the study is two years.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.1855,

CANCER INCIDENCE IN FIVE CONTINENTS - VOLUME IV

C.S. Muir, Centre International de Recherche sur le Cancer, Unit of Epidemiology & Biostatistics, *150 Cours Albert Thomas, 69372 Lyon Cedex 2, France*

The fourth volume in this series is in preparation and will be published in 1981. In addition to incidence data obtained from some 88 registries, covering the period 1973-1977, studies on distribution of histological types of bladder and thyroid cancer and Hodgkin's disease and on urban and rural incidence differentials will be included.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.1856,

CASE-CONTROL STUDY ON BRAIN TUMORS AND OCCUPATION

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The etiology of brain cancer in humans is mostly unknown; a number of chemicals, however, have been shown to induce tumors of the nervous system in animals (mainly nitrosureas), and a few are suspected of inducing human cancer. In this study the exposures of cases and controls are assessed from data on occupational history and specific chemical exposures, obtained by interview. Following preliminary data showing an excess of farmers among cases, specific questions on herbicides and pesticides have been added since November 1980 to the questionnaire. Cases are all patients with a definite diagnosis of glioma or meningioma admitted to this Institute since November 1980 (about 100 cases of glioma and 100 cases of meningioma each year). Two controls for each case are matched by sex, age, and residence.

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3.1857,

GENETIC EPIDEMIOLOGY OF BREAST CANCER

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Family studies so far carried out in various countries indicate that the genetic effect on breast cancer is related to age of onset. The present study aims to examine this in Japan and further to investigate what kind of genetically determined trait is responsible and how it is transmitted. The age distribution in about 3,600 breast cancer patients treated at the Cancer Inst. Hospital in Tokyo was studied. Those with a positive family history, especially patients whose mother had had breast cancer, are significantly younger than the average total cases. Preliminary results suggest a tendency, although not statistically significant, to greater body weight and height in these familial cases compared with total cases. Other epidemiological factors, such as fortility, are studied simultaneously.

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3.1858,

MORTALITY FROM UTERINE CANCER IN JAPAN

M. Nagai, Inst. of Public Health, Dept. of Public Health Statistics, *4-6-1, Shirokanedai, Minato-ku, Tokyo 108, Tokyo, Japan*

The mortality rate for uterine cancer in Japan has decreased over the last two decades. The 1977 rate is one-third that of 1955. Examination of the geographical distributions shows that the rate is higher in southwestern areas. Nationwide information regarding age at marriage and gestation, hygiene levels and socioeconomic status of population is being collected and correlated with death rates in an attempt to determine the reasons for the decrease and differences in geographical distribution.

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3.1859,

APPLICATIONS OF A COMPUTERIZED OCCUPATIONAL HEALTH RECORDS SYSTEM

G.M. Paddle, Imperial Chemical Industries Ltd., Central Medical Group, *Fulshaw Hall, Wilmslow SK9 10B, England, United Kingdom*

For several years, ICI has had computerized records of the mortality and serious morbidity experience of all its employees in the United Kingdom. These data are analyzed annually for geographical or product group correlations, and are an invaluable resource for ad hoc studies of specific compounds or occupational groups. Areas of concern alerted by these analyses are examined in greater depth by recourse to the detailed health and production records which are maintained manually.

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3.1860,

CORRELATION OF AIR POLLUTION AND CANCER

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In this collaborative project between the International Agency for Research on Cancer and the National Institute for Public Health (RIV) correlation study between air pollution and cancer will be developed, which will exploit the unique automated system of air pollution monitoring existing in the Netherlands. The pollution data collected are such that it is possible to produce an integrated average exposure to sulphur dioxide, the oxides of nitrogen, ozone and carbon monoxide, for a large number of areas covering the entire country. The Netherlands National Vital Statistics Office will be consulted for information on cancer and other death rates, for the areas considered to be meaningful for atmospheric pollution exposures. The Automated Pathological Diagnoses Storage and Retrieval System (PALGA) has an important potential for epidemiological studies as the information about cases of cancer is based on histological diagnoses.

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3.1861,

CANCER OF THE LARYNX AND OCCUPATION

J. Olsen, Odense Universitet, Inst. of Hygiene & Social Medicine, Dept. of Social Medicine, *Winslowsvej 17, 5000 Odense, Denmark*

The purpose is to study the etiology of larynx cancer in relation to occupation. In a case-control study

involving all new larynx cancer patients in Denmark below the age of 70 occupational exposure histories are compared with those of controls matched for age, residence and broad occupational group, taken mainly from union files. The focus is exposure to chrome and nickel. Information is obtained by interview which includes detailed questions about smoking and alcohol comsumption. The study will involve 200 patients and 800 controls.
Description provided by IARC and DKFZ with ICRDB/NCI support.
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3.1862,
RADIATION CARCINOGENESIS
K. Neumeister, Staatliches Amt fuer Atomsicherheit und Strahlenschutz, *Waldowallee 117, 1157 Berlin, German Democratic Republic*
Epidemiological analyses are undertaken of radiation-induced carcinoma and leukemia following diagnostic or therapeutic administration of ionizing radiation, including pre- and postnatal exposure in children, and of radiation-induced cancer in multiple primary malignant tumors in the German Democratic Republic.
Description provided by IARC and DKFZ with ICRDB/NCI support.
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.1863,
EXTRAMEDULLARY PLASMACYTOMA (EMP) OF THE HEAD AND NECK
A. Pahor, Dudley Road Hospital, Dept. of Ear Nose & Throat, *Dudley Rd., Birmingham B18 7QH, England, United Kingdom*
Extramedullary plasmacytomas are rare tumors and present difficulty in diagnosis for both the clinician and pathologist. A study of a group of these tumors is of value to throw some light on their nature, presentation and natural history until diagnosis (which can be years). This present study aims to up-date a previous study (J. Laryng., 92, 223-232, 1978) using data collected from the Birmingham Regional Cancer Registry. Emphasis will be laid on incidence in the general population, sites affected, age, sex, and survival, comparing these with similar data for multiple myeloma.
Description provided by IARC and DKFZ with ICRDB/NCI support.
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.1864,
HIDRADENOMATA OF THE EXTENAL EAR CANAL (CERUMINOMAS)
A. Pahor, Dudley Road Hospital, Dept. of Ear Nose & Throat, *Dudley Rd., Birmingham B18 7QH, England, United Kingdom*
Hidradenomata of the external auditory meatus are common tumors. All reports so far are either single or concern a few cases from a selected group of patients, usually hospital-based, and show confusion regarding the pathology and nature of these tumors. The present study aims to analyze the cases diagnosed and managed in the West Midlands over a number of years, using data collected from the Birmingham Regional Cancer Registry which are likely to be more representative of the true incidence and survival than series from individual hospitals.
Description provided by IARC and DKFZ with ICRDB/NCI support.
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3.1865,
GENETIC, DEMOGRAPHIC AND EPIDEMIOLOGICAL SURVEY ON HEREDITARY HEMORRHAGIC TELANGIECTASIA DISEASE IN THE 'HAUT-JURA' IN FRANCE
H. Plauchu, Centre National de la Recherche Scientifique, Centre dEpidemiologie, *8 ave. Rockefeller, LP No. 005440 c/o Fac. Med., 69008 Lyon, France*
Cases of hemorrhagic telangiectasia occurring in the Haut-Jura will be registered and their family trees constructed back to the eighteenth century in order to study genetic transmission and possible association with cancer.
Description provided by IARC and DKFZ with ICRDB/NCI support.
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.1866,
ANALYSIS OF CANCER RISK DISTRIBUTION FOR CHEMICALS IN THE WORK ENVIRONMENT
R. Puntoni, Istituto di Oncologia, Dept. of Epidemiology, *Viale Benedetto XV, Pad. B, 16132 Genoa, Italy*
A census of all the industries (including tradesmen) in the industralized town of La Spezia, with 130,000 inhabitants, is being organized in order to study the distribution (use, quantity, number of exposed) of compounds selected from the list of carcinogens published by IARC (Monographs on the Evaluation of Carcinogenic Risk of Chemicals to Man). The objective is to quantify the presence of chemical carcinogens in the environment and to formulate hypotheses about the effects of such compounds on the health of the exposed people. This study is undertaken in collaboration with 'Centro per le malattie sociale' of Florence.
Description provided by IARC and DKFZ with ICRDB/NCI support.
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.1867,
CANCER INCIDENCE IN AMIENS
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Cancer registration is being carried out in Amiens, a town with a population of 131,476, using data from pathological laboratories, registry officies (deaths from cancer), social security funds, etc. The objective is to identify the most common cancers, their possible relationship with the environment and sociocultural habits.
Description provided by IARC and DKFZ with ICRDB/NCI support.
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3.1868,
ANTHROPOLOGICAL, FAMILIAL AND PRENATAL FACTORS IN HEMOPOIETIC SYSTEM NEOPLASMS
E. Quiroga Micheo, Grupo Argentino Cooperativo de Estudios Epid. en Hematologia, *Las Heras 1895, 1127 Buenos Aires, Argentina*
Differences in mortality rates for these neoplasms have been observed among the different immigrant groups in Argentina. Preliminary results of a case-control study carried out on 603 case-control pairs show: (1) fewer cases of acute non-lymphocytic leukemia and Hodgkin's disease in Spaniards, and more cases of lymphoproliferative disorders in Spaniards and of Hodgkin's disease in Italians; (2) acute non-lymphocytic leukemia cases had fewer Spanish ancestors and cases of lymphoproliferative disorders had fewer Paraguayan, Chilean and Bolivian ancestors; (3) fewer cases of acute lymphocytic and non-lymphocytic leukemia had green eyes, and among the latter there were fewer people with blue and grey eyes; (4) there were no differences in the proportional mortality caused by cancer or hemopoietic system neoplasms among relatives and spouses; (5) in the cases it was observed that fewer patients were born from young mothers and fewer were first born. The differences were observed both in children and in adults. No differences were observed in other prenatal factors. The study continues.
Description provided by IARC and DKFZ with ICRDB/NCI support.
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.1869,
EPIDEMIOLOGICAL ASPECTS OF JUVENILE ANGIOFIBROMA
P.A. Rolon, Registro Nacional de Patologia Tumoral, Dept. of Pathology, *G. Arias y Tte. Rodi, Asuncion, Paraguay*
The frequency of this tumour is being investigated in a defined population in Paraguay in search of epidemiological clues.
Description provided by IARC and DKFZ with ICRDB/NCI support.
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.1870,
MORTALITY OF CEMENT-ASBESTOS WORKERS AFFECTED BY ASBESTOSIS
G.F. Rubino, Universita degli Studi di Torino, Inst. of Occupational Medicine, *via Zuretti 29, 10126 Turin, Italy* (02078)
This mortality study, which includes 700 male workers in the cement-asbestos industry, aims (1) to assess whether exposure to both crocidolite and chrysotile and subsequent compensation for asbestosis are associated with higher mortality from lung cancer, gastrointestinal cancer and mesothelioma, and (2) to investigate the relationship between pulmonary fibrosis and lung cancer by establishing whether irregular opacities according to the ILO Classification are of predictive value for subsequent development of lung cancer.
Description provided by IARC and DKFZ with ICRDB/NCI support.
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.1871,
FREQUENCY OF CHAGAS DISEASE IN CANCEROUS PATIENTS
E. Sacerdote de Lustig, Instituto Oncologia Angel H. Roffo, Dept. of Research, *Av. San Martin 5481, 1417 Buenos Aires, Argentina*
Several authors have demonstrated the oncolytic effect of Trypansoma cruzi, the agent of Chagas disease, on mouse sarcomas and carcinomas. An epidemiological study was designed to study Chagas disease frequency in a group of patients at the Inst. of Oncology Angel H. Roffo in Buenos Aires. Out of 896 patients studied 74 (8.2%) were serologically positive for Chagas, 66.3% of them suffering from malignant tumors and 33.7% with non-cancerous pathologies. Tumor frequency was significantly higher in the Chagasic patients than in the serologically negative ones. When localizations were compared, a higher frequency of esophagus, uterine cervix and urinary system cancers was found in the Chagasic group. The present project is designed to study Chagas disease frequency in a larger group of patients with tumors of the cervix, esophagus and urinary system (bladder and kidney). Sera from patients will be tested by complement fixation, hemoagglutination, latex and immunofluorescence to diagnose Chagas disease. Information on age, anatomopathological diagnosis, place of birth, place of longest residence, cultural and socio-economic level and transfusions will be collected. Approximately 150 patients will be studied.
Description provided by IARC and DKFZ with ICRDB/NCI support.
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3.1872,
DIET AND BREAST CANCER
E. Sacerdote de Lustig, Instituto Oncologia Angel H. Roffo, Dept. of Research, *Av. San Martin 5481, 1417 Buenos Aires, Argentina* (01910)
Evidence of the influence of dietary factors in high breast cancer incidence is found in developed countries. Breast cancer is one of the primary causes of death for females in Argentina, and the aim of this study is to determine whether a diet particularly rich in animal proteins and fat can be associated with this high incidence. 150 diagnosed breast cancer patients have been interviewed until now. The required information includes personal data, gynecological and obstetrical history, hormonal treatment and diet, with special emphasis on fat and protein contents. Two control groups are being used, matched by age and sex, one composed of healthy consanguineous relatives, the other of healthy women who have no cancer history.
Description provided by IARC and DKFZ with ICRDB/NCI support.
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3.1873,
LUNG CANCER AND AIR POLLUTION IN HAMILTON
D.L. Sackett, McMaster University, Dept. of Clinical Epidemiology & Biostatistics, *1200 Main St. W., Hamilton, Ontario, Canada* L8S 4L8 (02175)
Previous work has shown that crude lung cancer death rates are higher in areas of Hamilton nearer to the major industries, but such factors as age, sex, smoking and socio-economic status were not taken into account. This study will make use of data on air

pollution levels and age-, sex- and socio-economic-specific death rates as well as a survey of smoking habits to examine roughly 600 lung cancer deaths in the city between 1972 and 1976. After allowing for the confounding variables, the relationship between air pollution and lung cancer mortality will be determined.

Description provided by IARC and DKFZ with ICRDB/NCI support.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.1874,

COMPARATIVE ANALYSIS ON CANCER DEATHS AMONG LOCAL POPULATIONS IN SAITAMA PREFECTURE, JAPAN

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A high level of population flow would theoretically make a local mortality pattern unclear and it might be meaningful to group persons according to residential histories. In Saitama Prefecture, there is a high level of immigration from the whole of Japan. The standardized mortality rates for cancer have been calculated for several local populations (cities or towns) in Saitama Prefecture, using the death certificates for 1973-1977. After adjustment for residential history, it was shown that the relative risk of liver cancer among persons in some local populations was remarkably high. Death rates for liver cancer will now be studied in greater detail and it is intended to collect death certificates for a longer period of time. Ultimately an attempt will be made to identify causal factors.

Description provided by IARC and DKFZ with ICRDB/NCI support.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.1875,

CANCER INCIDENCE IN THE FRENCH DEPARTMENT OF BAS-RHIN

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Cancer of all anatomical sites has been registered in the French department of Bas-Rhin since 1975. The registration area covers the resident population of Bas-Rhin: 883,095 inhabitants. The aims of the Registry are to establish incidence statistics for the identification of high-risk groups and for etiological research.

Description provided by IARC and DKFZ with ICRDB/NCI support.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.1876,

MALIGNANT NON-HODGKIN LYMPHOMAS IN UGANDA

R. Schmauz, Christian Albrechts Universitat, Medizinischen Hochschule, Inst fuer Pathologie, *Ratzeburger Allee 160, 2400 Lubeck, Federal Republic of Germany*

An attempt is made to describe the morphology and geographical distribution of these tumors using recent refined histological classifications. More than 500 cases coded under lymphosarcoma or reticulum cell sarcoma (ICD 200) are available for review from the Kampala Cancer Registry. It is hoped that some variation will be found within Uganda and in comparison to Europe which could provide clues to the nature of these diseases.

Description provided by IARC and DKFZ with ICRDB/NCI support.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.1877,

MORTALITY STUDY OF GLASS FIBER WORKERS

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A historical follow-up study is being conducted of 3,000-4,000 individuals who have worked in the manufacture of glass fiber since 1948. Mortality will be determined and certified causes of death found. Death rates will be compared internally (with rates in the provincial and national populations) and SMRs will be calculated. Of particular interest will be any deaths due to mesothelioma or lung cancer.

Description provided by IARC and DKFZ with ICRDB/NCI support.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.1878,

CANCER REGISTRY OF DOUBS

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The cancer registry of Doubs, which started in 1976, has for its main purpose the collection of cancer incidence data in the department of Doubs (500,000 inhabitants). Data are evaluated and compared with mortality data. Special investigations into urban and rural cancer distribution are being carried out.

Description provided by IARC and DKFZ with ICRDB/NCI support.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.1879,

ANALYSIS OF THE CANADIAN CANCER INCIDENCE REPORTING SYSTEM AND ITS DATA, 1969-76

G.J. Sherman, University of Toronto, Faculty of Medicine, *92 College St., Toronto, Ontario, Canada* M5S 1A8

Although cancer incidence data collection has increased greatly in the last 15 years, relatively little use has been made of the data for epidemiological purposes. More fundamentally, traditional indices of incidence registration completeness seem inadequate. This study has two main objectives: (1) to survey cancer registration techniques used in Canadian provinces and to relate these findings to the results of mathematical modelling procedure which improves on the usual cases: deaths in period index of reporting, and (2) to examine existing Canadian incidence data with correlation, regression and multivariable stratification techniques which will result in testable etiological models when interpreted in the light of (1).

Description provided by IARC and DKFZ with ICRDB/NCI support.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.1880,

SPUTUM CYTOLOGY RELATED TO A FOUNDRY EXPOSURE

A. Simard, Institut du Cancer de Montreal, Centre Hospitalier Notre Dame, *1560 Sherbrooke St. E., Montreal, Quebec, Canada* H2L 4M1

Some studies have shown an increased risk of lung cancer among foundry workers. Sputum cytology among uranium miners has shown cellular changes ranging from mild, moderate and marked atypia to cancer in-situ and invasive cancer. Sputum cytology will be undertaken in 700 foundry workers, using the technique of Saccomanno. Results will be related to duration of exposure in the foundry. Information on age, date of entry into the industry, work history, and smoking history will be obtained and person-years at risk evaluated. Comparisons will be made with other exposed groups, namely uranium miners, asbestos workers and smokers.

Description provided by IARC and DKFZ with ICRDB/NCI support.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.1881,

SPUTUM CYTOLOGY AND ASBESTOS EXPOSURE

A. Simard, Institut du Cancer de Montreal, Centre Hospitalier Notre Dame, *1560 Sherbrooke St. E., Montreal, Quebec, Canada* H2L 4M1 (01913)

An increased risk of lung cancer among asbestos workers has long been known. Sputum cytology in uranium workers led Saccomanno to evaluate mild, moderate, and marked atypia as well as cancer in-situ and invasive cancer. Sputum cytology will be related to asbestos exposure in 800 workers. Short (10 years), medium (10-20 years), and long (20 years) exposure will be defined as well as degree of exposure (2 fibres/cc, 2-10). A special group of workers with 35 years of exposure (20-50 fibres/cc) will also be studied. Work histories and other data, namely age, smoking patterns, man-years at risk and years since first exposure, will be put on computer files and related to the severity of atypia.

Description provided by IARC and DKFZ with ICRDB/NCI support.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.1882,

MORTALITY SURVEY OF CEGB RADIATION WORKERS AND EX-WORKERS

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The objective of the study is to determine whether exposure to low levels of ionizing radiation affects cause of death - in particular whether cancer mortality is higher in people occupationally exposed. Data is to be collected initially on 5,000-6,000 ex-workers, but eventually the study will be extended to current radiation workers (marking about 12,000 in all) and the survey will then run continuously. The exposed population will be compared with the general population, the working population, and eventually it is hoped, control groups within the electricity supply industry.

Description provided by IARC and DKFZ with ICRDB/NCI support.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.1883,

CYTOLOGICAL SCREENING FOR LUNG CANCER IN WORKERS EXPOSED TO HEXAVALENT CHROMIUM IN A CHEMICAL PLANT

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The object of the study is to monitor 50 workers exposed to hexavalent chromium in a department in which chromium catalyst is manufactured, using cytological screening of sputum for the early detection of lung cancer as well as of epithelial disorders which may precede the development of a tumor. Annual cytological screening of sputum collected for three consecutive mornings and kept in Eskenasy fixative solution is carried out. Paraffin was added and the sputum dyed with HE and Masson. Results are correlated with age, sex, smoking habits, length of exposure, pulmonary antecedents, and exposure levels.

Description provided by IARC and DKFZ with ICRDB/NCI support.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.1884,

COHORT STUDY OF ASBESTOS-RELATED ILLNESSES IN WORKERS PREVIOUSLY EXPOSED TO ASBESTOS IN A SALTPETER PLANT

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The study is designed as a retrospective and prospective mortality and morbidity cohort study on the effects of occupational exposure to asbestos in a saltpeter plant located in southern Norway. The cohort consists of all men directly and indirectly exposed to asbestos dust in two divisions of the plant, and who started work there between 1929 and 1970. This includes about 320 persons. Based on assumed different levels of exposure, the cohort is divided up into subgroups. Most of the still living 160 men have been subjected to a medical examination which also includes a chest x-ray and simple spirometry. A detailed work history is taken from every man and respiratory symptoms are registered on a questionnaire (Medical Research Council, 1976). The cohort will be followed up by yearly examinations for a least five years. Occupational data on the dead members of the cohort are obtained from the plant's personnel department. Health data will be obtained from the plant's medical department, from the local hospital and from the Norwegian Cancer Registry. Data on smoking habits are collected from different sources and will be taken into consideration in the statistical calculations. The main aim of the study is to contribute to the design and justification of screening programs for former asbestos workers. It is also hoped to further knowledge on dose-response and dose-effect relationships.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.1885,

CANCER INCIDENCE AND MORTALITY AMONG RAILROAD WORKERS

G.R. Howe, University of Toronto, *Medical Sciences Bldg., Toronto, Ontario, Canada* M5S 1A8

In a recent case-control study (Tobacco Use, Occupation, Coffee, Various Nutrients, and Bladder Cancer, G.R. Howe et al. JNCI, in press) an association was observed between any occupation related to railroads and increased risk of bladder cancer. The present study is a cohort study using pension records from a large Canadian railroad company. Records from 1965 onwards are being linked using computerized techniques, to the Canadian mortality data base, and records for those from 1969 on are being linked to the Canadian cancer incidence reporting system. Thus mortality between 1965 and 1976, and cancer incidence between 1969 and 1976 can be related to various occupations within the railroad industry.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.1886,

HEPATOCELLULAR CARCINOMA IN URBAN BLACKS - ETIOLOGICAL FACTORS AND RELATIONSHIP TO CERTAIN ONCO-FETAL ANTIGENS

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Hepatocellular carcinoma has a high incidence in Southern Africa. Numerous series have shown a strong relationship with HBV. A preliminary study was performed using orcein staining for HBsAg on autopsy material obtained from patients dying of hepatocellular carcinoma at Baragwanath Hospital. A low positivity was noted. This was extended in a study using immunoperoxidase and aldehyde-fuchsin staining techniques on similar material. Seventeen percent of the Baragwanath series showed HBsAg positively in non-neoplastic liver as opposed to 72% in a control group of Shangaan miners from Mozambique. significant number of cases showed iron overload and micro-nodular cirrhosis in the Baragwanath series. A prospective study is now commencing using serological and immunochemical techniques to invostigate the relationship between various tumor-related antigens, including HBsAg, alpha-fetoprotein, carcinoembryonic antigens and ferritin, and hepatocellular carcinoma in the urban black population.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.1887,

ETIOLOGY OF HODGKIN'S DISEASE

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The risk of Hodgkin's disease (HD) is known to be inversely related to sibship size. In an on-going study of case-control-within-a-cohort design, using as a reference population the birth cohort 1930-1950 from the register of school health records from the Copenhagen council, an inverse relationship between risk of HD and birth order position has been found. Birth weight and height and weight at 8-14 years were also higher in patients than in controls. The study includes 63 HD patients and 183 controls. Information about sibship size, mother's age at birth, and the difference in age from the nearest older sibling is now being collected and will be analyzed in combination with information about birth weight, height and weight measured at school age, and social background. The aim is to evaluate the relative importance of these factors, using a method based on a linear logistic model.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.1888,

ASSOCIATION OF STEROID CONTRACEPTIVE USE AND CERVICAL CARCINOGENESIS

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The aim is to determine if there is a true association between steroid contraceptive use and cervical carcinogenesis and to identify high-risk groups for whom the use of steroid contraceptives might lead to a significantly increased risk of cervical dysplasia and cancer. A case-control study on women with cervical intraepithelial neoplasia and/or invasive carcinoma in which patients undergoing hysterectomy without histological evidence of the studied diseases serve as controls is being carried out. The two groups will be matched for age, age at first marriage, age at first pregnancy and socio-economic status. The subjects are interviewed for information on matching factors and contraception using a specially designed protocol. Histological sections of both case and control subjects are reviewed and the diagnoses confirmed. Additional serial sections of the cervix are obtained whenever necessary. Three hundred control and 300 case subjects will be investigated. Association will be evaluated by means of relative risks, statistical significance, and confidence interval.

Description provided by IARC and DKFZ with ICRDB/NCI support.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.1889,

EPIDEMIOLOGICAL STUDY OF DIET AND STOMACH CANCER

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The object is to investigate the hypothesis that dietary factors are related to stomach cancer and specifically that nitrosamines are formed in the stomach from the interaction of amines and nitrites of dietary origin. Factors known to increase or reduce the formation of nitrosamines will be investigated. This case-control study is being conducted in three different provinces of Canada admitting approximately 400 newly diagnosed cases of stomach cancer and an equal number of population controls. Information is being collected by means of personal interviews using a personal and medical history questionnaire. The dietary information collected will include the frequency and amount of consumption of various foods and also any changes from present intake. In addition, the patterns or combinations of foods consumed for different meals will be assessed to assess the role of supposedly protective foods like vegetables and fruits.

Description provided by IARC and DKFZ with ICRDB/NCI support.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.1890,

BACKGROUND VARIABLES IN LUNG CANCER

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Lung cancer is being increasingly diagnosed all over the world. The reported incidence differs in different countries and populations, and environmental factors obviously play an important role. The present study aims to assess the risk from different smoking habits prevalent in India such as cigarette, bidi and hookka smoking, and to identify the role of rural/urban factors and occupation. Detailed information on smoking history, occupation and residence is obtained by interview of clinically and histologically confirmed cases of bronchogenic carcinoma seen over the past five years. 300 cases have been studied to date. preliminary report on 150 cases was published in 1979.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.1891,

EFFECT OF SCREENING FOR BREAST CANCER IN ICELAND

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Since 1973 a clinical breast examination has been carried out on every woman being screened for cervix cancer. In selected cases a mammography and fine needle aspiration are also performed. About 10,000 women, or 25 percent of the female population of Iceland in the age group 25-70 years, are examined every year. From the cancer registry information is collected annually concerning all cases of breast cancer. The screening history, stage distribution, and survival rate of cases diagnosed by and without screening are compared.

Description provided by IARC and DKFZ with ICRDB/NCI support.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.1892,

CANCER OF THE UPPER AERO-DIGESTIVE TRACT AND ALCOHOLIC BEVERAGES

B. Junod, Universite de Lausanne, Institut de Medicine Sociale et Preventive, Dept. of Epidemiology, *Bugnon, Case Postale 611, 1011 Lausanne, Switzerland*

The first objective of the study is to identify among alcoholic beverages which types are most linked with cancer of the upper digestive tract. In a case-control study, the distribution of types of alcoholic beverages will be compared in about 150 controls, all alcoholic. If some significant differences appear, a second objective of the study would be a search for increased mutagenicity in the suspected beverages using Ames' test.

Description provided by IARC and DKFZ with ICRDB/NCI support.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.1893,

EPIDEMIOLOGY OF URINARY TRACT CANCER IN GREATER BOMBAY

D.J. Jussawalla, Tata Memorial Hospital, Dept. of Surgery & Chemotherapy, *Dr. Ernest Borges Marg, Parel, Bombay 400012, Maharashtra, India*

For this study the data collected by Bombay Cancer Registry for the period 1964-75 have already been reviewed. A total of 954 cases of bladder and kidney cancers have been recorded. The incidence rates for bladder and kidney cancer are 2.8 and 1.3 for males and 0.9 and 0.8 for females, respectively. The incidence and mortality of these cancers by age, sex, religion and histology will be studied and the figures will be compared with those from other registries. A retrospective analysis of these cases will also be carried out in order to study the relationship of urinary tract cancers with smoking habits, alcohol addiction and dietary patterns.

Description provided by IARC and DKFZ with ICRDB/NCI support.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.1894,

EPIDEMIOLOGICAL STUDY OF HISTOLOGICALLY CONFIRMED CANCER CASES IN GREATER BOMBAY

D.J. Jussawalla, Tata Memorial Hospital, Dept. of Surgery & Chemotherapy, *Dr. Ernest Borges Marg, Parel, Bombay 400012, Maharashtra, India*

About 45,000 cancer cases were registered during the period 1964-75 in Greater Bombay residents. Approximately 70 percent of these diagnoses were confirmed histologically. The aim of this investigation will be to study the variations by site, site-group, sex, religion and age in the different histological types of cancers.

Description provided by IARC and DKFZ with ICRDB/NCI support.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.1895,

CANCER INCIDENCE IN AURANGABAD CITY AGGLOMERATION

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Western Maharashtra, Marathwada and Vidarbha are the three natural divisions of Maharashtra. Aurangabad City, covering an area of 50.48 sq. km with a population of 165,253 (1971 Census), is the main city in Marathwada. The purpose of this study is to obtain reliable morbidity data on cancer from this precisely defined area. Apart from in Bombay and Poona no such stuies have been carried out in India. Data on cancer patients are collected on pre-designed proformas from 12 general hospitals, 51 dispensaries, 3 clinics and 3 family planning centers. Copies are made of all death certificates which mention cancer as a cause of death from the vital statistics division of the Aurangabad Municipal Corporation.

Description provided by IARC and DKFZ with ICRDB/NCI support.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.1896,

CANCER MORTALITY IN GREATER BOMBAY

D.J. Jussawalla, Tata Memorial Hospital, Dept. of Surgery & Chemotherapy, *Dr. Ernest Borges Marg, Parel, Bombay 400012, Maharashtra, India*

Until 1941 cancer was not included in the list of the 10 leading sites of death in Greater Bombay, but today it ranks ninth, and is responsible for 4.3% of all deaths in the city. Data on cancer mortality were collected from the Vital Statistics Division of the Bombay Municipal Corporation. A total of 21,958 cancer deaths were registered among residents of Greater Bombay during the period 1964-74. The aim of this study is to analyze these data by age, sex, and site and to compare these rates with the mortality experience of other countries. Age-specific cancer rates will be used for computing the data.

Description provided by IARC and DKFZ with ICRDB/NCI support.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.1897,

CASE-CONTROL STUDY OF BREAST CANCER IN NORTH EAST BRAZIL

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The North East of Brazil is a poor, underdeveloped area, but in contrast with other similar regions in the world, breast cancer is remarkably common; in Racife and Fortaleza (the two biggest cities in the area) the incidence among women aged 35-64 years is nearly 100/1000000/year, only slightly less than the rate for women of similar age in England. Clues to disease etiology may often be gleaned from the study of exceptional situations and it is hoped that a case-control study will lead to the isolation of some specific factor which may be responsible for the high incidence of breast cancer in Brazil. The study will take two years and will be conducted simultaneously in Recife and Fortaleza; for each case there will be two controls and the interviews will concentrate on currently known risk factors and also on specific aspects related to local diet and habits.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.1898,

CANCER AND OCCUPATIONAL EXPOSURE TO INDUSTRIAL POLLUTANTS

H. Kjuus, Telemark Sentralsjukehus, Dept. of Occupational Medicine, *Olavsgt. 26, 3900 Porsgrunn, Norway*

Suggested estimates of the proportion of cancers attributable to occupational exposure varies widely. This case-referent study aims to assess to what degree cancer among patients in a county hospital is related to occupational exposure. A complete working history is obtained from all male patients admitted to surgical and medical wards with newly diagnosed cancer, and the total number of years of occupational exposure to a variety of industrial pollutants is recorded. The reference group consists of age-matched non-cancer patients from the same wards. There will be approximately 100-150 cancer patients in the case group.

Description provided by IARC and DKFZ with ICRDB/NCI support.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.1899,

CANCER RISK IN MAINTENANCE WORKERS IN CHRYSOTILE-ASBESTOS ENRICHMENT MILLS

F.M. Kogan, Sverdlovsk Research Inst. of Hygiene of Labor & Occup. Dis., Dept. of Industrial Hygiene, *Repin 2, Sverdlovsk 620014, Russia, Union of Soviet Soc. Republics*

This retrospective study aims to determine the cooperative carcinogenic risk in men who worked as maintenance workers in asbestos mills and other persons who worked during 25 years in the same mills. The major objective is to ascertain the role of intermittent exposure to dust which characterizes maintenance work.

Description provided by IARC and DKFZ with ICRDB/NCI support.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.1900,

CANCER MORTALITY AMONG BEAUTICIANS

S. Kono, Kyushu University, School of Medicine, Dept. of Public Health, *3-1-1 Maidashi, Higashi-ku, Fukuoka City 812, Fukuoka ken, Japan*

It has been reported that beauticians might be exposed to mutagenic compounds. In a retrospective cohort study the cancer mortality of about 8,000 female beauticians, registered at the Bureau of Public Health, Fukuoka Prefectural Government from 1948-1960, will be examined. Possible excess risk of cancer will be established by comparing the observed mortality with that expected from the national average.

Description provided by IARC and DKFZ with ICRDB/NCI support.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.1901,

MORTALITY AMONG ZEN BUDDHISTS

M. Kuratsune, Kyushu University, School of Medicine, Dept. of Public Health, *3-1-1 Maidashi, Higashi-ku, Fukuoka City 812, Fukuoka ken, Japan* (01890)

In a retrospective cohort study the mortality from various causes of death including cancer among Zen Buddhists will be examined. There will be more than 5,000 subjects and the study period will be 20 years. Standardized mortality ratios will be calculated on the basis of the national average mortality.

Description provided by IARC and DKFZ with ICRDB/NCI support.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.1902,

PREVALENCE OF COLORECTAL TUMORAL LESIONS (ADENOMA AND CANCER) IN WOMEN WITH BREAST CANCER

R. Lambert, Centre National de la Recherche Scientifique, Centre dEpidemiologie, *8 ave. Rockefeller, LP No. 005440 c/o Fac. Med., 69008 Lyon, France*

The aim is to detect the frequency of colonic tumoral lesions in women with breast cancer. The test group (220 subjects) includes women over 40 with breast cancer. They will be submitted to fibrorectosigmoidoscopy. 220 age-matched women without a known breast tumor admitted for a gastric disease (gastro-esophageal diseases, hiatal hernia, cancer) are used as controls.

Description provided by IARC and DKFZ with ICRDB/NCI support.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.1903,

HEMOCCULT TEST IN THE SCREENING OF COLORECTAL CANCER IN OCCUPATIONAL GROUPS

R. Lambert, Centre National de la Recherche Scientifique, Centre dEpidemiologie, *8 ave. Rockefeller, LP No. 005440 c/o Fac. Med., 69008 Lyon, France*

The aim is to evaluate the efficiency of the Hemoccult test in the detection of tumoral colorectal lesions (adenoma and cancer). The survey will be conducted in occupational groups concerned with chemicals (drug companies, petrochemicals and polymers, mineral compounds situated around Lyon). The test group consists of 1,600 persons. A questionnaire on intestinal symptoms is administered and Hemoccult testing is carried out. Positive subjects will be explored. The incidence of colorectal lesions in a control group of 2,000 will be followed.

Description provided by IARC and DKFZ with ICRDB/NCI support.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.1904,

CANCER INCIDENCE AMONG FERROCHROMIUM AND FERROSILICON WORKERS

S. Langard, Telemark Sentralsjukehus, Dept. of Occupational Medicine, *Olavsgt. 26, 3900 Porsgrunn, Norway*

The aim is to evaluate whether workers exposed to trivalent chromium have an increased risk of developing lung cancer or cancer at other sites by means of a historical study carried out on a population producing ferrosilicon and ferrochromium from 1928. The whole study population includes 976 members of whom 325 are characterized as belonging to a ferrochromium subpopulation. The internal reference population is comprised of workers who have not been exposed at the ferrochromium furnaces. The mortality and cancer incidence in the population is followed from 1935 through 1977. A complete working history of all members of the population is recorded, and an industrial hygiene survey performed. The mortality is compared to that for similar age-groups in the Norwegian population and incidence rates are compared with those for both the total Norwegian population, a local population and an internal population.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.1905,

CANCER OF THE UPPER LIP

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The epidemiology of lip cancer has been thoroughly studied during recent years in Finland (Am. J. Epidemiol., 109, 521-530, 1979). Cancer of the upper lip has, however, not been analyzed separately. Differences in male/female ratios of the incidence rates, time-trends, age-incidence curves, urban/rural ratios and geographical distribution in the different provinces of Finland suggest that the risk factors in upper and lower lip cancers may be different. The material consists of all cases of cancer of the upper lip diagnosed in 1953-1975 and reported to the Finnish Cancer Registry. The epidemiology of upper lip cancer will be studied, and compared and correlated with data on total lip cancer together with some other types of cancer with the aim of testing certain etiological hypotheses.

Description provided by IARC and DKFZ with ICRDB/NCI support.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.1906,

INTERACTION BETWEEN SMOKING AND ASBESTOS EXPOSURE IN LUNG CANCER AMONG CHRYSOTILE MINERS AND MILLERS

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In the 'Quebec Asbestos Mortality Cohort', consisting of 10,939 males and 440 females born 1891 through 1920 who worked for at least a month in the chrysotile mines and mills of Quebec, there had been 4,463 male deaths to the end of 1975. Of these, 244 were due to lung cancer, and, for a study under the direction of Professor J.C. McDonald, four controls had been selected from the cohort for each lung cancer death; the controls were born in the same year as the case, but had survived to a greater age. Work histories have been verified and annual exposures to chrysotile calculated in terms of fiber concentrations times proportion of year worked. Smoking history questionnaires had been completed for the great majority and are being recorded. New methods for comparing the fits of several models of observable interactions of the combination of asbestos and smoking in causing disease will be applied, leading to the possibilities of (a) inferences concerning biological models of carcinogenesis, and (b) the estimation of the probabilities that any individual's cancer was due to smoking or to asbestos exposure or to other factors.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.1907,

A RETROSPECTIVE STUDY OF CANCER IN RELATION TO A SPECIFIC ENVIRONMENTAL FACTOR (WATER NITRATE)

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The incidence of testis cancer in Denmark has for years been known to exceed that of neighboring countries (6.0 new cases/year/100,000 males). In this study a small, geographically limited 'hot-spot', possibly of recent origin, with an incidence of 31.7 new cases/year/ 100,000 males during the last two years (01.06.76 - 01.06.78) has been detected. This particular region differs from the rest of the island of Sjaelland (the island where the capital Copenhagen is situated) in one specific respect: the content of nitrate in deep ground-water supplies. The possibility

of the formation of carcinogenic nitrosamines from nitrate, nitrite and secondary amines in humans is being examined. Data are now being collected to see if there is a significant rise in the incidence in other parts of the country.

Description provided by IARC and DKFZ with ICRDB/NCI support.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.1908,

EPIDEMIOLOGY OF THYROID CANCER

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It is intended to check the incidence of thyroid cancer in Sardinia in order to identify incidental clustering and the relationship to environmental iodine concentration. The Survey will use the diagnoses from the three departments of pathology on the island.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.1909,

EPIDEMIOLOGICAL STUDY OF YOUNG PATIENTS WITH UTERINE CANCER

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In recent years, there have been many reports on cervical cancer in young women. The objective is to study cervical carcinoma and corpus carcinoma in young patients epidemiologically. Among 6,336 cases of cervical carcinoma and 467 cases of corpus carcinoma treated in the Department of Gynaecology, the Cancer Inst. Hospital in Tokyo from 1949 to 1977, 873 patients with cervical carcinoma and 17 patients with corpus carcinoma were under 39 years of age and these are being analysed. Non-cancer patients operated on at the same time and of the same age are selected as a control group.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.1910,

LONG-TERM EFFECTS OF THE HEALTH STATE OF OCCUPATIONAL EXPOSURES TO CHEMICALS

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Malignant tumors as well as cardiovascular and obstructive lung diseases may be caused by occupational exposure to various chemicals. The aims of the project are (1) to develop a suitable epidemiological methodology; (2) to analyze accurately the long-term effects of occupational exposure to chemicals, and (3) to determine the specific patterns of morbidity and mortality from malignant tumors in workers formerly exposed to chromium salts, asbestos and aromatic amines. The project includes a study of mortality from lung cancer, pleural mesothelioma and bladder cancer over the last 20 years in workers exposed to various chemicals, compared to the mortality recorded in the general population of the area, and a morbidity study based on the result of periodic medical examinations performed annually among workers at risk.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.1911,

LUNG CANCER - SMOKING, RESIDENCE AND WORK PLACE EXPOSURES

C. Edling, University of Linkoping, University Hospital, Dept. of Occupational Medicine, *58185 Linkoping, Sweden*

Radon concentrations are expected to increase in dwellings due to decreased ventilation for energy saving. Estimates by the Swedish Energy Commission indicate that radon and radon daughters in dwellings could contribute considerably to lung cancer morbidity. Recently a case-control study from an extremely rural area indicated an increased risk of lung cancer among residents in stone houses (i.e. the higher concentrations of radon and daughters) in comparison to those who had lived in wooden houses (low concentrations) (Scand. J. Work Environ. Health, 5, 10-15, 1979). Another case-referent study has started to examine the hypothesis that indoor concentrations of radon and daughters are of etiological importance for lung cancer. Type of residence, work place exposures, smoking, etc. are examined in 120 newly diagnosed lung cancer cases and 480 matched controls selected from hospital registers. If earlier results are confirmed, efforts to save energy through decreasing ventilation mean a serious lung cancer threat to the populations in countries with a cold climate. However, if this hazard can be more definitely assessed, indoor air could be filtered to remove radon daughters.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.1912,

MORTALITY STUDY OF NICKEL PLATERS

K.P. Duncan, Health & Safety Center, *97 Horseferry Rd., London SW1P 2DY, England, United Kingdom*

A retrospective study of the mortality patterns of nickel platers is being carried out.

Description provided by IARC and DKFZ with ICRDB/NCI support.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.1913,

MORTALITY STUDY OF UK ACRYLONITRILE WORKERS

K.P. Duncan, Health & Safety Center, *97 Horseferry Rd., London SW1P 2DY, England, United Kingdom*

The study takes the form of an examination of the mortality pattern of 1,300 acrylonitrile polymerization process workers who were first exposed to acrylonitrile in 1968 or earlier in six factories in the UK. Data on job histories and exposure levels will be used to allocate workers to defined exposure groups. Mortality from all causes of death, together with selected causes including cancer of lung, brain and large intestine, will be considered.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.1914,

MORTALITY STUDY OF FOUNDRY WORKERS

K.P. Duncan, Health & Safety Center, *97 Horseferry Rd., London SW1P 2DY, England, United Kingdom*

This study will investigate the mortality of workers in both iron and non-ferrous foundries. A population of about 1800 men who were employed in foundries in 1963 will be compared to a control population of 1700 men in other factories. The incidence of lung and other cancers as well as non-malignant respiratory disease and other causes of death will be investigated.

Description provided by IARC and DKFZ with ICRDB/NCI support.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.1915,

MORTALITY STUDY OF WORKERS IN TWO SCOTTISH STEEL FOUNDRIES

K.P. Duncan, Health & Safety Center, *97 Horseferry Rd., London SW1P 2DY, England, United Kingdom*

The mortality pattern of workers in two foundries in Scotland will be investigated following the suggestion that atmosphere from the foundries was responsible for an increase in lung cancer in the area. The population will consist of about 4,200 past and present employees of the foundries. Mortality from all causes of death and from lung cancer in particular will be studied.

Description provided by IARC and DKFZ with ICRDB/NCI support.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.1916,

URINARY BLADDER CANCER AND OCCUPATION IN LYON

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In a case-control study all cases of urinary bladder tumors in three hospitals in the city of Lyon are being registered and a questionnaire on occupational factors and toxic products used administered. Two controls for each case, one a patient without the disease and one population control, are used.

Description provided by IARC and DKFZ with ICRDB/NCI support.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.1917,

OCCUPATION AND NASAL CANCER

U.K. Engzell, Huddinge Sjukhus, Dept. of Ear Nose & Throat, *S14186 Huddinge, Sweden*

An increased frequency of cancer of the nose and paranasal sinus among workers exposed to fine wood dust, leather and nickel has been reported from England and other countries. A joint project has been started to explore the risk of contracting nasal cancer in the Nordic countries and to single out occupations and exposures possibly associated with nasal cancer. In each country a project group is at work on a national basis, according to a joint program. Each new case of malignant epithelial tumor of the nose and sinuses reported to the individual national cancer registries is interviewed concerning previous occupational exposures of various kinds. There are an estimated 150 cases a year. The project is a case-referent study and the controls will be matched cases of colon cancer.

Description provided by IARC and DKFZ with ICRDB/NCI support.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.1918,

STUDY OF OCCUPATIONAL FACTORS IN NASAL SINUS CARCINOMA

J.M. Elwood, Cancer Control Agency of British Columbia, Division of Epidemiology, *2656 Heather St., Vancouver, British Columbia, Canada* V5Z 3J3

Since 1938, approximately 125 male patients with nasal sinus carcinoma have been identified in the major treatment facility in British Columbia. Information on the occupation of these patients, and on certain other factors, such as ethnic origin and smoking history, is being collected from medical records and compared to census data on occupations, and also to similar data on a controlled series of other cancer patients matched by age and year of diagnosis. The analysis will assess the associations of risk of nasal sinus cancer with specific occupations.

Description provided by IARC and DKFZ with ICRDB/NCI support.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.1919,

EPIDEMIOLOGICAL AND PROGNOSTIC STUDIES OF ESTROGEN RECEPTOR TYPE IN BREAST CANCER

J.M. Elwood, Cancer Control Agency of British Columbia, Division of Epidemiology, *2656 Heather St., Vancouver, British Columbia, Canada* V5Z 3J3

Estrogen receptor determinations have been carried out on approximately 600 breast cancer patients diagnosed in British Columbia since 1974. Information on etiological factors and survival is being collected on these patients, and the analysis will assess differences or similarities in the epidemiological risk factors between oestrogen receptor positive and estrogen receptor negative breast cancer, as well as look at the relationship of receptor status to pathology and staging and to survival and response to various treatments.

Description provided by IARC and DKFZ with ICRDB/NCI support.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.1920,

CASE-CONTROL STUDY OF MALIGNANT MELANOMA

J.M. Elwood, Cancer Control Agency of British Columbia, Division of Epidemiology, *2656 Heather St., Vancouver, British Columbia, Canada* V5Z 3J3

The study will include all residents of western Canada (Manitoba, Saskatchewan, Alberta and British Columbia) diagnosed with malignant melanoma in a two year period commencing April 1979. About 700 cases are anticipated and an age-sex matched control group will be chosen from general population listings. A detailed interview will be carried out in the subject's home, medical records will be abstracted, and pathology reviewed centrally. The study will assess etiological factors, such as acute and chronic sunlight exposure, residence, occupation, and recreational factors, drug and hormone use, pigmentation, and also study methods of diagnosis and pathological types. Extension of the study to consider treatment survival will probably be possible.

Description provided by IARC and DKFZ with ICRDB/NCI support.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.1921,

CASE-CONTROL STUDY OF MULTIPLE MYELOMA

J.M. Elwood, Cancer Control Agency of British Columbia, Division of Epidemiology, *2656 Heather St., Vancouver, British Columbia, Canada* V5Z 3J3

A small case-control study of multiple myeloma (about 50 patients) is being carried out in the main referral center in British Columbia. Patients are being compared with other cancer patients with diagnoses selected to exclude those in which smoking, alcohol use, radiation or occupational factors are known to be of major etiological importance. detailed interview assessing occupational factors, prior exposure to irradiation, and various lifestyle factors is being carried out by a trained interviewer.

Description provided by IARC and DKFZ with ICRDB/NCI support.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.1922,

ARSENIC AND CANCER

S. Evans, University of Liverpool, Dept. of Dermatology, *P.O. Box 147, Liverpool L69 3BX, England, United Kingdom*

There is abundant evidence of the carcinogenic effect of arsenic from environmental, occupational and medicinal sources. Of 481 subjects who received medicinal arsenic (mainly for skin diseases), 144 were examined for evidence of skin and internal pre-malignant and malignant lesions. Skin arsenic levels were measured by neutron activation analysis and tissue culture performed to detect epidermal chromosomal abnormalities. The cancer death rate in all 481 subjects is now being investigated.

Description provided by IARC and DKFZ with ICRDB/NCI support.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.1923,

CASE-CONTROL STUDY OF SOFT TISSUE SARCOMAS AND EXPOSURE TO CHEMICAL AGENTS

M.H. Eriksson, Regionsjukhuset, Dept. of Oncology, *90185 Umea, Sweden*

In 1978 a matched case-control study performed in this insitution showed that exposure to phenoxyacetic acids or chlorophenois gave an approximately sixfold increase in the risk of soft tissue sarcomas. This investigation was carried out in the northernmost counties in Sweden, where forestry is common. All exposed cases except two had been in occupational contact with either chlorophenols or the phenoxyacetic acid 2,4,5-T (2,4,5-trichlorophenoxyacetic acid), which are both often associated with impurities such as chlorinated dibenzodioxins or dibenzofurans, among them the toxic 2,3,7,8-tetrachlorodibenzodioxin (TCDD). Thus it could not be decided whether the increased risk was due to the impurities or to the chemicals studied. To try to determine this, a new matched case-control study is being carried out in the agricultural area of the five southernmost counties in Sweden, since phenoxyacetic acids without the impurities mentioned above are extensively used in farming. The cases in this new study are 110 men, aged 25-75, with soft tissue sarcomas diagnosed between 1974 and 1978 in the region studied. For each case two controls are selected, matched by geographical district, sex and age.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.1924,

MORTALITY RISK STUDY OF COPPER SMELTER WORKERS

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The study aims to determine if an excess risk of mortality from certain diseases, especially lung, renal or prostate cancer, exists among copper smelter workers. These workers are exposed to lead, arsenic, cadmium and sulphur dioxide. Five levels of exposure to these different contaminants have been determined: (1) no exposure; (2) exposure to concentrations always below the threshold limit values (TLV) accepted by the National Inst. of Occupational Safety and Health (US); (3) average exposure below TLV but with possible incursion over; (4) average exposure always over TLV; (5) exposure known but never measured. Employees who have worked at least one year for the company between 1 January 1952 and 31 December 1957 are followed up to 31 December 1977. In all 2,246 workers will be studied. The risk of mortality related to different cancers will be evaluated by comparing the number of cancers observed in a cohort to the number expected in a population of the same age and sex, for each year, in the Province of Quebec.

Description provided by IARC and DKFZ with ICRDB/NCI support.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.1925,

OCCUPATIONAL DISEASE IN ALBERTA WORKERS EXPOSED TO CHEMICALS

S.M. Fincham, Alberta Provincial Cancer Hospitals Board, Dept. of Epidemiology, *11560 University Ave., Edmonton, Alberta, Canada* T6G 1Z2

A data base was established on a cohort of 5,777 Alberta workers occupationally exposed to chemicals and 1,645 workers not so exposed. The data file will be matched annually with the Alberta Cancer Registry and the National Death Registry using record-linkage techniques. Risk estimates will be computed for cancer incidence and for cause-specific death in both groups.

Description provided by IARC and DKFZ with ICRDB/NCI support.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.1926,

LUNG CANCER - HISTOLOGY AND OCCUPATIONAL EXPOSURE

M. Geddes, Center for the Prevention of Social Diseases, Unit for Epidemiological Research in Environmental Toxicolog, *171 Viale Alessandro Volta, 50131 Florence, Italy*

An association has been observed between some occupations and specific histological types of lung cancer. The present study aims to verify if there is a different distribution of workers and others between various histological types of lung cancer; and to determine if there is a different distribution of occupational groups specifically exposed to carcinogens for lung in humans (IARC working group report, 1978) in lung cancer patients with different histological types and in controls. Approximately 500 lung cancer patients (males and females), with established histological diagnosis according to a simplified WHO classification, and an equal number of controls selected from the same hospital, without respiratory diseases, hospitalized in the same year, and matched for sex, age, residence and smoking habits are interviewed about occupational history, which is classified according to the International Labor Organization classification.

Description provided by IARC and DKFZ with ICRDB/NCI support.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.1927,

SOME RISK FACTORS IN LUNG CANCER

M.R. Galesanu, Inst. of Medicine & Pharmacy, Medical Faculty, Radiological Clinic, *St. Universitati 16, 6600 Iasi, Romania*

The aims of this study are to survey and analyze case characteristics in confirmed bronchial carcinomas treated in this center, such as: age distribution, sex, education, socio-economic factors, environment (rural-urban), occupation, industrial neighborhood, smoking, previous diseases. The number of new patients admitted is estimated to be about 200 over five years. Special attention will be accorded to workers coming from rural areas.

Description provided by IARC and DKFZ with ICRDB/NCI support.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.1928,

SOME RISK FACTORS IN BREAST CANCER

M.R. Galesanu, Inst. of Medicine & Pharmacy, Medical Faculty, Radiological Clinic, *St. Universitati 16, 6600 Iasi, Romania*

The purpose of the study is to establish some correlations between the incidence of breast cancer and case characteristics such as: age at menarche, age at marriage, age at first pregnancy, lactation, abortions, sterility, age at menopause, socio-economic factors, etc. It is estimated to study about 400 cases over five years. The study population is taken from in-patients treated in this clinic.

Description provided by IARC and DKFZ with ICRDB/NCI support.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.1929,

CANCER RISK IN NON-FERROUS METALLURGY AND CHROMIUM INDUSTRIES

S.I. Gabor, Academia de Stiinte Medicale, Inst. of Hygiene & Public Health, Dept. of Occupational Health, *Pasteur 6, 3400 Cluj Napoca, Romania*

Exposure of workers to lead, cadmium, copper, arsenic, chromium and sulphur dioxide from non-ferrous metallurgy and chromate industries, as well as that of the population living in the surrounding polluted areas, represents a risk of high cancer incidence. This investigation aims at assessing the mortality patterns of retired workers employed in non-ferrous metallurgy (lead and copper smelting) and chromium compound production plants compared to the mortality rate of the general population. Environmental measurements will be carried out in parallel with biotoxicological tests of exposure and sputum cytology screening examinations. As estimated, 1,500 workers will be surveyed.

Description provided by IARC and DKFZ with ICRDB/NCI support.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.1930,

STUDY OF THE EPIDEMIOLOGY, HISTOPATHOLOGY, AND CLINICAL PATTERN OF MELANOMA IN NORTHERN IRELAND

L. Gordon, Queens University of Belfast, Dept. of Oncology, *Belfast, Northern Ireland, United Kingdom*

The first retrospective study of the pattern of melanoma in Northern Ireland (1974-1978) is being undertaken, encompassing about 300 cases. Histopathology is classified according to both the Clark and Breslow criteria. Additional features such as tumor profile, cell type, ulceration, mitoses, and lymphocytic infiltrate pattern are being noted. A clinical picture of each patient is also recorded, including selected aspects of personal history. Advantages claimed for this study are (1) geographical completeness, (2) the investigation of clinical, histological, and epidemiological factors as they inter-relate to one another. A comparative study to illuminate the interaction between genetic factors and the environment will follow. The results of the study of the native Irish population could profitably be compared with Irish immigrant populations in Australia, the USA, and Canada.

Description provided by IARC and DKFZ with ICRDB/NCI support.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.1931,

BRONCHUS CARCINOMA IN URANIUM MINERS (SCHNEEBERGER LUNGENKREBS)

E.F. Hain, Allgemeines Krankenhaus, Dept. of Pneumology, *Bissendorfer Pferdeweg 52, 2000 Hamburg 90, Federal Republic of Germany*

Bronchus carcinoma is being studied in 47 cases found in uranium miners in the Federal Republic of Germany after the Second World War. 45 of these persons were exposed to uranium in Saxony/Bohemia outside the Federal Republic of Germany. All data, especially the radiation measurements, of these miners are kept secret, so that it is impossible to measure the real radiation exposure. This is estimated by the time of exposure to uranium. No control group is used because of this lack of information. Besides time of exposure the following data are collected: age at death, latency period, place and type of uranium mining, therapy, time of survival after discovery of the carcinoma, site and histology of the carcinoma, metastases, clinical data, pneumoconiosis, and smoking history.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.1932,

CHILDREN'S CANCER REGISTRATION

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The object is to establish registration of childhood cancer on a national basis in Japan.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.1933,

MALIGNANT LYMPHOMAS AND EXPOSURE TO CHEMICALS, ESPECIALLY TO PHENOXYACETIC ACIDS, CHLOROPHENOLS OR ORGANIC SOLVENTS

O.L. Hardell, Regionsjukhuset, Dept. of Oncology, *90185 Umea, Sweden*

In 1977 a number of patients with soft tissue sarcomas and previous exposure to phenoxyacetic acids were reported in this department. This included an analysis of exposure to chlorophenols. The results showed that exposure to phenoxyacetic acids or chlorophenols gave an approximately six-fold increase in the risk for this type of tumor. In May, 1978, a patient with a tumor in the soft tissue of his left femur was admitted to this department. The clinical picture was similar to that of a soft-tissue sarcoma. Histological examination showed, however, a malignant lymphoma of histiocytic type. The patient reported a massive exposure to phenoxyacetic acids. All male patients with this type of tumor who were admitted to the department during January to September, 1978, were then asked about their past and present occupation and about possible exposure to phenoxy acids or chlorophenols. In this pilot study, 14 of 17 patients reported a current occupation which was consistent with the possibility of exposure to the chemicals under study - namely, farming or forestry (7), saw mill work (1), painting (3) and building (3). Eleven men reported exposure to phenoxyacetic acids or chlorophenols. An epidemiological study is now being performed. The cases are 173 men with malignant lymphomas, aged 25-85 years, admitted to this department in 1974-1978. For each case two controls are selected, matched by geographical region, sex and age. The chemicals under consideration are phenoxyacetic acids, chlorophenols and organic solvents.

Description provided by IARC and DKFZ with ICRDB/NCI support.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.1934,

EPIDEMIOLOGY, PATHOLOGY, CLINICAL MANAGEMENT AND OUTCOME OF MALIGNANT MELANOMA IN WESTERN AUSTRALIA

B.K. Armstrong, University of Western Australia, *Nedlands, W. Australia 6009, Australia*

All patients (about 500 expected) having pre-invasive or invasive malignant melanoma of the skin diagnosed in Western Australia in 1980 and 1981 will be included in a case-control study, and detailed review of histopathology and clinical management undertaken. The case-control study will include demographic features, details of sun-exposure (particularly intermittent versus continuous), objective measures of solar skin damage, diet and other relevant habits. Controls will be matched by age and sex using the electrical roll as a sampling frame. All relevant prognostic features will be recorded in the histopathological review including Clark's levels and tumor thickness. Melanoma patients will be followed for at least ten years to document prognosis in relation to histopathology and clinical management.

Description provided by IARC and DKFZ with ICRDB/NCI support.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.1935,

FAMILIALITY OF CHILDHOOD CANCER

A.M. Alvarez, Hospital Infantil de la Ciudad Sanitaria Virgen del Rocio, Depto de Oncologia, *Ave. Manuel Siurot, Sevilla, Spain*

Numerous publications in recent years have demonstrated the familiality of childhood cancer. A study of the frequency of malignant and benign tumors in the families of 100-200 children aged 0-7 years, from the Andalucian and Extremaduran regions of Spain, who come to the cancer surgery department of the Children's Hospital, will be carried out. The family history of the patients will be investigated back through three to four generations, concentrating on the tumors which are most frequent in infancy. A parallel study of the family histories of children who come to the Children's Hospital with illnesses not related to cancer will be carried out simultaneously.

Description provided by IARC and DKFZ with ICRDB/NCI support.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.1936,

CANCER RISK AND OCCUPATIONAL EXPOSURE

M.B. Aksoy, Istanbul Universitesi, Faculty of Medicine, Section of Hematology, *Bayezit, Istanbul, Turkey*

The occurrence of malignancies among workers exposed to vinyl chloride monomer in a petrochemical plant at Yarimca, Izmit, began in 1978. Studies among workers in textile industries where solvents and chemicals are used and in asbestos and cement pipe factories are being undertaken.

Description provided by IARC and DKFZ with ICRDB/NCI support.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.1937,

CANCER INCIDENCE AND SURVIVAL IN A 1% CENSUS SAMPLE

A.M. Adelstein, Office of Population Censuses & Surveys, Medical Statistics Div., *10 Kingsway, St. Catherines House, London WC2B 6JP, England, United Kingdom*

This longitudinal study of cancer incidence and survival is based on a 1% census sample taking into account all available census variables.

Description provided by IARC and DKFZ with ICRDB/NCI support.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.1938,

NATIONWIDE STUDIES OF CANCER INCIDENCE AND SURVIVAL

A.M. Adelstein, Office of Population Censuses & Surveys, Medical Statistics Div., *10 Kingsway, St. Catherines House, London WC2B 6JP, England, United Kingdom*

These continuing studies of national cancer incidence and survival are based on regional and national cancer registration schemes.

Description provided by IARC and DKFZ with ICRDB/NCI support.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.1939,

EPIDEMIOLOGICAL ANALYSIS OF HOSPITAL DIAGNOSIS DATA

T. Abelin, Universitat Bern, Dept. of Social & Preventive Medicine, *Waldheimstrasse 18, 3012 Bern, Switzerland*

For most cancer sites, patients are admitted to a hospital at some point of the disease process. Analysis of country-wide hospital diagnosis statistics thus allows for insights into time trends of cancer incidence by regions and socio-demographic characteristics. In the present study, hospital diagnosis data (available for about one-third of all acute hospital departments in Switzerland) will be extrapolated in stratified procedure to the country as a whole and to socio-culturally different regions. Cancer incidence will be computed for all major sites, and analysis will focus on correlations with personal and regional characteristics. Emphasis will be on cancer sites known to be associated with tobacco and/or alcohol consumption. Data will be drawn from the VESKA-hospital diagnosis statistics system, existing since 1969, that today includes 309 hospital departments with approximately 300,000 yearly admissions.

Description provided by IARC and DKFZ with ICRDB/NCI support.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.1940,

NATIONAL PLAN FOR POPULATION-BASED CANCER REGISTRIES IN SPAIN

R. Abad Iglesias, Ministerio de Sanidad y Seguridad Social, Negociado de Oncologia, Serv de Epidemiologia, *Paseo del Prado 18-20, Madrid 14, Spain*

The National Cancer Registry Plan involves the setting up of four population-based cancer registries (Oviedo, Seville, Tenerife and Valladolid) which will be connected with the two already existing (Zaragoza and Navarra). Considering the considerable geographical, cultural and socio-economic differences between these regions which represent large areas of Spain, the interpretation of observed differences is of very great epidemiological interest. In addition, the registry organization intends to analyse the requirements for oncological health care in Spain and to coordinate the elaboration of program of primary prevention.

Description provided by IARC and DKFZ with ICRDB/NCI support.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.1941,

SURVEY OF THE PREVALENCE OF FERRUGINOUS BODY (ZEOLITE) IN SPUTUM OF THE INHABITANTS OF KARAIN

Y.I. Baris, Hacettepe Universitesi, Faculty of Medicine, Dept. of Chest Diseases, *Ankara, Turkey*

Recent epidemiological work carried out in the village of Karain revealed that malignant mesothelioma and chronic fibrosing pleurisy are endemic. Mineralogical data show that these disorders are probably due to the presence of a fibrous silicate (zeolite) other than asbestos which is found in the tuff rocks in Karain, in the airborne samples and even in the lung tissues of the patients. A survey is planned in order to demonstrate ferruginous bodies (zeolite) in the sputum of the inhabitants of Karain using the neighboring village of Karlik as a control. The level of exposure will be assessed and correlated with cancer rates.

Description provided by IARC and DKFZ with ICRDB/NCI support.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.1942,

CLINICAL AND RADIOLOGICAL STUDY OF SEPIOLITE WORKERS

Y.I. Baris, Hacettepe Universitesi, Faculty of Medicine, Dept. of Chest Diseases, *Ankara, Turkey*

It has already been shown that mineral fibers are potentially active biologically. Because of this it was decided to carry out a clinical and radiological study in workers who take part in the production and manufacturing of sepiolite. A clinical and radiological study is being done on 63 sepiolite processing workers in Eskisehir and radiological findings are collected on mass survey (70 mm films) in four villages where mining and processing of sepiolite have taken place for more than a hundred years.

Description provided by IARC and DKFZ with ICRDB/NCI support.
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.1943,
CANCER OF THE PROSTATE IN ALBERTA
G. Bako, Alberta Provincial Cancer Hospitals Board, Dept. of Epidemiology, *11560 University Ave., Edmonton, Alberta, Canada* T6G 1Z2
This study is a supplement to the 1977 published report 'Epidemiology of Cancer in Alberta 1969-73'. The objectives are to update the collected data and to investigate a number of epidemiological factors for their possible contribution to extreme geographical differences of prostate cancer incidence in Alberta.
Description provided by IARC and DKFZ with ICRDB/NCI support.
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.1944,
COLON CANCER IN ALBERTA
G. Bako, Alberta Provincial Cancer Hospitals Board, Dept. of Epidemiology, *11560 University Ave., Edmonton, Alberta, Canada* T6G 1Z2
This study is a supplement to the 1977 published report 'Epidemiology of Cancer in Alberta 1969-73'. The objectives are to update the collected data and to investigate a number of epidemiological factors for their possible contribution to extreme geographical differences in colon cancer incidence in Alberta.
Description provided by IARC and DKFZ with ICRDB/NCI support.
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.1945,
A TIME-SPACE CLUSTERING ANALYSIS OF CHILDHOOD MALIGNANCY IN NORTH WEST ENGLAND
J.M. Birch, University Hospital of South Manchester, Dept. of Epidemiology & Social Research, *W. Didsbury, Manchester M20 8LR, England, United Kingdom*
Previous studies of this type have been carried out on leukemias and some lymphomas and have produced negative results or evidence of weak clustering. The Manchester Children's Tumor Registry is population-based with almost complete ascertainment and a high degree of diagnostic accuracy. It therefore provides a unique body of data for this type of analysis. The address at the time of each child's birth is known and it is felt that in the case of childhood cancer this may be more appropriate reference than the address at time of onset of the disease. Two Ordnance Survey grid references, accurate to within 0.1 Km, have been allocated to each case included in the Manchester Children's Tumor Registry between 1 January 1954 and 31 December 1973 corresponding to the child's place of residence at its time of birth and at the time of onset of its disease. These data are being analyzed, using the methods described by Pike and Smith, 1968, and Smith et al., 1976, to detect any space-time interaction. The data will be analyzed as a whole, by disease group and by age group.
Description provided by IARC and DKFZ with ICRDB/NCI support.
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.1946,
A STUDY OF CHILDHOOD LEUKEMIA IN NORTH WEST ENGLAND 1954-1977
J.M. Birch, University Hospital of South Manchester, Dept. of Epidemiology & Social Research, *W. Didsbury, Manchester M20 8LR, England, United Kingdom*
The annual incidence of leukemias of various cell types recorded by the Manchester Children's Tumor Registry during the period 1954-1977 has been analysed and the incidence of acute lymphoid leukemia has shown a significant increase. The data are currently being analysed to determine whether this increase is concentrated in any particular group. Factors being studied include age, sex, white cell count at presentation, social class and socio-economic group. Geographical studies are also being carried out to determine incidence trends in different parts of North West England and any association with features specific to a given area. A prospective case-control study of possible etiological factors (with emphasis on genetic and other pre-natal factors) will begin early in 1980. Controls will be selected from the population and matched for age, sex and race.
Description provided by IARC and DKFZ with ICRDB/NCI support.
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.1947,
SPATIAL DISTRIBUTION OF CANCER IN NEW ZEALAND, 1969-73
G.B. Borman, New Zealand Dept. of Health, National Health Statistics Centre, *P.O. Box 6314, Te Aro, Wellington, New Zealand*
Data from the National Cancer Registry and death certificates are being utilized to define spatial variations of cancer morbidity and mortality in New Zealand for the period of 1969-73. Probability testing of these patterns will permit significantly high and low incidence areas to be determined. The study also focuses upon the age-sex distributions as well as time trends since 1948.
Description provided by IARC and DKFZ with ICRDB/NCI support.
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.1948,
VIENNESE GYNECOLOGICAL TUMOR REGISTRY
G. Breitenecker, Universitat Wien, Medizinischen Fakultat, *Spitalgasse 23, 1010 Vienna, Austria*
In Austria, gynecological tumors are the cause of 20% of all deaths of females from cancer. At present some one million vaginal smears are examined in Austria annually. However, the number of women screened is not known as there is no registration of individuals and no record is kept of frequency of repeated examinations. Only inaccurate figures are available on the prevalence and incidence rates of gynecological cancers and, although mortality statistics provide the most reliable existing data, these cannot be used for epidemiological investigations as the localization of uterine cancer is not reported in nearly two-thirds of cases, so that the annual death rate for women with cervical cancer versus endometrial cancer is not clear. The aim is to organize a gynecological tumor registry in the Viennese area, which could eventually form part of a state-wide cancer registry. In addition to improving mortality and morbidity data and determining incidence and prevalence rates and effectiveness of treatment, there will be patient-based registration of cytological reports to determine prevalence and incidence rates of pre and early stages of cervical cancer and to evaluate screening programs. Cooperation with federal and community institutions, the Austrian League Against Cancer and gynecological and pathological institutes and practitioners will be extended.
Description provided by IARC and DKFZ with ICRDB/NCI support.
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.1949,
ENVIRONMENTAL CORRELATIONS OF CANCER MORTALITY
A. Bouckaert, Universite Catholique de Louvain, Ecole de Sante Publique, Service dEpidemiologie, *Clos Chapelle aux Champs 30, 1200 Brussels, Belgium*
Cancer mortality data are correlated with environmental (temperature, sunshine, rainfall, pollution, hardness of water) data. Changes are correlated with changes in the environment.
Description provided by IARC and DKFZ with ICRDB/NCI support.
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.1950,
EPIDEMIOLOGY OF DYSPLASIA AND CARCINOMA OF THE UTERINE CERVIX
J. Roy Chowdhury, Chittaranjan National Cancer Research Centre, Dept. of Epidemiology/Pathology, *37 S.P. Mukherjee Rd., Calcutta, 700026, West Bengal, India*
Carcinoma of the uterine cervix is the most common form of cancer among Indian women and more prevalent in low socioeconomic groups. It is accepted that a certain percentage of different grades of cervical dysplasia progress to squamous cell carcinoma. The aim of the present study is to establish the prevalence rate of dysplasia and cancer of the uterine cervix in the urban and rural population in West Bengal and correlate the natural histories of these lesions with age, parity, age at first birth, beginning of sexual relations, marital status, number of births and other known etiological and epidemiological factors. Married women in the age-group ranging from 20-70 years attending the Cancer Detection Centers are questioned thoroughly and forms containing 20 groups of questions are filled out by experts. The following investigations are made: general physical examination, systemic examination, gynecological examination, cytological and biopsy specimen examinations (biopsies are taken from the patients with cancer of the cervix and dysplasia whenever possible). Cases of dysplasia are followed up periodically for a minimum period of 5 years.
Description provided by IARC and DKFZ with ICRDB/NCI support.
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.1951,
EPIDEMIOLOGY OF ORAL CANCER
J. Roy Chowdhury, Chittaranjan National Cancer Research Centre, Dept. of Epidemiology/Pathology, *37 S.P. Mukherjee Rd., Calcutta, 700026, West Bengal, India*
Oral cancer, the commonest form of cancer in Indian men, is often preceded by some white precancerous lesions. The objectives of the present study are to establish the frequency of both oral cancer and precancerous lesions in urban and rural populations in West Bengal and the frequency of malignant transformation of white precancerous lesions and to examine the distribution by age, sex, localization, tobacco chewing and smoking habits. Other possible etiological factors, such as nutritional and dietary factors, oral hygiene, use of dental prosthesis and alcohol consumption, are also being investigated.
Description provided by IARC and DKFZ with ICRDB/NCI support.
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.1952,
INDUSTRIAL POLLUTION AND CANCER
N.W. Choi, Manitoba Cancer Treatment & Research Foundation, Dept. of Epidemiology & Biostatistics, *700 Bannatyne Ave., Winnipeg, Manitoba, Canada* R3E OV9
Objectives of the study are: (1) to investigate if risks of certain cancers were increased among the employees of a mining and smelting company according to length and place of job in the company and (2) to investigate if risks of certain cancers were also increased for the neighboring community. If so, the increased risk in relation to employment status and/or the relationship of the cases to employees will be further determined. In achieving both objectives, certain important variables such as smoking and dietary habits will be accounted for. Most of the feasibility work has been completed in terms of identification of the cohort group (approximately 30,000), population at risk, linkage of study subjects to a number of different sources of health and vital statistics including our cancer registry and follow-up of the cohort group, etc. As the feasibility of such a study has become apparent, a definitive study will now be conducted.
Description provided by IARC and DKFZ with ICRDB/NCI support.
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.1953,
CANCER AMONG ICELANDERS IN CANADA AND ICELAND
N.W. Choi, Manitoba Cancer Treatment & Research Foundation, Dept. of Epidemiology & Biostatistics, *700 Bannatyne Ave., Winnipeg, Manitoba, Canada* R3E OV9
In preparation for a series of studies on health and chronic diseases in Icelanders in Canada and Iceland initiated by consortia of Canadian and Icelanic scientists, a feasibility study of identification of cohort groups, data linkage and follow-up of study subjects has been conducted and is being completed. An initial study on cancer incidence among the Canadian Icelanders in relation to generation, relatives and geography has been planned. The objectives of the study are: (1) to study incidence of and mortality from cancer among Icelanders in Manitoba and Iceland; (2) to compare incidence of and mortality from cancer among different generations of Icelanders in

Manitoba with those among non-Icelanders in Manitoba and Icelanders in Iceland; (3) to compare incidence of and mortality from cancer between family members of Icelanders in Manitoba and Iceland; (4) to elucidate environmental correlates of differing incidence and mortality among Icelanders in Iceland and Manitoba.

Description provided by IARC and DKFZ with ICRDB/NCI support.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.1954,

NATIONAL AND INTERNATIONAL TRENDS IN MORTALITY FROM ALCOHOL-RELATED DISEASE

C.E. Chilvers, Inst. of Cancer Research, Division of Epidemiology, *Clifton Ave., Sutton SM2 5PX, England, United Kingdom*

Alcohol consumption data are being collated from different sources for the United Kingdom and other countries. These will be related to cohort mortality trends for cancers of certain sites for which an association with alcohol consumption has been hypothesized, for example cancers of esophagus, larynx and colon and also for other chronic diseases. Correlations between mortality levels and alcohol consumption levels will also be investigated. The objective is to ascertain whether or not trends in these diseases are related to trends in alcohol consumption in the different countries. This should give some idea of which alcoholic beverages are particularly hazardous or whether there are other factors of more importance that should be investigated. This is particularly pertinent in countries such as the United Kingdom, where alcohol consumption is increasing and an increase in alcohol-related disease may be expected.

Description provided by IARC and DKFZ with ICRDB/NCI support.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.1955,

COMPARATIVE STUDY OF MORBIDITY AND RISK FACTORS OF FEMALE GENITAL CANCER IN THE GEORGIAN SSR, GERMAN DEMOCRATIC REPUBLIC AND POLAND

L. Charkviani, Ministry of Health of the Georgian SSR, Dept. of Gynaecology, *Lake Lisi, Tbilisi 380077, Georgia, Union of Soviet Soc. Republics*

Comparative studies of morbidity rates for cancer of the main sites of the female genital tract will be carried out in the Georgian SSR, German Democratic Republic and Poland for the period of 1971-1980. Morbidity rates will be analyzed by age and histological type. Analytical investigations will be carried out to identify risk factors. Each country will provide a certain number of questionnaires filled in for cases of gynecological cancer and for healthy controls. Comparative analysis of the morbidity rates and of the questionnaires from different countries will enable detection of risk factors.

Description provided by IARC and DKFZ with ICRDB/NCI support.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.1956,

OCCURRENCE OF CANCER IN THE SWEDISH TWIN REGISTRY

R. Cederloef, Karolinska Institutet, Dept. of Environmental Hygiene, *Solnavagen 1, Box 60400, S10401 Stockholm 60, Sweden*

In 1961 the Twin Registry covered about 10,000 pairs of the same sex born 1886-1925. The registry was expanded in 1973 to include about 13,000 pairs born 1926-1958. Cancer morbidity data have been obtained from the Swedish Cancer Registry and mortality data are continuously recorded for the twins. The first part of the project will be an evaluation of concordance rates among monozygons and dizygons twins with respect to a diagnosis of cervix and breast cancer. In addition, these diagnoses will be related to questionnaire data covering socio-economic factors, use of oral contraceptives, and smoking habits. Information on cancer of all sites is available and other specific diagnoses will be evaluated subsequently.

Description provided by IARC and DKFZ with ICRDB/NCI support.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.1957,

DIGESTIVE CANCER INCIDENCE IN THE POPULATION OF VIANA DO CASTELO

J.M. Carvalho, Hospital District of Viana do Castelo, Dept. of Surgery, *Rua Candido Reis, Viana do Castelo, Portugal* (02013)

Data collected from the cancer registry of Viana do Castelo on esophageal, gastric, colorectal, liver and pancreas cancers will be examined in an attempt to find exact incidence rates and the distribution of these cancers in littoral compared to rural areas. If the incidence rates are significantly different for the two areas, the dietary habits, alcohol consumption, smoking and other pertinent data will be studied in the populations.

Description provided by IARC and DKFZ with ICRDB/NCI support.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.1958,

EPIDEMIOLOGY OF LYMPHOID CANCER IN WEST YORKSHIRE

R.A. Cartwright, Yorkshire Regional Cancer Org., *Leeds LS16 6QB, England, United Kingdom*

This is a case-control study of incident cases arising within the Yorkshire Regional Health Authority. The diseases included are all the lymphomas and lymphocytic leukemias of all ages and both sexes. Controls will be hospital-based. The cases and controls will be interviewed to explore past drug ingestion, occupation and allergies. The study will collect data for at least three years and about 1,000 cases will be interviewed.

Description provided by IARC and DKFZ with ICRDB/NCI support.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.1959,

COHORT STUDY OF ASBESTOS-RELATED DISEASES AND MORTALITY IN ASBESTOS-CEMENT WORKERS

T. Burilkov, Medical Academy, Hygiene & Occupational Diseases Inst., Unit of Epidemiology, *15 Dimiter Nestorov St., 1431 Sofia, Bulgaria*

This cohort study aims to determine the asbestos-related diseases and the mortality pattern in a cohort of workers, exposed to chyrsotile asbestos in an asbestos-cement factory in Dimitrovgrad, Bulgaria. The asbestos exposure of 1,647 workers employed prior to 1960, the health status of persons alive and the causes of death for the period between 1960-1980 will be examined. Morbidity and mortality data will be compared with those expected for the population of the whole country and the town of Dimitrovgrad in an attempt to detect significant asbestos-induced health effects, their relation to occupational risk and the latent period between onset of exposure and clinical manifestation.

Description provided by IARC and DKFZ with ICRDB/NCI support.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.1960,

EPIDEMIOLOGICAL STUDY OF CEREBRAL TUMORS IN ADULTS

J.D. Burch, National Cancer Inst. of Canada, Epidemiology Unit, Dept. of Preventive Medicine & Biostatistics, *12 Queens Pk. Cres. W., c/o University of Toronto, Toronto, Ontario, Canada* M5S 1A8

Little is known of the etiology of cerebral tumors in humans, although associations have been suggested as a result of incidence, mortality, and animal studies. These include urban/rural differences, occupation with specific reference to farming, the rubber industry, and exposure to vinyl chloride, familial associations, ionizing radiation, brain trauma, and specific chemical carcinogens. The current study will reinvestigate these associations and explore other possible relevant factors. The study will test the hypotheses that cerebral tumors are associated with specific occupations (farming, rubber industry, plastics industry), family history of brain tumor, and exposure to nitrosamines, especially through drinking water and preservative-containing meats and meat products. A number of questions will also be asked of respondents relating to additional environmental factors (e.g., smoking, alcohol consumption, etc.). Data on past events and exposures will be obtained from cases and hospital controls through personal interviews in the respondents' homes using proxy respondents for dead or incapacitated cases and appropriate proxy controls. Case and control acquisition is restricted to the metropolitan Toronto and fringe areas and will include incident cases with defined histology for the four-year period 1 January 1977 to 31 December 1980.

Description provided by IARC and DKFZ with ICRDB/NCI support.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.1961,

EPIDEMIOLOGICAL RESEARCH UNIT OF THE ONTARIO CANCER TREATMENT AND RESEARCH FOUNDATION

E.A. Clarke, Ontario Cancer Treatment & Research Foundation, Division of Epidemiology & Statistics, *7 Overlea Blvd., Toronto, Ontario, Canada* M4H 1A8

The Research Unit of the Division of Epidemiology and Statistics of Ontario Cancer Treatment and Research Foundation was established to: (1) conduct analyses using the cancer data base at the Foundation, (2) assess the quality and ascertainment of the cancer data base, (3) cooperate with cancer researchers by supplying requested information or epidemiological and statistical assistance, (4) conduct or support cancer research projects, and (5) provide information which will improve the knowledge of the general public and scientific community. Analysis is continuing of trends in cancer incidence and of geographical distributions of cancer by Ontario counties. The quality of the Ontario Cancer Registry data is being assessed. Follow-up studies of possible environmental carcinogens are in progress.

Description provided by IARC and DKFZ with ICRDB/NCI support.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.1962,

EPIDEMIOLOGY OF CERVICAL DYSPLASIA

E.A. Clarke, Ontario Cancer Treatment & Research Foundation, Division of Epidemiology & Statistics, *7 Overlea Blvd., Toronto, Ontario, Canada* M4H 1A8

The proposed investigation is a case-control study designed to examine the relationship between cigarette smoking and dysplasia of the uterine cervix. Evidence has accumulated linking cigarette smoking and different sites of squamous cell carcinoma, recently including that of carcinoma of the uterine cervix. It is, therefore, possible that exposure to cigarettes may also increase the risk of cervical dysplasia which is a precursor of invasive carcinoma of the cervix. The cases will be 250 consecutive women between the ages of 20 and 59, seen at the Dysplasia Clinic of the Toronto General Hospital. Two controls will be used, the first being a neighborhood control selected for living as close as possible to the case and the second selected from the practice of the physician who referred the case to the Toronto General Hospital for treatment. Each case and control will be interviewed to obtain information on date of birth, education, income, marital status, race, gynecological and obstetrical history, contraceptive practices, sexual history and smoking habits. The analysis will explore differences between cases and controls in their smoking habits after taking appropriate account of such disturbing variables as socioeconomic status, etc.

Description provided by IARC and DKFZ with ICRDB/NCI support.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.1963,

CANCER OF THE LUNG, PANCREAS AND STOMACH IN SOUTHER LOUSIANA

P. Correa, Louisiana State University, Medical Center, School of Medicine, Dept. of Pathology, *1542 Tulane Ave., New Orleans, Louisiana* 70112

Personal interviews of patients with cancer of the lung, pancreas or stomach, as well as hospital controls, will be, conducted in the state of Louisiana. The southern part of the state has previously been shown to have a high mortality rate for these tumors. The questionnnaire emphasizes the aspects of occupation, smoking history, diet and drinking habits. A total of 3,008 interviews are expected to be conducted in two years.

Description provided by IARC and DKFZ with ICRDB/NCI support.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.1964,

CANCER MORTALITY AND WATER FLUORIDE

P.J. Cook, University of Oxford, Dept. of Social & Community Medicine, *S. Parks Rd., Oxford OX2 6HE, England, United Kingdom*

The age-standardized death rates for 'all malignant neoplasms' are being compared for the population of Birmingham (fluoridated in 1964) and the six other towns in England with a population over 400,000 (not fluoridated). Rates are being calculated for the periods 1959-63; 1969-73; and 1974-77. Allowance is being made for boundary changes which, if ignored, would invalidate comparison of the time trends. The situation in Birmingham is being considered in the context of studies comparing fluoridated and non-fluoridated populations in other countries because of the impossibility of drawing any etiological conclusions from a study of one 'affected' population. More detailed time comparisons by individual site and type of cancer are planned when unpublished data have been prepared by the Office of Population Censuses and Surveys. The latter will also permit geographical comparisons between the cancer mortality rates in all areas of England and Wales fluoridated before 1969 and eight neighboring control areas.

Description provided by IARC and DKFZ with ICRDB/NCI support.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.1965,

PRIMARY BRONCHIAL CARCINOMA IN IRAQ

S.F. Al Damaluji, University of Baghdad, School of Medicine, Dept. of Medicine, *Baghdad, Iraq*

Bronchial carcinoma is the commonest carcinoma in males in Iraq. multi-center group study involving main centers in this country are contributing in this project. Leading thoracic surgeons, chest physicians, pathologists, cytologists, radiotherapists, and cancer oncologists, from the staff of the Medical College of Baghdad University and Iragi Ministry of Health are participating in this project.

Description provided by IARC and DKFZ with ICRDB/NCI support.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.1966,

INTERDISCIPLINARY STUDIES ON NASOPHARYNGAEL CARCINOMA AND ASSOCIATED HUMAN TUMORS

G. De The, Centre National de la Recherche Scientifique, International Prog for Epidem & Exper Studies on Human Tumor, *Lyon, France*

The objective of the study is to determine the importance of Epstein-Barr virus immuno-virological tests for clinical management of nasopharyngeal carcinoma. The specific aims are to evaluate IgA antibodies to EBV in serum and saliva of NPC patients as a marker for prognosis; to evaluate EBV serology and EBV markers in tumor cells as complement to pathology to characterize malignancies arising in the nasopharynx, and to evaluate EBV serology as a tool for diagnosis in metastatic cervical lymph nodes with occult primary, and as a method of early detection in areas having high incidence for NPC. The project will involve the following closely linked sub-projects: (1) a prospective study involving all new NPC patients in Paris, Milan, Tunis and most of the patients in Hong Kong aimed at assessing the value of EBV immunovirology in the management of NPC, using clinical, pathological and experimental parameters for the evaluation of survival at three and five years after diagnosis: (2) a case-control study involving different types of tumor arising in the nasopharynx as well as in the rest of the upper respiratory tract with the aim of assessing the strength of the association between EBV and these tumors. This will include comparison of clinical, histopathological, epidemiological and experimental data between the different types of tumors observed; (3) sub-study in Western European centers in Tunis to assess EBV serology as a diagnostic tool to detect NPC in patients with cervical metastatic lymph nodes with occult primary: (4) a prospective study in Hong Kong involving the family members of NPC patients to assess the value of EBV serology as a method for early detection of the disease.

Description provided by IARC and DKFZ with ICRDB/NCI support.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.1967,

DOSE EFFECT RELATIONSHIP OF LOW DOSAGE X-RAY THERAPY TO THE HEAD AND NECK AREA

G. Dean, Medico Social Research Board, *73 Lower Baggot St., Dublin 2, Ireland*

Modan et al. showed that there was an increased mortality from certain cancers among those who had been treated as children with X-ray therapy for ringworm of the scalp (Lancet, i, 277-279, 1974). It is proposed to ascertain the mortality of those who were given superficial X-ray therapy to the head and neck area between 1928 and 1960 for acne and related conditions. Hospitals at Liverpool, Glasgow, Birmingham, Manchester, Leeds and London are collaborating in the study. The main conditions treated were acne, sycosis barbae, other skin conditions and eye conditions. It is expected that information will be obtained for about 10,000 patients treated. Follow-up will be achieved using the National Health Service Register in Southport to find deaths since the start of the National Health Service in 1948 and through the Area Health Authorities and the family doctors, to find those who are still alive in case further study is required at a later date. Both the National Cancer Register and regional cancer registers will also be checked. The study program will be completed in 1981/82.

Description provided by IARC and DKFZ with ICRDB/NCI support.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.1968,

PROSPECTIVE STUDY OF COLON AND RECTUM CANCER

G. Dean, Medico Social Research Board, *73 Lower Baggot St., Dublin 2, Ireland*

A prospective study of men who develop cancer of the rectum and colon in comparison with controls is being undertaken in Dublin and London to find out if cases have consumed more beer during their lifetime than the controls. Controls will be men admitted to hospital in the same age-group as the cancer patients.

Description provided by IARC and DKFZ with ICRDB/NCI support.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.1969,

CANCER MORTALITY IN NORTH STAFFORDSHIRE

J.M. Davies, Inst. of Cancer Research, Division of Epidemiology, *Clifton Ave., Sutton SM2 5PX, England, United Kingdom*

Cancer mortality data covering thirty years have been collected for districts in North Staffordshire, and will be analyzed to see what variations are found within the area. In particular, the study will explore the extent of the zone of high stomach cancer mortality known to center on Stoke-on-Trent.

Description provided by IARC and DKFZ with ICRDB/NCI support.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.1970,

BLADDER CANCER MORTALITY IN HUDDERSFIELD, YORKSHIRE

J.M. Davies, Inst. of Cancer Research, Division of Epidemiology, *Clifton Ave., Sutton SM2 5PX, England, United Kingdom*

Huddersfield is a center for the manufacture of dyestuffs, and cases of occupational bladder cancer have occurred. This study will assess the impact of occupational cases on male bladder cancer death rates in the whole town and in subdivisions since the 1930s and will assess whether the town's raised male death rates can be attributed solely to past exposure in dyestuff manufacture and will check whether bladder cancer mortaity among women is normal.

Description provided by IARC and DKFZ with ICRDB/NCI support.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.1971,

FOOD HABITS, TOBACCO USE AND DIGESTIVE CANCER IN BELGIUM

A.J. Tuyns, Centre International de Recherche sur le Cancer, Unit of Epidemiology & Biostatistics, *150 Cours Albert Thomas, 69372 Lyon Cedex 2, France*

Mortality from gastric and rectal cancer was found to be higher in the Flemish part of Belgium than in the Wallon area. Following a study showing geographical differences in mortality from digestive tract cancer in Belgium (Acta Gastro-Ent. Belg., 40, 129-147, 1977), a case-control study is being conducted to assess whether a relationship can be found between food habits, tobacco consumption and these cancers. During 1980 and 1981 all the incident cases of digestive cancer in the northern province of East-Flanders and in the southern province of Liege (expected number : 2,500) will be interviewed. Controls will consist of a stratified random sample of 2,500 persons in comparable age groups, taken from the total population. All possible food groups and their components will be analyzed with emphasis on the previously noted differences in consumption between north and south (e.g. alcohol, saturated/unsaturated fat, fiber, smoked food).

Description provided by IARC and DKFZ with ICRDB/NCI support.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.1972,

OCCUPATIONAL EXPOSURE TO RECOGNIZED CARCINOGENS

P. Vineis, Universita degli Studi di Torino, Istituto di Anatomia e Istologia Patologica, Cattedra di epidemiologia dei tumori, *Via Santena 7, I10126 Turin, Italy*

Information on 81 chemicals of possible industrial use, considered as carcinogens for man by IARC and by the American Government Conference of International Hygiene (AGCIH) or with 'sufficient' evidence of carcinogenicity for laboratory animals according to IARC, has been supplied to the local Health Authority of Piedmont. Information for each substance included chemicals, commercial and industrial names, labelling regulations and industrial activities where the substance could be used. Using this information, workplaces where recognized carcinogens are used are identified. The aims are to introduce preventive measures and to recognize groups of exposed workers for planning early diagnosis of cancer (whenever feasible) and follow-up studies.

Description provided by IARC and DKFZ with ICRDB/NCI support.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.1973,

COHORT STUDY OF LUNG CANCER AMONG MEN OCCUPATIONALLY EXPOSED TO HYDRAZINE

N.J. Wald, University of Oxford, Radcliffe Infirmary, Cancer Epidemiology & Clinical Trials Unit, *Oxford OX2 6HE, England, United Kingdom*

Following evidence in animals that exposure to hydrazine increased the incidence of lung and liver tumors, a cohort study involving 423 men who have been occupationally exposed to hydrazine is being carried out. Identification information relating to these men has been collected and their records tagged at the National Health Service Central Register so that notification of cancer and death can be obtained.

Description provided by IARC and DKFZ with ICRDB/NCI support.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.1974,

FURTHER OBSERVATIONS ON CANCER MORTALITY RATES IN POZNAN

T. Walter, Akademia Medyczna w Poznaniu, Inst. of Social Medicine, Dept. of Epidemiology, *Fredry St. 10, 61701 Poznan, Poland*

Study of the mortality from cancer in the city of Poznan, with 500,000 inhabitants is continuing. Data on sex, age and site of neoplasm are collected and compared with data for other Polish cities where possible. An attempt is being made to include the occupation of the deceased in the investigation.

Description provided by IARC and DKFZ with ICRDB/NCI support.
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.1975,

MORTALITY IN CANADIAN MINING COMMUNITIES

D.T. Wigle, Canadian Dept. of National Health & Welfare, Lab. Centre for Disease Control, *Tunneys Pasture, Ottawa, Ontario, Canada* K1A 0L2

The objective is to determine the extent of excess mortality, particularly male lung cancer mortality, in Canadian mining communities. A pilot study which revealed substantial excess lung cancer mortality among males in three mining communities will be extended to include about 85 mining and 85 non-mining communities. Direct and indirect age-adjusted mortality rates by sex and cause will be calculated for the mining communities using the non-mining communities and Canada as reference groups. A case-control analysis of occupation will be performed for male deaths due to lung cancer (cases) and other causes (controls) in the mining communities.
Description provided by IARC and DKFZ with ICRDB/NCI support.
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.1976,

STOMACH CARCINOMA IN A-BOMB SURVIVORS OF HIROSHIMA AND NAGASAKI, 1950-1977

T. Yamamoto, Radiation Effects Research Foundation, Dept. of Pathology, *5-2 Hijiyama Pk., Minami-ku, Hiroshima 730, Hiroshima, Japan* (02224)

A histopathological review will be made of stomach carcinoma cases observed in a defined population in Hiroshima and Nagasaki during 1950-1977. This population, the Extended Life Span Study sample, consists of some 100,000 persons, of whom 3/4 were in the cities at the time of bombing, whose permanent address was in or near the cities. The sample includes about 9,000 persons who were less than 2.5 km from the hypocentre at the time of bombing. Autopsy and surgical material and the relationship of stomach carcinoma incidence and histological characteristics to A-bomb radiation dose will be investigated. This is an extension of a study published in J. Radiat. Res. 19,213-227, 1978. Data are now being analyzed.
Description provided by IARC and DKFZ with ICRDB/NCI support.
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.1977,

EPIDEMIOLOGY OF LYMPHOID TUMORS IN THE NORTH WEST REGION OF ENGLAND

J.H. Youngson, University Hospital of South Manchester, Dept. of Epidemiology & Social Research, *W. Didsbury, Manchester M20 8LR, England, United Kingdom*

The aim of the study is to determine retrospectively the incidence of lymphoid neoplasms in the North West of England, as a whole and by subtype, to characterize each group and sub-type demographically; to search for etiological factors with especial emphasis on possible genetic factors; to assess trends in survival on a regional basis: to look for trends in incidence with time; to assess the accuracy of cancer registry data with a view to improving this. The study is designed to cover all cases of lymphoid leukemia (acute and chronic) and non-Hodgkin lymphomas occurring in patients resident in the North West Regional Health Authority area from 1 January 1968 to 31 December 1979. The population area is approximately 4.5 million and it is expected that this survey would cover 2,608 cases of lymphoma and 1,400 cases of leukemia.
Description provided by IARC and DKFZ with ICRDB/NCI support.
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.1978,

CHORIONEPITHELIOMA AND GYNECOLOGICAL DRUGS

S. Yuasa, Inst. of Public Health, Dept. of Epidemiology, *4-6-1, Shirokanedai, Minato-ku, Tokyo 108, Tokyo, Japan*

The number of deaths from chorionepithelioma in Japan from 1947 to 1976 was 6,432. Annual trends are being compared with those for live births, stillbirths (spontaneous and artificial), abortion, and production of vaginal contraceptive chemicals containing mercury, using data published officially by the Japanese government.
Description provided by IARC and DKFZ with ICRDB/NCI support.
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.1979,

INCIDENCE AND GEOGRAPHICAL DISTRIBUTION OF CHILDHOOD LEUKEMIA IN THE NETHERLANDS 1972-1980

G.E. Van Zanen, Stichting Nederlandse Werkgroep Leukemie bij Kinderen, *Dr. van Welylaan 2 P.O. 60604, c/o Juliana Kinderziekenhuis, Hague, Netherlands*

Since 1972 more than 95% of all new leukemia cases in children have been registered. This was done primarily to enroll new patients in clinical trials. In all the patients the Dutch Childhood Leukemia Study Group (DCLSG) has, as a central reference laboratory, confirmed the diagnosis on bone marrow aspirates, using the FAB (French-American-British Cooperative Group) classification. This patient material will now be analyzed in order to obtain a geographical map of incidence and distribution. Additional data will be obtained. The 'map' can be used to study relationships between environmental factors (air pollution, quality of drinking water, etc.) and leukemia incidence. Any possible clustering of cases will be traced.
Description provided by IARC and DKFZ with ICRDB/NCI support.
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.1980,

EPIDEMIOLOGY OF LIVER CANCER IN KARACHI

S.J. Zuberi, Jinnah Postgraduate Medical Center, Pakistan Medical Research Council, *Karachi 35, Pakistan*

Approximately 50 new cases of liver cancor are seen in the Jinnah Postgraduate Medical Center each year. Data collected include family history, place of birth, place of longest stay, past history of liver disease and cancer in the family, liver scan, needle biopsy and screening for hepatitis B antigen. Three controls for each case will be randomly selected after matching for age from the 300-400 patients with other liver diseases treated yearly in the Center, for whom the same data are collected.
Description provided by IARC and DKFZ with ICRDB/NCI support.
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.1981,

CORRELATION BETWEEN HODGKIN'S DISEASE, NUMBERS AND INCIDENCE OF BOVINE LEUKEMIA IN FIVE EUROPEAN STATES

G. Mititelu, Agricultural School, Dept. of Breeding, *M. Kogalniceanust. 3, 6575 Husi, Romania*

In a previous study in males from ten countries positive correlations were found between per capita consumption of dairy products and incidence of human leukemia-lymphoma, r equals 0.80 for multiple myeloma, r equals 0.71 for lymphoid leukemia, r equals 0.62 for lymphosarcoma and r equals 0.53 for Hodgkin's Disease. The present study is seeking correlations between the incidence of Hodgkin's Disease and the number of bovine populations as well as the incidence of bovine leukemia in five countries (Denmark, Sweden, Norway, Finland and German Democratic Republic) for the 1968-1972 period, using data from 'Cancer Incidence in Five Continents', Vol. III, 1976 and 'Animal Health Yearbook', FAO, WHO, OIE for the same period.
Description provided by IARC and DKFZ with ICRDB/NCI support.
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.1982,

DECISION MAKING ON MASS SCREENING FOR CANCER

J.D. Habbema, Erasmus University of Rotterdam, Dept. of Public Health & Social Medicine, *Wytemaweg 2A, P.O. Box 1738, 3000DR Rotterdam, Netherlands*

Policy decision about mass screening for disease are surrounded with a lot of uncertainty, and with contradictory opinions about the usefulness of screening. Quite a few factors are relevant in predicting the effects of mass screening. Among these are prevalence, incidence and mortality from the disease; sensitivity, specificity and acceptability of the screening test; attendance at the screening program, especially of high-risk groups; the natural history of the disease, the duration of the preclinical stage, and the prognosis of each stage; the change in prognosis when the disease is treated at an early stage, etc. To take account of all these factors and known interactions is impossible. Therefore, in this project stochastic decision models are developed, which have as their input assumptions about all the relevant factors, and as their output estimates of the effects of mass screening on morbidity, mortality, life-years, medical consumption, etc. These models will be implemented in a computer program and will be tested in the years to come on a number of cancer sites. The model is intended to be general, and should be applicable (with slight adaptations) to all sites of neoplasms for which screening is considered.
Description provided by IARC and DKFZ with ICRDB/NCI support.
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.1983,

ENVIRONMENTAL, PERSONAL AND SOCIO-ECONOMIC FACTORS IN HEMATOPOIETIC SYSTEM NEOPLASMS (HSN)

E. Quiroga Micheo, Grupo Argentino Cooperativo de Estudios Epid. en Hematologia, *Las Heras 1895, 1127 Buenos Aires, Argentina*

In a descriptive epidemiological study carried out in Argentina, high rates and clusters of lymphomas and multiple myeloma in zones with arsenical water were observed. A case-control study carried out on 603 case-control pairs shows: (1) no differences with regard to personal contact with cancer or HSN patients, (2) higher occupational exposure to petroleum and its products, particularly in cases of acute non-lymphocytic leukemia, (3) a greater exposure to petroleum (especially in myeloproliferative disorders and Hodgkin's disease) and insecticides (especially in acute leukemia and myeloproliferative disorders) in cases, (4) cases living in the Greater Buenos Aires area had more dogs and other animals in their homes; (5) more cases, in particular acute lymphocytic leukemias, had a simian or Sidney fold. (No differences were observed in other personal factors: mongolism, congenital abnormalities, thymoma, neoplasms, allergy, tonsillectomy, appendectomy, tuberculosis, syphilis, brucellosis, BCG, chloramphenicol, phenylbutazone, number of X-rays, etc.); (6) the socio-economic stratification was similar in both groups. This study will be extended with the aim of measuring the degree of exposure to environmental factors. A cohort study to compare the incidence of hematopoietic system neoplasms in occupations connected with expcsure to petroleum with that of non-exposed persons is planned.
Description provided by IARC and DKFZ with ICRDB/NCI support.
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.1984,

EPIDEMIOLOGICAL AND ETIOPATHOGENIC STUDY OF TUMORS OF SEROUS SURFACES

A.F. Donna, General City Hospital of Alessandria, Institute of Pathology, *Via Venezia 18, Alessandria, Italy*

During a survey of mesotheliomas in the district of Alessandria with special regard to their relationship with exposure to asbestos, a preponderance of these tumors was reported in people living in the countryside. Occupational histories obtained from these patients and/or their relatives and environmental surveys do not indicate any relationship between these tumors and exposure to asbestos. The object is to establish whether some chemicals (nitrogen and cyanide organic compounds), widely used in the Alessandria countryside, are carcinogenic in the serous membranes. This hypothesis is being assessed, at the same time, by a middle-term treatment of mice, and the mutagenic properties of the chemicals may also be examined.
Description provided by IARC and DKFZ with ICRDB/NCI support.
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.1985,

EPIDEMIOLOGICAL INVESTIGATION OF AN OUTBREAK OF MESOTHELIOMA IN CENTRAL ANATOLIA, TURKEY

Y.I. Baris, Hacettepe Universitesi, Faculty of Medicine, Dept. of Chest Diseases, *Ankara, Turkey*

The study consists of an epidemiological survey of selected villages (mortality by cause, main demographic features, examination of all adults with chest X-ray, questionnaire and medical examination) and environmental measurements of airborne dust with count size determination of fibers. The field investigation started in 1978 with two villages, one where an extremely high incidence of pleural mesothelioma had previously been documented and the other a nearby control village with no cases yet reported.

Description provided by IARC and DKFZ with ICRDB/NCI support.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.1986,

EPIDERMOID AND SMALL CELL CARCINOMAS OF THE LUNG - OCCUPATIONAL DISTRIBUTION AMONG THE WORKING POPULATION OF THE RHONE-ALPES AREA

J. Mouriquand, Universite de Grenoble, Faculte de Medecine, Laboratoire d'Histologie, *38700 La Tronche, Grenoble, France*

Epidermoid and small cell carcinomas are the main contributors to the recent increase in lung carcinomas, although the clinical course and the histological aspects of the two are quite different. Potential risk factors for lung cancer have been defined mainly within factories where the working population was submitted to defined substances (chrome, nickel, etc.), and few studies have examined the general working population. This retrospective study is based on 585 cases of epidermoid carcinoma and 200 cases of small cell carcinoma of the lung. Patients were classified according to their occupation and the age at occurrence of the disease. Occupational distribution and age groups were correlated with a cohort of non-cancer patients with lung diseases for whom cytological sputum specimens were sent to the laboratory, and with the professional distribution of the active population of the same area as obtained from the 1975 census.

Description provided by IARC and DKFZ with ICRDB/NCI support.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.1987,

EPIDEMIOLOGY OF BLADDER CANCER IN ISRAEL

B. Bertini, Health Inst., Epidemiological & Cytological Research Unit, *P.O. Box 16320, Tel Aviv, Israel*

The relationship between urinary lithiasis, very frequent in Israel, and urinary tract cancer is being studied in 850 patients. Duration of the bleeding and degree of inflammation until appearance of the tumor are analyzed.

Description provided by IARC and DKFZ with ICRDB/NCI support.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.1988,

EPIDEMIOLOGY OF CHILDHOOD MALIGNANCIES IN JAPAN

T. Hirayama, Ministry of Health & Welfare, Epidemiology Div., *Tsukiji 5-1-1, Chuo-ku, Tokyo 104, Tokyo, Japan*

Patterns of occurrence of childhood malignancies in Japan are being studied in relation to selected risk factors based on data from nationwide registration. A total of 10,575 children (5,951 males; 4,624 females) under age 15 were registered between 1969 and 1977. Malignancies included leukemia (4,607), malignant lymphoma (750), neuroblastoma (1,002), Wilms' tumor (485), liver tumor (230), retinoblastoma (892). Age-specific incidence rates were calculated for each. When compared with vital statistics figures for all Japan, maternal ages had little or no influence, but significant risk elevation was noted under age three with increase in weight at birth, for leukemia, neuroblastoma, Wilms' tumor, testis tumor, and teratoma. Abdominal radiation exposure during the later part of pregnancy was noted to enhance leukemia risk in those children when compared with 1,011 controls of similar age. Down's syndrome was frequent in leukemia cases under age three and many cases of congenital malformation, including seven cases of hemihypertrophy, five of aniridia, six of congenital heart disease, were recorded co-existent with Wilms' tumor. The mean ages for retinoblastoma were five, six and seventeen months for bilateral, unilateral with family history, and unilateral without family history cases respectively. Analysis continues.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.1989,

ESTABLISHMENT OF HOSPITAL-BASED CANCER REGISTRY ACCORDING TO THE RECOMMENDATIONS OF WHO

P.A. Carda, Inst. Nacionale de Oncologia, *Ciudad Universitaria s/n, Bartolome Cossio, Madrid 3, Spain* (02222)

Epidemiological and clinical data are being registered for cancer patients treated at the National Inst. of Oncology (about 700-750 per year), including sex and age of the patient, tumor site and stage, and type of treatment as well as family and environmental data. Patients are clinically followed-up each year. The data are used for correlation studies, mainly between clinical stages, types of treatment and survival and are compared with data from other Spanish and national (chiefly European) hospital-based registries.

Description provided by IARC and DKFZ with ICRDB/NCI support.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.1990,

ETIOLOGY OF CERVIX CANCER

S.P. Jain, J.K. Cancer Inst., Surgery Chemotherapy Pathology & Research Unit, *G.T. Rd., Kanpur 208002, Uttar Pradesh, India*

Cervix carcinoma has the highest incidence among malignant disease encountered at J.K. Cancer Institute, Kanpur. On an average 2,000 new patients are seen annually. More than 95% of the patients are of very low socioeconomic level. All have poor obstetrical histories, a large number of pregnancies and a serious offensive vaginal discharge for 20-30 years before the onset of cervix cancer. Data on socioeconomic status, number of pregnancies, vaginal discharge (including culture), cervical smear, colposcopy examination, etc. will be correlated statistically for both cervix cancer cases and women with vaginal discharge but no cancer. It is proposed to study about 200 cases per year. Emphasis will be on study of offensive discharge and its relationship to changes in the cervix.

Description provided by IARC and DKFZ with ICRDB/NCI support.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.1991,

ETIOLOGY OF LIVER CANCER

C. Nwokolo, University of Nigeria, School of Medicine, Dept. of Medicine, *Enugu, Nigeria*

A study is being carried out of the staple foods consumed by patients with cancer of the liver admitted into the University of Nigeria Teaching Hospital in Enugu. These foods are examined chemically for evidence of carcinogens, such as aflatoxins (Trans. R. Soc. Trop. Med. Hyg., 72(4), 329-332, 1978), nitrites, etc.

Description provided by IARC and DKFZ with ICRDB/NCI support.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.1992,

EVALUATION OF CERVICAL CANCER SCREENING

T. Shigematsu, Fukuoka University, School of Medicine, Dept. of Public Health, *34 Nanakuma Nishi-ku, Fukuoka City 814, Japan*

In Japan cervical cancer screening has been carried out extensively, but no adequate evaluation of its impact has been made. This study aims to evaluate the effect of screening, and to establish the duration of carcinoma in situ and the optimal screening interval by introducing an intensive program in the Dogo district, the biggest of the Oki Islands, with a female population of 10,000, using the Dozen district in the same islands, with a population half that of the study area, as a control. The population at risk has been registered and its movements are checked and the register updated yearly. Screening is done by gynecologists and with a mobile unit using colposcopy. It is hoped to screen more than 90% of the population at risk in five years and to follow them for 10 years. Screening data are arranged according to the register, copies of death certificates are collected and a survey of cervical cancer patients done both in the area and at the hospitals in the surrounding area. The screening data and incidence, prevalence, mortality and end results in diagnosed cancer patients will be analyzed. A similar program is being carried out in another town in the mountain area of the same prefecture. The total female population included in the two programs is about 15,000.

Description provided by IARC and DKFZ with ICRDB/NCI support.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.1993,

EXPERIMENTAL BREAST CANCER SCREENING

J.H. Hendriks, Katholieke Universiteit Nijmegen, Dept. of Diagnostic Radiology, *Erasmuslaan 4, Nijmegen, Netherlands*

The experimental breast cancer screening project in Nijmegen, The Netherlands, was started in 1975. All women born before January 1940 and living in the city of Nijmegen are invited to participate and the third screening will be completed in 1981. Single view film mammography is used, with an average tissue dose of 0.1 R to each breast. There is no clinical examination. About 10,000 women a year are screened at two year intervals. The total number of women in the study is 24,000. Breast cancer incidence and mortality data for the city of Nijmegen have been collected from 1970. The impact of the present screening program on these is being evaluated and the prevalence/incidence ratio, the age distribution of prevalent cases and the estimated lead time will be analyzed. Differences in growth rate between cancers found by screening and those found in the interval between screenings will be calculated. Pathological and morphological characteristics of invasive and non-invasive cancerous lesions of the breast, diagnosed at and between the screening examinations, are examined.

Description provided by IARC and DKFZ with ICRDB/NCI support.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.1994,

FOLLOW-UP OF DANISH THOROTRAST-INJECTED PATIENTS

M. Faber, Finseninstitutet, Finsen Lab., *49 Strandboulevarden, DK2100 Copenhagen, Denmark*

1,000 patients injected with Thorotrast will be followed up in order to evaluate the carcinogenicity of this product.

Description provided by IARC and DKFZ with ICRDB/NCI support.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.1995,

HOSPITAL CANCER REGISTRY OF BOLLATE

P. Canevini, Caduti Bollatesi Hospital, Dept. of Pathological Anatomy & Histology, *Via Piave 2, 20021 Bollate-Milano, Italy*

A cancer registry allows epidemiological evaluation of tumors and specification of carcinogenic hazards, and, when hospital-based, provides the best source of information with regard to diagnostic certainty. The objectives of the present study are to (1) evaluate the average annual cancer incidence in the population residing in three cities near the hospital (about 70,000 inhabitants), (2) compare the average annual incidence between two four-year periods (1973-1977 and 1977-1981), (3) follow-up different types of cancer patients, and (4) identify cancer risk factors in occupation. Data on the resident population were obtained from municipality offices, and information on work activities carried out in factories was supplied by the medical offices in the area. 97% of cancer diagnoses were accompanied by histological, cytological or autopsy material. For each patient date of birth, place of residence, occupation, date of first diagnosis of neoplasia, clinical stage and therapy used, date of death, and registry number of biopsy, cytological or autopsy examinations are recorded.

Description provided by IARC and DKFZ with ICRDB/NCI support.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.1996,

IMMUNOLOGICAL CRITERIA IN THE DETECTION OF HIGH OCCUPATIONAL CANCER RISK AMONG TEXTILE WORKERS

T.A. Korosteleva, N.N. Petrov Inst. of Oncology Research, Laboratory of Experimental & Clinical Oncoimmunology, *Leningradskaja St. 68, Pesochny 2, Leningrad 188646, Russia, Union of Soviet Soc. Republics*

The purpose is to examine textile workers handling direct dyes containing benzidine and beta-naphthylamine. The workers have been divided into 3 groups according to extent and duration of exposure. The following immunological tests have been used: (1) determination of benzidine as haptene in the blood serum of workers, splitting of the direct dyes by specific rabbit immune serum; (2) determination of an endogenous carcinogen, the metabolite of tryptophane-3-hydroxyanthranilic acid (3HAA), using specific rabbit immune serum in immune diffusion in agarose as a criterion of disturbances in tryptophane metabolism. Such disturbances have frequently been observed in patients with cancer of the urinary bladder and some other sites (breast, lung); (3) determination of the index of phagocytic activity of blood neutrophils as related to specific and non-specific factors. Particles of activated carbon, loaded by benzidine- and 3-HAA -azoproteins, were used as specific factors, and staphylococcus aureus as a non-specific factor; (4) determination of blast transformation of peripheral leucocytes to PHA and benzidine- and 3-HAA-azoproteins. The blood of non-exposed workers and healthy donors was used as a control.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.1997,

MALIGNANT NEOPLASMS OF FEMALE GENITAL ORGANS

S. Boonyanit, Mahidol University, Siriraj Hospital & Medical School, Dept. of Obstetrics & Gynaecology, *2 Prannog Rd., Bangkok 7, Thailand*

The study will describe trends in mortality from gynecological cancer in Thailand between 1970 and 1980, and incidence data collected by cancer registration since 1970. The data will permit study by area of residence, occupation, race, socioeconomic status, drugs used, customs, infections, and virus lesions in the genital tract. A retrospective case-control study of the role of estrogen therapy, particularly ethinyl estradiol, in the etiology of endometrial cancer is being undertaken on some 100-150 cases. Controls are non-cancer patients matched for age, parity, race and environment. Data on physical characteristics, obesity, diet, diabetes and other factors are obtained from cases and controls, using records of interviews and direct contact by home visits or correspondence.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.1998,

PROSPECTIVE STUDY TO DETERMINE HIGH-RISK GROUPS FOR LUNG CANCER

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Screening of the population between the ages of 40-74, both sexes, in an industrial area of Budapest with 87,000 inhabitants was started in 1968 with the aim of early detection of pulmonary diseases. Between 1975-1978, at the time of screening, supposed risk factors for lung cancer: smoking, occupational exposure, chronic respiratory complaints, fibrotic lung lesions, were determined in about 30,000 persons, 90-97% of the population group concerned. The incidence of lung cancer in the risk-free population and in the persons with several risk factors shows a significant difference at the first evaluation after three years. On the basis of chronic respiratory complaints, a high-risk group of around 9,000 people has been selected and respiratory function examinations are now taking place and will continue until 1982, together with immunological examinations. Analysis and mathematical weighting of the connection between the incidence of lung cancer and the different risk factors will be made by computer after an observation period of five years.

Description provided by IARC and DKFZ with ICRDB/NCI support.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.1999,

OVARY NEOPLASMS

S. Boonyanit, Mahidol University, Siriraj Hospital & Medical School, Dept. of Obstetrics & Gynaecology, *2 Prannog Rd., Bangkok 7, Thailand*

Ovarian cancer has a relatively high frequency which is increasing rapidly. It ranks second in frequency among neoplasms of the female genital tract and as a cause of death among gynecological patients. An important problem is its asymptomatic course which entails a late diagnosis, high mortality rate, and inadequate results in therapy. The purpose of this study is to determine incidence, prevalence and mortality rates for ovarian neoplasms for the period 1970-1980. All new cases of ovarian cancer by year, period, district and age-group for the area of Bangkok and the provinces in the center of Thailand are included. The Thai people, the Chinese minority and other groups including Vietnamese, Cambodians, Moslems, and Indians will be studied. The influence of abortion, fertility, number of marriages, divorce rates, socioeconomic status and the effects of changes in the age distribution of the female population on the incidence rate in different districts, especially among people in industrial and agricultural areas and also among people from affluent residential districts, are being assessed. Occupation, heredity, drug intake, personal habits, culture, history of cancer among ancestors, and transsexual frequency are also studied.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.2000,

PORTUGUESE STUDY GROUP OF SIDE-EFFECTS OF THORIUM DIOXIDE

L.C. Cayolla da Motta, National School of Public Health of Portugal, *Ave. Padre Cruz a Telheiras, 1699 Lisbon Codex, Portugal*

Of 2,436 individuals who have received Thorotrast (a colloidal suspension of ThO2 used as intravascular radiological contrast medium) in Portugal, mostly between 1930 and 1950, 1,244 (51%) have been traced and followed up, as have 924 of 2,086 (44%) of a control group, injected for the same purpose with non-radioactive contrast material. Of the 955 deaths to 31 December 1976 among Thorotrast cases, 16 died as a direct result of the consequences of local granulomata developed from drug spillage around blood vessels (cervical granulomata in 15 cases), 137 from malignant tumors (of which 6 developed on the edge of local granulomata, 87 being primary tumors - 32 with complete histological confirmation - including 18 hemangioendotheliomas, 4 biliary duct carcinomas, 8 carcinomas of the stomach, 5 of the bronchus and lung, 2 of the larynx, 5 primary bone tumours, and 20 other localizations), 23 died from fatal blood dyscrasias (12 of which were leukemias, mostly acute and myeloid in type), and 27 from liver cirrhosis (actually a particular form of liver fibrosis). Of the 656 control deaths only 15 were caused by malignant tumors (including 4 stomach carcinomas, 1 bronchus, 1 larynx, a 1 probably primary liver tumor); there were no deaths from leukemia or other fatal blood diseases among controls and only 6 deaths were attributed to liver cirrhosis. Statistical analysis of data has shown that the number of observed deaths from malignancies particularly primary liver, bone, bronchus, and larynx tumors, and leukemia- and from liver cirrhosis in the Thorotrast cases is significantly (0.05) higher than among controls and also higher than the expected corresponding figures in the general Portuguese population. Follow-up of the remaining 300 or so patients and 300 controls will be undertaken as soon as funds are available. Results are expected to contribute, by extrapolation, to a better knowledge and understanding of the human effects of continuous low dose radiation.

Description provided by IARC and DKFZ with ICRDB/NCI support.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.2001,

PROSPECTIVE STUDY OF BENIGN AND MALIGNANT BREAST DISEASE IN NURSES

J.M. Elwood, Cancer Control Agency of British Columbia, Division of Epidemiology, *2656 Heather St., Vancouver, British Columbia, Canada* V5Z 3J3

Commencing in 1946, interviews and physical examinations were carried out on a total of approximately 1,000 student nurses trained at a major teaching center in Vancouver. These women have been followed up to 1979 by means of questionnaires. The analysis will assess risk factors for benign breast neoplasms primarily, as the number of breast tumors in this group is still very small.

Description provided by IARC and DKFZ with ICRDB/NCI support.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.2002,

NATIONAL PEDIATRIC REGISTRY (POPULATION-BASED)

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The National Pediatric Registry was established by the Pediatric Group of the Clinical Oncological Society of Australia (of the Australian Cancer Society) in 1976, to collect and collate incidence data from January 1977, for all pediatric cancers (0 to 14 years) for all States in Australia. This is the first national collection of cancer incidence statistics. Notification of cases is voluntary, and is supervised in each State by a co-ordinator who is a member of the Pediatric Group of the Clinical Oncology Society of Australia. The notifications are forwarded to the Central Co-ordinator, who is the Registrar of the New South Wales Central Cancer Registry. The data are processed parallel with the New South Wales cancer data and a separate file is maintained. Cancer incidence by site, age, sex, cell type, country of birth of the child and his parents and grandparents, racial origin, and geographical location of the patient is currently being analyzed. The first of a series of reports is to be published in 1980.

Description provided by IARC and DKFZ with ICRDB/NCI support.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.2003,

THE SWEDISH TWIN REGISTRY STUDIES

L.T. Friberg, Karolinska Institutet, Dept. of Environmental Hygiene, *Solnavagen 1, Box 60400, S10401 Stockholm 60, Sweden*

In 1961 the Twin Registry covered about 10,000 same-sexed pairs born during the period 1886-1925. The registry was expanded in 1973 to include about 15,000 pairs born in 1926-1958. The aim of the Twin Registry is to study influences of the environment on morbidity and mortality, including cancer morbidity and mortality, based on periodical matching with the Swedish Cancer Registry. The latest updating was performed during 1979. The mortality data are evaluated through a continuous follow-up of mortality within the registries. The total twin program was reported in Acta Medica Scandinavia, Suppl. 612, 1977, in 'The Interactions of Smoking, Environment and Heredity and their Implications for Disease Etiology.' The latest report concerning cancer by Cederloef-Floderus, 'Cancer Mortality and Morbidity among 23,000 Unselected Twin Pairs' (1979) dealt mainly with concordance rates for cancer of all sites and cervical cancers.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.2004,

REPRODUCTIVE AND HORMONAL FACTORS IN THE ETIOLOGY OF COLON CANCER IN WOMEN

A.J. McMichael, Commonwealth Scientific & Industrial Research Org., Div. of Human Nutrition, *Kintore Ave., Adelaide, S. Australia 5000, Australia*

In view of sex hormonal influences upon hepatic cholesterol and bile metabolism, recent isolated reports of increased colon cancer risk in nulliparous women, together with the observed pattern of age-specific variations in the sex ratio of this cancer, suggest that reproductive history and exogenous sex hormone exposure may influence colon carcinogenesis. A case-control study is underway, comparing the reproductive histories of approximately 250 colon cancer cases, and 550 age-matched controls. All study subjects were women dying during 1976-77. Further, time trends in sex-age-specific colon cancer incidence and mortality, in the US, UK, Australia and New Zealand are being compared, with particular attention being paid to the untypical prolonged decline in rates in young women.

Description provided by IARC and DKFZ with ICRDB/NCI support.
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.2005,
ANTICONVULSANT DRUGS AND CANCER

A.M. McLean, University of London, University College Hospital Medical School, Dept. of Clinical Pharmacology, *University St., London WC1E 6JJ, England, United Kingdom*

Animal studies have suggested that patients with epileptics taking phenobarbitone and other anticonvulsant drugs may have an altered pattern of cancer mortality, in particular a higher incidence of liver tumors. Two groups of subjects are being studied. The first consists of patients admitted to a residential center for the treatment of epilepsy, and the second of people with less severe epilepsy living in the community. For comparison with the latter group a control population of people with limb disabilities has been taken. It is envisaged to study 5,000 epilepsy patients and 5,000 controls. Cause of death is obtained from the National Health Service Central Registry, and the cancer mortality is compared with that in the general population. Preliminary results for the first group indicate a possibly raised mortality from cancers of all sites, but with no apparent increase in liver tumors, although the numbers are small. It is hoped in the future to use cancer registration data, as well as cause of death.

Description provided by IARC and DKFZ with ICRDB/NCI support.
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.2006,
EVALUATION OF METHODS OF 'RESTRICTED' COHORT ANALYSIS

J.C. McDonald, University of London, London School of Hygiene & Tropical Medicine, T.U.C. Centenary Inst. of Occupational Health, *Keppel St., London WC1E 7HT, England, United Kingdom*

The aim is to develop and assess methods for the analysis of cohort data in which follow-up is restricted to subjects at work, on retirement pension or limited periods of time after leaving employment. Observations recorded in various studies of workers exposed to asbestos and other dusts are being used for this research.

Description provided by IARC and DKFZ with ICRDB/NCI support.
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3.2007,
EFFECT OF ERRORS IN ASSESSING OCCUPATIONAL EXPOSURE

J.C. McDonald, University of London, London School of Hygiene & Tropical Medicine, T.U.C. Centenary Inst. of Occupational Health, *Keppel St., London WC1E 7HT, England, United Kingdom*

In epidemiological studies, exposures are assessed from work histories and environmental measurements, both subject to error. The aim of this research is to develop statistical methods for determining the extent of these errors and their effect on dose response relationships.

Description provided by IARC and DKFZ with ICRDB/NCI support.
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3.2008,
MESOTHELIOMA AND OTHER MALIGNANT DISEASE IN CHRYSOTILE ASBESTOS FACTORY WORKERS

J.C. McDonald, University of London, London School of Hygiene & Tropical Medicine, T.U.C. Centenary Inst. of Occupational Health, *Keppel St., London WC1E 7HT, England, United Kingdom*

Cohort mortality studies are being undertaken in three large, long-established asbestos plants in the USA. In two chrysotile only has been processed and in the third crocidolite and amosite also were used since 1925. The three cohorts, not yet finalized, each comprise some 5,000 persons. Those first employed from 1937 through 1959 are of primary interest but persons employed before 1937 will also be studied. In all three plants some environmental measurements are available from 1930 onwards. In one plant a detailed study has just been completed including recent fibre levels and estimates of the equivalent in fibres of past dust levels. The possibility of similarly investigating environmental measurements in the other two plants is being investigated.

Description provided by IARC and DKFZ with ICRDB/NCI support.
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.2009,
CANCER MORTALITY AMONG PERSONS EXPOSED TO LOW LEVELS OF CHRYSOTILE ASBESTOS IN THE MANUFACTURE OF ASBESTOS-CEMENT ARTICLES

S.F. McCullach, James Hardie Industries Ltd., Occupational Health Services, *Grand Ave., Camellia, N.S.W. 2142, Australia*

At Ipoh in Malaysia a workforce exposed only to chrysotile asbestos and engaged in the manufacture of asbestos-cement products is being studied. Engineering methods changed negligibly from 1966 when the plant came into operation to the time when the airborne asbestos concentrations in the breathing zones of the workers were first measured in 1978. On this basis it is believed that in no case has any worker's exposure exceeded two fibers/ml. On a time-weighted average basis. The cumulative exposures of all present (approximately 400) and former (approximately 1,000) employees have been determined. Death Registers will be searched to discover the deaths of those who have died after leaving the workforce. Where available, hospital records will be searched and consideration given to amending the certified cause of death. Each case will be matched with a control for sex, age within five years and place of residence. Consideration of the certified cause of death in the light of hospital records will be conducted in ignorance of whether one is dealing with case or a control.

Description provided by IARC and DKFZ with ICRDB/NCI support.
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.2010,
NATURAL HISTORY OF CERVICAL CANCER

G.H. Green, University of Auckland, Postgraduate School of Obstetrics & Gynecology, *P.O. Box 2175, Claude Rd., Auckland 3, New Zealand*

The aim is to ascertain whether or not cervical cancer commences in the pre-invasive form and whether or not the discovery of carcinoma in situ by cytology will decrease the rate of mortality from invasive cervical cancer in the population. The study population consists of all cases of in situ cancer diagnosed and treated at National Womens Hospital, Auckland, New Zealand, (about 150 per annum); all cases of invasive cancer (about 50 to 60 per annum) occurring in populations served by the Auckland Hospital Board (approximately 890,000 in 1978), and all cases of in situ and invasive cancer and their district of origin reported to the National Cancer Registry, Department of Health, Wellington. All clinical and sociological data relative to cases occurring in the Auckland Hospital Board area will be correlated and age-standardized incidence and mortality rates, and trends in these will be calculated for all New Zealand cases. A cytology screening index (number of smears per 1,000 population aged 20 years and over) will be used in association with these analyses.

Description provided by IARC and DKFZ with ICRDB/NCI support.
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.2011,
LUNG CANCER MORTALITY IN MEN EXPOSED TO DUST

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1,630 men exposed long-term to dust (foundry workers, workers in metal, ceramics, glass, stone and other industries) and 1,630 non-exposed matched controls were registered betwen the years 1950 and 1960 for a prospective study of workmen living in Vienna, born 1910 or before. In a separate historical cohort study on asbestos cement workers the same methods are used to compare their mortality data with data from a cohort of cement workers from the same region. (Preliminary results were published in 'New approaches to risk estimation of air pollutants', Facultas, Wein, 1979.)

Description provided by IARC and DKFZ with ICRDB/NCI support.
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.2012,
LIVER CANCER IN THE DODOMA REGION

P.F. Hiza, Muhimbili Medical Centre, Dept. of Surgery, *P.O. Box 20693, Dar es Salaam, Tanzania* (00861)

Primary hepatocellular carcinoma is common in Africa. In the Dodoma Region of Tanzania there is a high consumption of ground nuts, believed to predispose to liver cancer. The aim is to collect food samples from Dodoma Region and examine these for mycotoxin and, in particular, aflatoxin. It is also intended to look for Hepatitis B antigen in liver cancer patients and in the general population in the area.

Description provided by IARC and DKFZ with ICRDB/NCI support.
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.2013,
LEUKEMIA AND RELATED DISORDERS IN ATOMIC BOMB SURVIVORS

M. Ichimaru, Nagasaki University, Atomic Disease Inst., Dept. of Hematology, *Sakamoto-Cho, c/o School of Medicine, Nagasaki, Japan*

Approximately 80,000 atomic bomb survivors and 30,000 controls are being studied. The radiation dose of each exposed person is calculated. 150 cases of leukemia and 22 cases of multiple myeloma have been confirmed in this sample from 1945-1976. The incidence of leukemia and related disorders, relationship to dose of gamma ray and neutron, chromosome anomalies, and differences between the two cities of Hiroshima and Nagasaki have been studied. A manuscript of a paper 'Multiple myeloma among atomic bomb survivors and controls in Hiroshima and Nagaski, by dose, 1945-1976', was sent to the J. Nat. Cancer Inst. Follow-up continues.

Description provided by IARC and DKFZ with ICRDB/NCI support.
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3.2014,
PROSPECTIVE POPULATION STUDY ON CANCER IN COUNTY SZABOLCS-SZATMAR, HUNGARY

L. Juhasz, Szabolcs Szatmar County Hospital, Policlinic Unit, *44 Voeroeshadsereg u. 68, H4401 Nyiregyhaza, Hungary* (01937)

This study was established in 1973 with the aim of acquiring more accurate data on cancer incidence and mortality, of examining trends in cancer and other diseases. Approximately 150,000 inhabitants of County Szabolcs-Szatmar, Hungary aged over 18 were listed. Migration is checked yearly. Death certificates are included in the study only after careful revision of the data. All the data will be compared and completed with those of the County Cancer Registry. The first evaluation will be done in 1980-1981.

Description provided by IARC and DKFZ with ICRDB/NCI support.
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.2015,
ONTARIO MINERS STUDY

J. Muller, Ontario Occupational Health & Safety Div., Special Studies & Services Branch, *4000 University Ave., Toronto, Ontario, Canada* M7A 1T7

It is known that uranium miners have an increased lung cancer risk. This study will attempt to calculate the relationship between the time course of exposure to short-lived radon daughters and the time course of excess lung cancer risk. Several control populations will be used: Ontario males, Northern Ontario males and Ontario miners who have not worked in an uranium mine. The study will also investigate cancer risks among non-uranium miners. The employment history data and coded x-ray results (silicosis ratings) from the annual medical examinations required of all active miners in Ontario are being recorded in computer files for all uranium miners and for all miners who have reported for medical examination in 1955 or later and had 5 or more years of mining experience. In the data files, there are about 16,000 men who qualify as uranium miners and about 34,000 men who meet the latter qualifications.

The employment histories and measurements of air concentrations of short-lived radon daughters will be used to make an estimate of each uranium miner's annual exposure between 1955 and 1987. From 1966 onwards exposure was estimated by the mining company. When all these data have been assembled, there will be, for each uranium miner, a record of exposure to short-lived radon daughters for each year that he was employed as an uranium miner. Information concerning deaths in the study population will be obtained by matching the personal identifying information of each miner with information contained in the Canadian Death Registry maintained by Statistics Canada. The data files will be completely assembled in the early part of 1980 and a review will be started then. The study is on-going and the data are to be reviewed regularly.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.2016,

MALIGNANT OVARIAN TUMORS IN BYELORUSSIA

D.V. Nikolaeva, Gomel Provincial Oncological Dispensary, Dept. of Radio Gynaecology, *Sovietskaya 104, Gomel, Byelorussia, Union of Soviet Soc. Republics*

There has been no recent investigation into the incidence of ovarian cancer in Byelorussia. A geographical correlation study, which included data obtained from patients, has been carried out. Incidence was correlated with risk factors including chronic genital disease, surgery on pelvic organs after age 40, reproductive history and early menopause. There seemed to be differences in environmental risk factors among women over 40 in the northern compared to the southern part of the Republic. Analysis of the data continues, and it is proposed to set up a case-control study using two groups of over 1,000 age-matched controls from urban and rural populations.

Description provided by IARC and DKFZ with ICRDB/NCI supoort.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.2017,

MALE BREAST CANCER

M.A. Rahim, Dacca Medical College Hospital, Dept. of Radiotherapy & Chemotherapy, *49 E. Azimpur Govt. Estate, Dacca 5, Bangladesh*

It has been observed that the male/female breast cancer ratio is 1:19 in Bangladesh. This observation is being followed-up by case-control studies of patients reported to the hospital-based cancer registry. Questions are asked on family history, local irritation, local trauma, sexual characteristics, testis abnormalities, gynecomastia; liver function tests including needle biopsy and 17-ketosteroid excretion are examined.

Description provided by IARC and DKFZ with ICRDB/NCI support.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.2018,

PROSPECTIVE STUDY ON THE FREQUENCY OF MALFORMATIONS AND SPONTANEOUS ABORTIONS IN NORTHERN MORAVIA

S. Rozvadovska, Krajaska Hygienicka Stanice, Oddeleni Hygieny Obecne a Komunalni, *Partyzanske Nam. 7, Ostrava 72892, Czechoslovakia*

The possible link between carcinogenesis and mutagenesis has been stressed during recent years. Because of an increase in malformations detected during 1972-1975 in some highly polluted areas, a prospective study was launched in 1977, with the objective of analyzing about 10,000 pregnancy records per year to detect possible relationship between birth defects (malformations and spontaneous abortions) and occupational and/or non-occupational exposure of parents to environmental carcinogens.

Description provided by IARC and DKFZ with ICRDB/NCI support.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.2019,

PRECURSORS OF GASTRIC CARCINOMA

M. Siurala, Helsingin Yliopisto, *Louhentie 1A2, 02130 Espoo 13, Finland*

The epidemiology and dynamic behavior of atrophic gastritis and its relation to gastric carcinoma are being studied in 301 first-degree relatives of 73 consecutive gastric carcinoma probands diagnosed in this unit, in 358 relatives of 73 probands matched by computer for age, sex, residence, birth place and occupation from the general Finnish population, and in randomly selected material from Saarenmaa (Estonian S.S.R.). Using the same material and all cases diagnosed at a gastroenterological department the epidemiology and cell kinetical behavior of intestinal metaplasia and epithelial dysplasia are being examined, as are the dynamics of HCl secretion on a population level.

Description provided by IARC and DKFZ with ICRDB/NCI support.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.2020,

LATE EFFECTS IN CHILDREN AND ADULTS OF 224RA INJECTIONS

H. Spiess, Ludwig Maximilians University Munchen, Kinderpoliklinik, *Pettenkoferstrasse 8a, 8000 Munich 2, Federal Republic of Germany*

Nine hundred patients treated with 224Ra for tuberculosis, ankylosing spondylitis and other diseases, mainly during the years 1946-1951, have been followed up over a 30-year period. Fifty cases of bone sarcomas and 4 cases of chondrosarcomas have been found, of whom 36 cases had been treated with 224Ra as juveniles and 18 as adults. Follow-up continues.

Description provided by IARC and DKFZ with ICRDB/NCI support.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.2021,

PERIMENOPAUSAL ESTROGEN TREATMENT AND BREAST CANCER RISK

L.O. Thoren, University Hospital, Dept. of Surgery, *S75014 Uppsala 14, Sweden*

This prospective cohort study includes all women within a defined geographical area who during the three year period 1977-1980 have estrogens prescribed for menopausal symptoms. The final cohort will include about 25,000 women. A comprehensive mailed questionnaire enabling detailed assessment of epidemiological characteristics, of compliance and of estrogen exposure prior to the investigation is sent to a random sample of about 900 women from the cohort and to all those who develop breast cancer. All newly diagnosed cases of breast cancer in the area are reported monthly to the investigators. The breast cancer incidence in the cohort will be observed for at least five years and related to an expected incidence derived from official statistics and from the reported total incidence in the area. Calculation of relative risks will be possible for the whole material and for subgroups according to duration of exposure, preparation, dose, etc. Possible confounding is controlled using information from the questionnaire and results from recent epidemiological investigations in the same area.

Description provided by IARC and DKFZ with ICRDB/NCI support.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.2022,

INTERNATIONAL COOPERATIVE PROGRAM FOR COMPARATIVE STUDIES IN NEIGHBORING REGIONS OF AUSTRIA, CZECHOSLOVAKIA, HUNGARY, YUGOSLAVIA

H. Wrba, Universitat Wien, Inst. Fuer Krebsforschung, *Borschkegasse 8A, A1090 Vienna, Austria*

A cooperative program has existed since 1972 between Hungary and Austria in cancer epidemiology. For Austria, the Burgenland Region on the Hungarian border is of particular interest, as previous epidemiological studies have shown that stomach cancer mortality is strikingly higher there than in the remainder of Austria. Further, the neighboring regions of Hungary and Austria are particularly suitable for comparative epidemiological studies, as the ethnic origin of the population of these regions is very similar. (The county of Burgenland belonged to Hungary until 1921.)

Morbidity data for the following sites were examined from 1969 onwards - stomach, colon, rectum, lung, female breast, cervix and corpus uteri. It is intended to analyze the data and to extend the study to larger geographical area. Since February 1976 the Cancer Registry of Slovenia, Yugoslavia has collaborated in this project and provides the pertinent data for the Pomurje district which borders both Austria and Hungary. Finally, the region of Bratislava, Czechoslovakia joined the study in 1978, also with morbidity data from 1969 onwards.

Description provided by IARC and DKFZ with ICRDB/NCI support.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.2023,

LARGE BOWEL PATHOLOGY IN AUTOPSY SERIES

D.Z. Zaridze, Centre International de Recherche sur le Cancer, Unit of Epidemiology & Biostatistics, *150 Cours Albert Thomas, 69372 Lyon Cedex 2, France*

(1) The general objectives are to study and document in a comparable manner all lesions of the colon and rectum in adult autopsy series in different geographical areas with contrasts in large bowel incidence. (2) The specific objectives are to investigate and compare the prevalence, distribution and histological types of various lesions of the colon and rectum in autopsy series in certain urban and rural populations of Europe and where feasible in other geographical areas. Among the lesions studied, the greatest attention will be given to the macroscopic and microscopic features of mucosal lesions, i.e. various types of polyps. Other lesions studied will include cancer, diverticular disease, inflammatory disease and melanosis. In the case of diverticular disease, the emphasis will be on the description of the distribution and the presence of inflammation. Data have been collected from Finland, Norway and the United Kingdom with differences in large bowel cancer incidence.

Description provided by IARC and DKFZ with ICRDB/NCI support.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.2024,

PRE-MALIGNANT AND MALIGNANT GYNECOLOGICAL LESIONS IN PATIENTS TREATED BY IMMUNOSUPPRESSIVES

J. Baltzer, Ludwig Maximilians University Munchen, Frauenklinik I, *Mainstrasse 11, 8000 Munich 2, Federal Republic of Germany*

Pre-malignant and malignant lesions are being sought in (1) patients with chronic renal insufficiency treated by dialysis without immnosuppressives; (2) patients on immunosuppressives following renal transplantation; (3) patients on immunosuppressives without renal insufficiency. Comparisons are made with gynecological out-patients.

Description provided by IARC and DKFZ with ICRDB/NCI support.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.2025,

MALIGNANT MESOTHELIOMA OF THE PLEURA IN MONFALCONE

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Ship construction and refitting has been associated with high incidence of pleural mesothelioma. Monfalcone, a town of 30,000 inhabitants near Trieste, is the site of important shipyards. In the past, particularly in the period 1920-40, naval production in Monfalcone was one of the largest in the world. At present the incidence of pleural mesothelioma in Monfalcone is unknown. The aim of this study is to collect and analyze all cases of malignant pleural mesothelioma diagnosed in Monfalcone district. Occupational history and data on smoking habits will be obtained from the patient or relatives by personal interview. Special attention will be paid to asbestos exposure from occupation or other sources.

Description provided by IARC and DKFZ with ICRDB/NCI support.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.2026,

CANCER IN MOZAMBIQUE

F. Bijlsma, (No Performing Organization Reported), *Netherlands*

Data on all malignancies diagnosed in 1977 in the Central Hospital, Maputo (formerly Lourenco Marques), where the Pathology Department is the only laboratory of its kind for the whole of Mozambique, are being collected in order to establish the relative frequency of malignant tumors of all sites. Only new cases proven by biopsy, autopsy or cytological methods are included. The data will be compared with those published by Portuguese authors over the years 1956-1970. Decrease or increase in frequency will be studied in relation to age, sex and type of tumor. Special attention is given to primary carcinoma of the liver, this being the most frequent malignant tumor in males and the second most frequent in females.

Description provided by IARC and DKFZ with ICRDB/NCI support.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.2027,

CANCER EPIDEMIOLOGY IN TURKEY

N. Bilir, Hacettepe Universitesi, Faculty of Medicine, Institute of Community Medicine, *Ankara, Turkey*

In order to start a cancer education program, the relative frequency of cancer and public knowledge of cancer in Turkey will be examined. The histopathological reports on biopsy specimens from all pathology institutions and laboratories for 1977 were reviewed and cases were collected for the one-year period. According to initial results, skin cancers (including malignant melanoma of skin) and breast cancers account for more than 1/4 of all malignant tumors. All data will be grouped by age, sex, and site. The knowledge about cancer of different segments of the population (peasants, laborers, university students) will be tested by a questionnaire using the seven warning signals of WHO as a basis. The Ministry of Health and Social Security will advise on early diagnosis of cancer, cancer prevention and cancer treatment services, and some future projects will be considered.

Description provided by IARC and DKFZ with ICRDB/NCI support.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.2028,

CHILDHOOD CANCER IN ALBERTA

J.M. Birdsell, Southern Alberta Cancer Centre, Dept. of Epidemiology, *2104 2nd St. S.W., Calgary, Alberta, Canada* T2S 1S5

Files of children diagnosed with cancer and registered with the Alberta Cancer Registry during the past 10 years are being reviewed. In addition to descriptive statistics on incidence and mortality by age, sex, site, and histology, this study will provide information on survival rates. Variables which might provide leads to etiological factors include occupation of father, place of birth and/or residence, reproductive history of mother, presence of congenital malformations, and family history of cancer. The total number of childhood cancer cases diagnosed in Alberta for the period 1968-1977 was 543 (0-14 years of age), 298 males and 245 females. The incidence of childhood cancer in Alberta has been compared with that of other population-based registries in Manitoba, Saskatchewan, Norway, and Birmingham, UK, and with results of the US Third National Cancer Survey. However, the incidence of leukemia in Alberta male children appears to be lower than the average. Data from detailed review of files for the three-year diagnosis period, 1975-77, are being analyzed in order to assess the quality of information available. Additional information will be obtained from vital statistics registrations in the province.

Description provided by IARC and DKFZ with ICRDB/NCI support.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.2029,

MORTALITY BY CANCER IN FRANCE 1954-1976

J. Berlie, Inst. National de la Sante et de la Recherche Medicale, Section Cancer, *5 rue Gaston Latouche, c/o Centre Rene Huguenin, 92211 St. Cloud, France*

Mortality data based on death certificates, giving site, sex, age, place of residence and social status category have been examined. These data are corrected to take into account the proportion of deaths due to unspecified causes and rates calculated for France by regions, departments and arrondissements are being undertaken and geographical distribution by site examined. Analyses have been undertaken to detect similarities between regions.

Description provided by IARC and DKFZ with ICRDB/NCI support.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.2030,

GYNECOLOGICAL CYTOLOGY REGISTRY, NOVA SCOTIA

G. Bisson, Victoria General Hospital, *5788 University Ave., Halifax, Nova Scotia, Canada* B3H 2Y9

A computerized gynecological cytology registry has been designed for the Province of Nova Scotia. The objectives of the registry are as follows: (1) To provide complete and accurate information regarding the numbers and location of women being screened and the number of Papanicolaou smears being examined annually throughout the Province of Nova Scotia; (2) to provide information for use in the establishment of a province-wide quality control program in the area of gynecological cytology; (3) to provide a comprehensive province-wide system of follow-up of cases who have abnormal cytology; (4) to provide epidemiological data related to malignant and pre-malignant disease of the uterus in the Province of Nova Scotia. Data are being collected from all laboratories providing a gynecological cytology service in the Province of Nova Scotia using standardized diagnostic terminology and a standardized requisition report form. The design of the computer program will provide annual and semi-annual reports relating to the numbers of women being screened in the province by age and county distribution. Information regarding abnormal smears and subsequent colposcopy and biopsy findings are also incorporated in the routine computer printout. Since Nova Scotia has a relatively small and stable population of approximately 300,000 women at risk of developing cervical neoplasia, it is hoped that the program will provide useful information in relation to the distribution and epidemiology of this disease in this population.

Description provided by IARC and DKFZ with ICRDB/NCI support.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.2031,

CASE-REFERENT STUDY ON OCCUPATION AND LUNG CANCER

F. Berrino, Istituto Nazionale per lo Studio e la Cura dei Tumori, Epidemiology Unit, *1 Via G Venezian, 20133 Milan, Italy*

The aims of the study are : (1) to determine what proportion of lung cancer is due to occupational exposure in a highly industrialized area of northern Italy; (2) to confirm the etiological role of a number of chemicals already shown to be associated with lung cancer in humans, especially those for which the evidence is not considered sufficient, and (3) to study the risk from other chemicals and occupation. Cases will be all new lung cancer cases occurring in the population covered by the Varese Province Cancer Registry (800,000 inhabitants). Both hospital controls and population controls will be used. Subjects will be interviewed on occupational history and confounding factors (tobacco, residence history, social class). Exposure to each chemical under study will be determined from the knowledge of its occurrence in industrial processes and from the occupational history. Exposures derived from occupations may not be specific (a number of subjects will be wrongly classified as exposed) and the resulting relative risk will probably be underestimated; however, the use of non-exposed subjects as controls is expected to produce reliable estimates of carcinogenic doses. Preliminary results from a previous study are already available.

Description provided by IARC and DKFZ with ICRDB/NCI support.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.2032,

MORTALITY EXPERIENCE AMONG PAINT PRODUCTION WORKERS

P.A. Bertazzi, Universita degli Studi di Milano, Inst. of Occupational Health, Dept. of Epidemioloy, *Via San Babila 8, 20122 Milan, Italy*

The aim of the study is to assess mortality in the period 1950-1978 among workers employed in a paint production plant operating since 1949. The workers, approximately 450, at this factory were exposed mainly to chromates, benzene and asbestos. The personal records of the workers employed since the beginning of manufacture have been obtained from the factory. For each subject date and place of birth, date of entry and leaving the industry and type of work performed are available; date, place and primary cause of death will be ascertained from death certificates. The sex, age and cause-specific mortality of people living in the same city where the factory is located will be used for comparison.

Description provided by IARC and DKFZ with ICRDB/NCI support.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.2033,

PROSPECTIVE STUDY OF OCCUPATIONAL LUNG CANCER

M.F. Baganha, Universidade de Coimbra, University Hospital of Coimbra, Clinica de Pheumologia, *Coimbra, Portugal*

This is a prospective study of workers in a mine with elevated levels of radioactivity involving clinical, radiological, spirometrical, cytological (sputum) and immunological examinations every four months. The results in terms of lung cancer will be compared with those of a group of control workers, who will undergo the same examinations. Both cases and controls will be asked in detail about smoking habits.

Description provided by IARC and DKFZ with ICRDB/NCI support.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.2034,

TRENDS IN CANCER INCIDENCE

R. Dewar, Alberta Provincial Cancer Hospitals Board, Dept. of Epidemiology, *11560 University Ave., Edmonton, Alberta, Canada* T6G 1Z2

This study will examine the temporal variation in cancer incidence in Alberta over the years 1961-1977, and fit simple regression models to determine significant increasing or decreasing trends. All sites will be analyzed involving the processing of about 68,000 malignancies. These analyses form the basis of comparisons with similar studies, and will be useful for the monitoring of preventive measures, occupational studies and as a long-range planning tool.

Description provided by IARC and DKFZ with ICRDB/NCI support.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.2035,

SELECTION OF WOMEN AT HIGH RISK FOR BREAST CANCER

P.A. Bruzzi, Istituto di Oncologia, Dept. of Epidemiology, *Viale Benedetto XV, Pad. B, 16132 Genoa, Italy*

The objectives are to better assess the attributable risk of known risk factors, and to evaluate the feasibility of a screening project which, by identifying and screening high-risk groups, obtains a better cost/benefit ratio than the usual mass screening. About 5,000 women and 50 cases of breast cancer are seen yearly in the out-patient clinic for early diagnosis of breast cancer. About half of these are asymptomatic women who come spontaneously; clinical histories are collected from all women. Cross-sectional analysis has shown a significant association of breast cancer with known risk factors. Follow-up of the healthy women will be undertaken to analyze further the relative and attributable risk associated with these factors, alone or together. Various values of absolute risk for breast cancer will then be examined in order to estimate the level at which annual screenings are worthwhile on the basis of a cost/benefit ratio. It is intended to involve other institutions in the study in order to shorten the time needed to reach useful results.

Description provided by IARC and DKFZ with ICRDB/NCI support.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.2036,

RELATIONSHIP BETWEEN CUMULATIVE DUST EXPOSURE AND DEVELOPMENT OF ASBESTOSIS AND PLEURAL CHANGES IN ASBESTOS MINERS

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This survey, one of the projects dealing with exposure to asbestos dust, currently consists of the retrospective and prospective recording of the dust exposure on 2,000 white asbestos miners. Records are updated at intervals by the particular inspector of mines of the area. The cumulative dust exposure records are correlated with X-ray changes or, if death occurs, with the findings at autopsy. The radiological appearances are read by three readers, but checks for inter-observer error are made. Correlation of the pathological changes will start during this year and, where possible, dust will be extracted from the lungs for comparison with the dust exposure records. It has not yet been possible to include black mine workers in the survey although the conversion factors to convert the mine mean into an occupational exposure have been assessed. The employment of migrant labor makes the follow-up of the black worker difficult, but more active steps must be taken to find some way of adding this large group to the survey.

Description provided by IARC and DKFZ with ICRDB/NCI support.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.2037,

THE OXFORD PREGNANCY STUDY

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This study is an investigation into the feasibility of linking antenatal serum samples to subsequent childhood cancer with a view to investigating the role of, for example, virus infection in the development of childhood cancer. Data have also been used to investigate the relationship between maternal serum alpha-fetoprotein levels and fetal neural-tube defects, spontaneous abortion, multiple pregnancy, diabetes mellitus and low birth weight. At present about 20,000 women have been recruited into the study. Children born to women in the study are identified and their National Health Service records tagged in Southport, so that in the event of cancer or death a notification will be sent to Oxford. At least one other center in Europe is performing a similar study, and with the collaboration of the International Agency for Research on Cancer the progress of different studies is periodically reviewed.

Description provided by IARC and DKFZ with ICRDB/NCI support.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.2038,

SCREENING FOR COLORECTAL POLYPS AND CANCER

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A screening program is carried out in a defined population in combination with a study of the incidence of colon and rectum cancer in order to assess the value of screening as a method of prevention.

Description provided by IARC and DKFZ with ICRDB/NCI support.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.2039,

RELATIONSHIP BETWEEEN ALCOHOLIC DRINKS, HEPATITIS B VIRUS AND ALPHA-FETOPROTEIN AND PRIMARY LIVER CANCER

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This is a retrospective case-control study, designed to determine whether there are asssociations between alcoholic drinks, hepatitis B virus infection and alpha-fetoprotein and the development of primary liver cancer. The cases and controls are the hospital population admitted to the National Cancer Inst. from July 1976 to June 1978. There are 27 cases and 83 controls, matched by sex and age-group. Information is obtained by personal interview. The laboratory work is performed in the Research Division of the same institute. Data have been analysed and the report is expected to be published in 1980.

Description provided by IARC and DKFZ with ICRDB/NCI support.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.2040,

THE CARCINOGENICITY FOR TRANSITIONAL EPITHELIUM OF METABOLITES OF PHENACETIN

J.H. Stewart, Westmead Hospital, Medicine, *Westmead, N.S.W. 2145, Australia*

The aim of this epidemiological survey is to determine whether there is an association between heavy analgesic consumption, in particular of phenacetin-containing preparations, and the occurrence of transitional-cell carcinoma of the renal pelvis or ureter in New South Wales. The association between analgesic abuse, renal papillary necrosis and carcinoma of the renal pelvis has been recognized sufficiently often, especially in Sweden, to suggest either that some component of analgesic powders and tablets is carcinogenic for uroepithelium, or that tissue destruction and inflammation associated with papillary necrosis in some way predisposes to the development of cancer. In New South Wales, Taylor has calculated an incidence of carcinoma of the renal pelvis nine times greater in kidneys damaged by analgesics than in those with non-analgesic inflammatory disease. At Sydney Hospital 35 per cent of cancers of the kidney and upper urinary tract seen between 1970 and 1976 were transitional-cell carcinomata, and 48 per cent of these occurred in analgesic habitues. The following methods will be used: (1) All patients aged 15 years and over reported to the New South Wales Central Cancer Registry with cancer of the kidney and upper urinary tract (ICD Codes 189.0, 189.0, 189.1 and 189.2) and females with bladder cancer (ICD Code 188.9) will be included. The study group will be divided into two, the first comprising those with transitional-cell carcinoma of the renal pelvis ureter or bladder, and the second those with renal cell carcinoma, with which analgesic consumption has not been implicated. (2) An appropriately matched (i.e. for age, sex and socio-economic status) group of control subjects will be drawn from the community using an accepted method. (3) A questionnaire covering possible occupational exposure to urinary carcinogens, smoking habits, analgesic intake and previous urinary tract disease, will be completed at interview and the data obtained coded for computer analysis.

Description provided by IARC and DKFZ with ICRDB/NCI support.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.2041,

RISK FACTORS FOR FEMALE CANCERS

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The aim of the study is primarily to investigate further the link between resperpine and breast cancer. Women undergoing surgery for a recently diagnosed cancer (breast for cases, various sites for controls) in public hospitals in Brisbane from 1969-1973 were included. Information on use of drugs was sought in medical records or from local medical offices.

Description provided by IARC and DKFZ with ICRDB/NCI support.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.2042,

RADIATION, CHEMICALS AND OTHER ENVIRONMENTAL CARCINOGENS

W.V. Mayneord, (No Performing Organization Reported), *United Kingdom*

It is intended to study the influence of the spatial pattern of dose distribution of environmental carcinogens. Time delays following exposure populations, for example, workers in nuclear establishments, and relationships with individual exposures are also being studied.

Description provided by IARC and DKFZ with ICRDB/NCI support.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.2043,

STUDY OF NATURAL RADIATION

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The study aims to assess biological changes, including congenital malformations and cancer, occurring in a rural population of 2,400,000 with a relatively high level of background radiation. Within this population 120,000 are particularly highly exposed and mortality rates for this cohort are being compared to those of the general population of Brittany and of the Republic of Ireland.

Description provided by IARC and DKFZ with ICRDB/NCI support.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.2044,

THE PATHOLOGY AND EPIDEMIOLOGY OF GERM CELL TUMORS

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This study was prompted by an increase in the incidence of these tumors, as assessed by the Manchester Children's Tumor Registry, which became significant in 1978. The pathology of all cases in this 25-year series, which include teratomas, yolk sac tumors and germinomas, has been reviewed to ensure diagnostic accuracy. The case-notes of each patient were carefully scrutinized for factors which may be of etiological importance and the mother's ante-natal records were also examined where these were available. These data are currently being analyzed. It is planned to extend this retrospective study to include cases in adults and a prospective case-control study of all cases aimed at the elucidation of etiological factors is also planned. Emphasis will be placed on determining the frequency of associated malformations and other tumors in the patients and their families and exposure to possible environmental carcinogens. Controls will be selected from the population and matched for age, sex and race.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.2045,

VAUD CANCER REGISTRY

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The population-based cancer registry (population: 524,000) of the canton of Vaud has been in operation since 1972. The sources of information are: pathological reports, hospitals, practicing doctors, death certificates. The aim of the project is to study the distribution of cancer incidence in the canton according to sex, age, anatomical site, histological type and place of residence. This descriptive study may provide etiological hypotheses and promote further analytical research.

Description provided by IARC and DKFZ with ICRDB/NCI support.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.2046,

TSH AS A RISK FACTOR OF CARCINOMA OF SOLITARY NODULES OF THYROID

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The risk of carcinoma developing in solitary nodules of the thyroid ranges from 5% to 25% in different parts of the world. Studies conducted so far have identified and 11% frequency in Delhi and the North of India. Some of the variability of carcinoma frequency in solitary nodules have been excised in this prospective study. Hormone levels of TSH, T3 and T4 are made routinely. Uniform protocols are maintained for recording clinical criteria, laboratory investigations and histological data. The frequency in patients coming from endemic and non-endemic areas is compared.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.2047,

RISK FACTORS FOR MALIGANT MESOTHELIOMA

M. Haider, Universitat Wien, Inst. of Environmental Hygiene, *Kinderspitalgasse 15, 1090 Vienna, Austria*

Morbidity and mortality data from the Austrian cancer register on primary malignant pleural tumors are corrected and completed by query to pathologists and clinicians. So far 192,172 autopsy records have been reviewed. All authenticated cases diagnosed since 1969 in the Austrian population are being analyzed retrospectively with regard to risk factors, especially asbestos exposure. Occupational histories obtained from social insurance schemes are completed with the help of physicians, safety engineers, relatives, fellow workers, etc. In selected cases of deceased patients the dust content of the lung is analyzed. From 1969 to 1974, 116 malignant pleural mesotheliomas were certified, the majority of which had no occupational asbestos exposure. Preliminary results are published in 'New Approaches to Risk Estimation of Air Pollutions', Facultas, Vienna (1979).

Description provided by IARC and DKFZ with ICRDB/NCI support.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.2048,

SCREENING FOR CERVICAL CANCER - PREDICTING THE EFFECTS OF VARIOUS SCREENING POLICIES

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A computer program has been developed to simulate the effects of mass screening policy. This program is applied to the Dutch cervical cancer mass screening program. Special attention is paid to hysterectomies for reasons other than cervical cancer and to the large number of cervical smears that are made outside the mass screening program. Parameters describing the mortality, morbidity, natural history, screening attendance and validity of the test will be collected, either from the literature or by special studies, e.g. the number and age-distribution of smears made outside mass screening programs in Rotterdam 1976-1977, and the incidence and survival rates of cervical cancer patients. These parameters will subsequently be tested in the program in order to reproduce the cervical cancer mortality before mass screening started, and to reproduce the first findings of the current mass screening. Then, alternative screening policies will be simulated in order to compare their expected effects.

Description provided by IARC and DKFZ with ICRDB/NCI support.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.2049,

STUDIES OF BILATERAL BREAST NEOPLASMS

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Special registries of second primary breast neoplasms have been kept for all breast cancer patients seen at the major referral center in Vancouver since 1938. Information on approximately 800 patients with confirmed second primary neoplasm is being compared to that of a series of patients with unilateral breast cancer, matched by age at diagnosis, year of diagnosis, and survival over the interval between the first and second neoplasms. The analysis will (1) assess the incidence rates of second primary neoplasms in breast cancer patients, (2) compare epidemiological characteristics between women who develop the second primary and those who do not, and (3) assess the impact on survival of the development of a second primary tumor.

Description provided by IARC and DKFZ with ICRDB/NCI support.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.2050,

CASE-CONTROL STUDY OF ASSOCIATION BETWEEN DRUG USAGE AND PROSTATIC CANCER

P.G. Smith, Imperial Cancer Research Fund, Cancer Epidemiology & Clinical Trials Unit, *9 Keble Rd., Oxford OX1 3QG, England, United Kingdom*

All patients (about 150) newly presenting with prostatic cancer under the age of 75 years in Oxford hospitals are being interviewed regarding drug use and other possible risk factors. A control group of 150 patients with genito-urinary and other non-malignant conditions is also being interviewed.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.2051,

CANCER MORTALITY FOLLOWING RADIATION TREATMENT OF ANKYLOSING SPONDYLITIS AND METROPATHIA

P.G. Smith, Imperial Cancer Research Fund, Cancer Epidemiology & Clinical Trials Unit, *9 Keble Rd., Oxford OX1 3QG, England, United Kingdom*

This is a retrospective cohort study of mortality among 14,000 patients who were given X-ray therapy for ankylosing spondylitis, and 2,000 women who were given a radiation-induced menopause for metropathia hemorrhagica. The patients were treated in the period 1930 to 1955 and it is planned to continue to compare their mortality experience with that of the general population to study the long term effects of exposure to radiation.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.2052,

LIVER CIRRHOSIS AND LIVER CANCER AMONG KOREANS LIVING IN JAPAN

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The age-adjusted mortality rates for liver cirrhosis and liver cancer among Korean males living in Osaka, Japan are 39.2 and 88.4 per 100,000 population - about three times higher than those of Japanese males. A similar difference is seen in females. The positive rate of HBsAg among the Korean population living in Osaka was examined, using data from blood donors at the Osaka Red Cross Blood Center. The positive rates among Koreans were 7.6% in males and 3.2% in females, in contrast to 2.2% in Japanese males and 1.6% in Japanese females. Case-control studies in Koreans living in Osaka are being conducted using 47 male and 13 female Korean patients with liver cirrhosis, admitted to the Kyowa hospital between January 1977 and August 1979, and sex- and age-matched controls chosen from Korean patients with other diseases. In the first study the prevalence of HBsAg in patients is compared to the prevalence in controls. The second study investigates alcohol consumption in the same groups.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.2053,

CANCER INCIDENCE AMONG VINYL CHLORIDE AND POLYVINYL-CHLORIDE WORKERS

S. Storetvedt Heldaas, Norsk Hydro, Dept. of Health, *3900 Porsgrunn, Norway*

The aim is to evaluate whether workers exposed to vinyl chloride have an increased risk of developing cancers other than angiosarcoma of the liver. In a historical study, the mortality and cancer incidence among workers producing polyvinyl chloride since 1950 is followed from 1950 through 1978. A complete working history for all members, some 1,400, of the population is recorded and they are characterized according to levels of exposure. The mortality rates for similar age-groups in the Norwegian population are used to compare mortality. As reference for cancer incidence, rates for both the total Norwegian population, a local population and an internal population consisting of workers employed for a short period are being used.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.2054,

MORTALITY AND CANCER DEATH AMONG CHIMNEY SWEEPS

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Among the adverse influences to which chimney sweeps are exposed are excessive heat and significant amounts of chemicals in combustion products; in addition, they are subject to a severe physical strain. retrospective and prospective cohort study of the mortality pattern and, especially, the incidence of malignant neoplasms among chimney sweeps will be made. The study will include all Danish chimney sweeps (about 700 persons). A preliminary study of the Copenhagen chimney sweeps from 1958 to 1977 indicates that cancer deaths among chimney sweeps aged 40-69 years are 3-4 times as frequent as might be expected. Malignant neoplasms of lymphatic and hematopoietic tissue were found to occur as often as respiratory cancer. Pancreatic cancer, too, constituted a much higher proportion of the cancer deaths than expected. Suggestions of causal relationship between specific cancer sites and exposure to high temperatures, certain metals and certain volatile hydrocarbons will be investigated. An estimation of present day exposure will be made through examination of the hygiene conditions at the place of work.

Description provided by IARC and DKFZ with ICRDB/NCI support.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.2055,

COMMENTARY ON CANCER INCIDENCE IN FIVE CONTINENTS

M.K. Stukonis, Centre International de Recherche sur le Cancer, Unit of Epidemiology & Biostatistics, *150 Cours Albert Thomas, 69372 Lyon Cedex 2, France*

The content of the first three volumes of the Cancer Incidence in Five Continents series is being examined from a descriptive viewpoint, e.g., geographical distribution, time trends, sex ratio, etc. The resulting publication, which will be illustrated by numerous graphs and histograms, will be published in 1981.

Description provided by IARC and DKFZ with ICRDB/NCI support.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.2056,

DESCRIPTIVE EPIDEMIOLOGY OF BREAST CANCER IN ITALY

B. Terracini, Universita degli Studi di Torino, Istituto di Anatomia e Istologia Patologica, *Via Santena 7, I10126 Turin, Italy*

Piedmont (population in 1971, 4.5 million) is a highly industrialized area. A large part of its population immigrated during 1955-65 from other Italian regions, mainly from the mountain and agricultural areas of Southern Italy. An analysis is under way of the trends of mortality rates from breast cancer during 1951-76 in Italy, in the 6 provinces of Piedmont and in the city of Torino (capital of Piedmont). In addition, a survey is being carried out to estimate incidence rates in Piedmont during 1978-79. The purpose is to investigate the role of year of birth, age and place of birth (industrial North or other Italian regions) in the appearance of breast cancer. The study will also be used as a basis for planning a case-control study on the association between breast cancer and lifestyle (including nutritional) factors in Peidmont.

Description provided by IARC and DKFZ with ICRDB/NCI support.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.2057,

A MORTALITY STUDY OF PEST CONTROL OFFICERS

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A pilot study is being conducted to examine the feasibility of obtaining information from local authorities in England and Wales on pest officers employed from 1946 onwards, and on the pesticides used. special interest is being taken in the use of 'antu' (alpha-naphthylthiourea), a rodenticide which chemical tests suggested could be associated with bladder cancer, and which was generally withdrawn from use in the UK in 1967. Commercial pest control firms are also being contacted and some may cooperate in a

retrospective study; the feasibility and value of prospective studies will also be considered.
Description provided by IARC and DKFZ with ICRDB/NCI support.
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.2058,
SCREENING FOR BOWEL CANCER - STUDY OF A POSSIBLE CORRELATION WITH EXPOSURE TO CUTTING OILS
C.C. Thony, Centre de Medecine du Travail, *20 rue du Pre Benevix, Cluses, France*
3,000 males aged 40 years and over are screened by means of the hemoccult test. Positive cases are examined by endoscopy and X-ray. The incidence of exposure to oil vapors (inadvertently swallowed) is being determined.
Description provided by IARC and DKFZ with ICRDB/NCI support.
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.2059,
LUNG DISEASE (INCLUDING BRONCHIAL CARCINOMA) INDUCED BY INDUSTRIAL CUTTING OILS
C.C. Thony, Centre de Medecine du Travail, *20 rue du Pre Benevix, Cluses, France*
In a study of lung morbidity, 100 persons with a high level of exposure to industrial cutting oils are studied. Methods include a questionnaire (adapted from the European Coal and Steel Community), clinical examination, ECG and assessment of respiratory function. 100 non-exposed persons are used as controls.
Description provided by IARC and DKFZ with ICRDB/NCI support.
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.2060,
FOLLOW-UP STUDY OF PATIENTS PARTIALLY GASTRECTOMIZED FOR A BENIGN CONDITION
S. Tokudome, Kyushu University, School of Medicine, Dept. of Public Health, *3-1-1 Maidashi, Higashiku, Fukuoka City 812, Fukuoka ken, Japan*
This is a follow-up study of approximately 1,000 patients partially gastrectomized previously for benign conditions such as gastric or duodenal ulcer. The patients will be divided into two groups by the methods of operation of Billroth I and Billroth II. because the two procedures are considered to give rise to formation of different nitroso-compounds in the stomach. Their mortality from gastric cancer will be compared with that of the general population.
Description provided by IARC and DKFZ with ICRDB/NCI support.
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.2061,
EPIDEMIOLOGICAL STUDY OF TUBERCULOSIS PATIENTS
S. Tokudome, Kyushu University, School of Medicine, Dept. of Public Health, *3-1-1 Maidashi, Higashiku, Fukuoka City 812, Fukuoka ken, Japan*
Using tuberculosis registry cards kept in the five health centers in Fukuoka City, a proportionate mortality analysis on the approximately 1,000 patients registered from 1973 to 1978 is proposed. The observed number of deaths including cancer is compared with that expected, derived from proportionate mortality ratios for Fukuoka City. In addition, a case-control study as to intake of isoniazid is being conducted in which the dosage of isoniazid in lung cancer cases is compared with that of controls dying from other diseases.
Description provided by IARC and DKFZ with ICRDB/NCI support.
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.2062,
CHANGES IN CANCER INCIDENCE AND MORTALITY 1970-1979 - COMPARISON OF TWO NEIGHBORING CANTONS
J.K. Torhorst, Krebsregister beider Basel, Dept. of Pathology, *Schoenbeinstr. 40, c/o Kantonsspital Basel, 4056 Basel, Switzerland* (02186)
The study comprises 15,000 cancer cases, of which about 90% have histologically confirmed diagnoses. The age-standardized incidence rates have been higher in Basel-Stadt than in Basel-Land (the two Cantons which make up the registration area). At the present time rates in Basel-Land are approaching those of Basel-Stadt. Differences in diagnostic criteria and in the physician population ratio are being examined as possible reasons for these differences.
Description provided by IARC and DKFZ with ICRDB/NCI support.
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.2063,
SMOKING AND LUNG CANCER
J.L. Townsend, University of Essex, Dept. of Economics, *Wivenhoe Pk., Colchester CO4 3SQ, England, United Kingdom*
This study is considering five-year age and sex cohorts in England and Wales and relating their lung cancer mortality rates to lifetime smoking habits. Results will be projected to forecast UK lung cancer mortality rates for men and women to the years 1996/2000, using current smoking trends.
Description provided by IARC and DKFZ with ICRDB/NCI support.
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.2064,
EPIDEMIOLOGY OF VIRAL HEPATITIS AND ITS ROLE COMPARED TO THAT OF ALCOHOL IN THE ETIOPATHOGENY OF CIRRHOSIS AND PRIMARY TUMORS OF THE LIVER
C. Trepo, Centre National de la Recherche Scientifique, Centre dEpidemiologie, *8 ave. Rockefeller, LP No. 005440 c/o Fac. Med., 69008 Lyon, France*
Alcohol consumption and hepatitis virus markers in the serum and liver are compared in hospitalized patients with histologically proven cirrhosis or primary cancer of the liver. Alcohol consumption is evaluated by interview of patients by a well-trained technician and hepatitis virus infection is evaluated by using radioimmunoassay for HBsAg and anti-HBC as well as the recent Ac/Ab system described by this group in non-A non-B hepatitis.
Description provided by IARC and DKFZ with ICRDB/NCI support.
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.2065,
PROSPECTIVE COHORT STUDY ON ASSOCIATION OF PRIMARY HEPATOCELLULAR CARCINOMA (PHC) WITH HEPATITIS B VIRUS AND AFLATOXIN B1
J. Tu, Shanghai Cancer Inst., Dept. of Epidemiology, *270 Dong An Rd., Shanghai, Peoples Republic of China*
In areas where aflatoxin B1 contamination is serious, the incidence of PHC is highest among those with HBV infection. This prospective cohort study aims to clarify the role of HBV infection and aflatoxin B1 intake in the prevalence of PHC, and the synergistic action that might exist between these two factors. Fifteen thousand males over 40 years of age residing in a Shanghai suburban county will be studied. They will be divided into an active HBV infectious group and a non-infectious group according to their response to HBs Ag, anti-HBs and anti-HBc examination. The amount of aflatoxin B1 intake will be examined among 200 families selected randomly from these different groups. Personal information to be obtained includes alterations in the proportion of corn intake during the last 30 years, the method of corn storage and previous history of liver disease. The number of liver cancer cases appearing in different groups will be compared after a five-year follow-up.
Description provided by IARC and DKFZ with ICRDB/NCI support.
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.2066,
PRIMARY LYMPHOMA OF THE SMALL INTESTINE IN TRUJILLO, PERU
P.F. Albujar, Universidad Nacional de Trujillo, Departamento de Medicina, *Trujillo, Peru* (003)
Thirty-three cases of primary gastrointestinal lymphoma have been observed over a 15-year period at two general hospitals in the city of Trujillo, Peru. They represent 0.4% of all malignant neoplasms seen during that period; 5.4% of malignant tumors of the digestive tract; and 14% of 225 nodal and extranodal lymphomas. The local distribution of the 33 gastrointestinal lymphomas is: gastric, 6; small intestine, 24; and colorectal, 3.
Primary lymphosarcoma represented 63% of all malignant tumors of small bowel. The majority of patients was male and above 40 years of age. Clinically, intestinal obstruction and palpable abdominal mass were the most common manifestations. The most common gross types were constrictive (annular) and polypoid. Histologically, all cases in this series were non-Hodgkin's, 23 were diffuse and one was modular. Involvement of lymph nodes was the most significant pathologic feature which seemed to correlate with prognosis.
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.2067,
LYMPHOMAS IN TRUJILLO, PERU - CLINICO-PATHOLOGIC STUDY
P.F. Albujar, Hospital Belen, Depto. Medicina, *Apartado 315, c/o Univ. Nac. de Trujillo, Trujillo, Peru* (014)
OBJECTIVE: To perform a retrospective study of lymphomas registered in the city of Trujillo, Peru, over a 10-year period (1971-1980) in order to establish clinical, histopathological and epidemiological (relative frequency, age, sex and place of residence of patients) characteristics.
APPROACH: Data will be taken from clinical histories and registered in an ad-hoc protocol. In each case, the histologic slide will be reviewed in order to determine the diagnosis in accordance with the World Health Organization's recommended classification. (Translated)
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.2068,
DIGESTIVE ENDOSCOPY IN GASTRIC CANCER
R. Aires Correia, Universidade Federal do Ceara, Hospital das Clinicas, Dept. of Gastroenterologia e Hepatologia, *Rua Cap Francisco Pedro s/n, Porangabussu, Fortaleza 60000, Ceara, Brazil* (017)
OBJECTIVES: To evaluate the prevalence of gastric cancer in Ceara where there are empirical indications of high incidence of this form of cancer. To perform a precise diagnosis, endoscopy and anatomopathology by gastric biopsy. To study the feasibility of early diagnosis by endoscopy.
APPROACH: In all cases of suspected gastric cancer, referral is made to the endoscopy section where that procedure is used. A flexible fiber optics apparatus is utilized. Biopsies obtained by endoscopy are analyzed histologically. Cases considered to be operable undergo surgery and the results are compared. (Translated)
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.2069,
ENDOMETRIAL CARCINOMA - EPIDEMIOLOGY AND TREATMENT
T.A. Salmi, (No Performing Organization Reported), *Ohio*
OBJECTIVE: In the literature, marked differences between the use of estrogens and rates of endometrial carcinoma have been found in the USA and in Finland. According to my investigation: 'Risk factors in endometrial carcinoma with special reference to the use of estrogens' (Acta Obstet. Gynecol. Scand. (suppl.) 86, 1979), no correlation was found between endometrial carcinoma and the use of estrogens; whereas in most of the investigations done in the USA such a correlation has been found. The objective of the current cancer research project is to determine the possible differences between these epidemiological studies.
APPROACH: The use of estrogens by endometrial cancer patients (American patient material) is being clarified, with special attention given to the type of estrogen used.
PROGRESS: This cancer research project is to be completed in August 1981.
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.2070,

BREAST SECRETION IN FINNISH WOMEN - A METABOLIC EPIDEMIOLOGIC STUDY

K. Kettunen, University Central Hospital of Kuopio, Dept. of Surgery, *Kuopio, Finland*

This investigation is a part of a cancer research project directed by Dr. Ernst L. Wynder, American Health Foundation, Naylor Dana Institute for Disease Prevention, Valhalla, New York 10595.

Epidemiologic data show major differences in breast cancer incidence and mortality between different human populations. Despite intensive scientific studies of the etiology of breast cancer, no single factor, with the possible exception of nutrition, has become evident that is consonant with the distribution pattern of the disease. Recent studies point to the content of breast secretion as a parameter which may be involved in breast carcinogenesis. It is possible that the quantity and the composition of the secretion could relate to the pathogenesis of breast cancer. The present study was undertaken to determine quantitative and qualitative aspects of breast secretion, in order to contribute to our understanding of the pattern and composition of this secretion, particularly in terms of its hormones, prolactin and estrogen. Because Finnish women exhibit an intermediate risk for breast cacer, they were selected as the study population, thereby enabling comparisons with data being collected in the United States and Japan.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.2071,

OBSERVATIONS ON THE PATHOLOGY OF HODGKIN'S DISEASE AND OTHER LYMPHOMAS IN CHILDHOOD

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OBJECTIVES: Investigation of Hodgkin's disease in childhood, with special attention paid to the nephrosis syndrome occuring as a complication. Furthermore, the following research is ongoing: the epidemiology of Wilms' tumor plus investigations of the optimal therapy of the above-mentioned diseases, especially with the newest medicaments.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.2072,

GROUP WORK WITH PATIENTS WITH GYNECOLOGIC PATHOLOGY

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The basic procedure in this research is group social service, with emphasis on administering the questionnaires. a) Compilation of social, economic and cultural data concerning the group from patients' records. b) Exchange of information with medical staff of the gynecopathological out-patient ward. c) Framing of hypotheses. d) Framing of basic questions to be put to the group. e) Administration of the questionnaire at group meetings. f) Confirmation or refutation of hypotheses. g) Tabulation or grouping of results. h) Statistical study. i) Conclusions.

Technical Tools: a) Observation, b) research, c) motivation, d) interpretation, e) evaluation, f) group meetings, g) records, h) pre-existing documentation on the group, i) literature.

Statistical Criteria: Grouping of results based on the following variables: economic, social and cultural. (Translated)

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.2073,

VITAMIN A INTAKE AND STATUS IN SOUTHERN EUROPEAN MIGRANTS TO AUSTRALIA IN RELATION TO CANCER RISK

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There is growing evidence, both experimental and epidemiological, that Vitamin A protects against epithelial cancers. Southern European Migrants, who have come to Australia in large numbers since 1950, are initially at low risk overall cancer mortality (stomach cancer excluded). The increased cancer risk associated with lengthening period of residence could reflect changes in both specific and general factors, e.g. the increases in colo-rectal cancer rates have been considered primarily in terms of dietary factors that directly influence the intra-colonic environment. However, it is possible that the dietary changes associated with migration - including a reduced consumption of fruit and vegetables - entail a change in Vitamin A status, with consequent general effects upon carcinogenesis. Detailed diet histories have been collected from a random sample of approximately 100 Greek, Italian and Yugoslav migrants living in Adelaide. Equivalent data are available for a random sample of approximately 500 Australian-born persons, with the same age and sex distribution. Dietary Vitamin A intake is being estimated, and, for the migrants, related to duration of stay and extent of post-migration dietary change. Blood samples are being obtained from a sub-group of the study population, for serum retinol determination.

Description provided by IARC and DKFZ with ICRDB/NCI support.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.2074,

EPIDEMIOLOGY OF BREAST CANCER AND BENIGN BREAST DISEASE IN WESTERN AUSTRALIA

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The main objectives of the study are: (1) To establish the incidence of breast cancer in Western Australia making note of the stage of disease at initial presentation, the pathologist's description, type of surgery done, and other relevant variables; (2) to establish the number of biopsies carried out per year for benign breast disease in Western Australia, noting the pathological description for each case and other relevant variables. For both aspects of the study, data will be obtained for the year 1978 only, and will be obtained from computer-stored lists of hospital admissions for treatment of breast disease, further information from pathology records and, for a few cases, requests to medical specialists for information from their patient records. There is no contact with patients in this study.

Description provided by IARC and DKFZ with ICRDB/NCI support.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.2075,

INCIDENCE OF CANCER IN WESTERN AUSTRALIA

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Western Australia has a diverse climate over its 1,000,000 square miles of area, and a scattered population of approximately 1,000,000. This population has remained relatively stable, making possible extensive epidemiological analysis, including long term follow-up. Cancer incidence, by site, age, sex, geographical location of patient, work history, and detailed treatment for three months following diagnosis is currently being analyzed.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.2076,

MESOTHELIOMA SURVEILLANCE PROGRAM

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The Mesothelioma Surveillance Program was inaugurated on 9 July 1980. The Program was initiated for the general purposes of standardizing the diagnosis and classification and of furthering epidemiological knowledge of the disease. Particularly, it is desirable to identify potential causal agents other that asbestos, to determine the relative importance of different fiber types in causation, and to establish dose-response relationships. It is essential for example to establish whether relatively minor exposures are associated with increased risk of mesothelioma. The program has been three years in development, during which time methods and criteria have been tested and perfected on diagnosis, fiber counting in lung tissue and environmental history taking. Panels of experts from around Australia and New Zealand are taking part in all aspects of the program, which is a research project likely to extend over ten or more years. It is not a statuatory register, though it will be collaborating with State cancer registers and with the Western Australian Mesothelioma Register. Various protocol measures have been devised to meet ethical requirements.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.2077,

CANCER INCIDENCE IN LA PAZ, BOLIVIA

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There has been no statistical study of the frequency of malignant tumors in La Paz, Bolivia, although clinical observations indicate that some malignant tumors such as bronchogenic and colon carcinoma, are very rare while others, such as cancer of the cervix, stomach and gall bladder, are frequent. A survey to detect all cancer cases in residents of the city of La Paz, Bolivia is being carried out with the aim of establishing cancer incidence by age, sex, site and type of neoplasms. Epidemiological and clinical data on stage, treatment and follow-up are also included. The survey covers all hospitals, clinics, laboratories and other medical facilities in La Paz, as well as death certificates. This city is located 3,600 meters above sea level with a population of nearly 700,000. Results will be analyzed after a three year period, ending in 1981.

Description provided by IARC and DKFZ with ICRDB/NCI support.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.2078,

EPIDEMIOLOGY OF CANCER IN ALBERTA 1969-1973

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This study is a supplement to the 1977 published report 'Epidemiology of Cancer in Alberta 1969-1973'. The objectives are to update the collected data and to investigate a number of epidemiological factors for their possible contribution to extreme geographical differences of stomach cancer incidence in Alberta.

Description provided by IARC and DKFZ with ICRDB/NCI support.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.2079,

EPIDEMIOLOGICAL STUDY OF A LEUKEMIA EXCESS IN A COMMUNITY HEALTH AREA 6

G.P. Theriault, Universite Laval, School of Medicine, Dept. de Medicine Sociale et Preventive, *Ste. Foy, Quebec, Canada* G1K 7P4 (02352)

A leukemia excess in adults has been reported for 1978-1979 in a community health area of Quebec Province. This excess affects both males and females and is mainly due to non-lymphocytic leukemia. The objective is to describe the distribution of leukemia in this area over a period of ten years and try to determine the cause of the excess noted in 1978-1979, using the case-control approach. The total number of known cases to date is 225, 55 of them being in one town. In this town, two controls (one hospital patient and one neighbor) will be matched with each case and all individuals will be surveyed in order to demonstrate a possible exposure to some special agent contributing to the leukemia exess.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.2080,

ESOPHAGEAL CANCER IN MIGRANTS

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A great difference in mortality from esophageal cancer has been found between immigrants and natives during ten years in Joneshang county, Hupeh Province. A prospective cohort study of about 100,000 individuals aims to assess (1) whether nutritional imbalance may predispose to esophageal cancer, and (2) whether mycotoxins produced by fungi from foodstuffs may be the carcinogen.

Description provided by IARC and DKFZ with ICRDB/NCI support.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.2081,

LUNG CANCER IN CUBA

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The objective of this case-control study is to determine (1) Whether Cubans who smoke experience a higher risk of developing lung cancer than those who do not, and whether this risk varies with light or dark cigarettes, (2) Whether the histological types of lung cancer are related to type of tobacco smoked, and (3) If there is a relationship between lung cancer and the reproductive history of affected females. The expected number of cases will be about 200 women and 500 men. The study will ascertain all new cases of lung cancer that occur in a defined geographical area - the city of Havana during a certain period of time. Two age-matched controls, one hospital and one neighborhood, will be used. Uniform diagnostic criteria are assured by a committee of pathologists which will review all slides. Data are being obtained on types of tobacco used, number of years smoked, patterns of smoking, drinking habits, occupational exposure, and demographic information.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.2082,

DEVELOPMENT OF ELECTRONIC DATA PROCESSING (EDP) PROGRAMS FOR DESCRIPTIVE AND ANALYTICAL STUDIES ON THE INCIDENCE OF PLEURAL CANCER

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This is a descriptive epidemiological study of pleural mesothelioma. As a result of co-operation between countries of the European Economic Community about 600 cases were registered between 1961 and 1972. The material has now been supplemented so that the number of cases amounts to more that 900. An analysis of the data will be carried out in co-operation with the Department of Datology, Institute of Mathematics, University of Aarhus, with the aim of establishing the extent and dynamic spread in time, place and population groups of this disease. At the same time the necessary EDP programs will be standardized for future use in similar studies of other diseases.

Description provided by IARC and DKFZ with ICRDB/NCI support.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.2083,

MALIGNANT LYMPHOHEMOPOIETIC DISEASE AND OCCUPATIONAL RISK

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The main purpose of this study is to identify relative risks of leukemia, lymphoma and Hodgkin's disease which are significantly high for some occupational activities or exposures, whether previously suspected or not. Moreover, the study will try to assess the proportion of these malignant diseases attributable to an occupational risk. This case-control study includes 700-1,000 cases, detected over three years in a highly industrialized area; controls are chosen, after matching, from other in-patients. The survey involves detailed occupational interview, with a novel technique, and a review of this interview by industrial experts in order to identify probable occupational exposures. Statistical processing will be carried out as in case-control studies.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.2084,

PRECANCEROUS LESIONS OF THE ESOPHAGUS IN A HIGH-RISK POPULATION

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A total of 523 individuals from the Cheng Guan commune of Lin County People's Republic of China was included in this study. One third had been examined by the Chinese balloon technique five years before and dysplasia diagnosed cytologically. One third were age- and sex-matched controls of the first group and had a normal esophageal cytology in the same survey. The remaining third were not included in the cytological survey five years before. For each subject a questionnaire containing basic demographic data, information on smoking, alcohol, dietary habits and symptomatology was completed, followed by physical and endoscopic examination with guided cytology and biopsies. Hair specimens were collected from all individuals for zinc analysis and blood was collected in a selected sample. Chronic esophagitis was observed in 90% of the subjects (mild 56%, moderate 28% and severe 6%). The endoscopic and histological characteristics of the chronic esophagitis are similar to those observed in High esophageal cancers incidence areas in Iran. This lesion increases in severity with age and moderate and severe degrees were more frequent in males than in females. Incontinence of cardia, as in Iran, was relatively infrequent (13%) and esophageal varices were found in 7.6% of the subjects. Dysplasia was diagnosed in 39 cases (7.5%), esophageal cancer in 10 patients (2%) and adenocarcinoma of the gastric fundus in three cases. Out of the 10 esophageal cancer cases, six were located in the cardia. The cytological and histological evaluation of these lesions is still in progress, and their possible relationship with specific nutritional deficiencies (Vitamin A, riboflavin and zinc) is being explored. If positive associations are found it will be possible to carry out intervention studies in this population. A similar epidemiological and endoscopic survey is being proposed in a low incidence area for esophageal cancer and in other high risk areas with completely different environments.

Description provided by IARC and DKFZ with ICRDB/NCI support.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.2085,

VINYL CHLORIDE IN RELATION TO MALIGNANT TUMORS

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The purpose of this prospective study is to examine the relationship between vinyl chloride (VC) exposure and pathology (in particular malignant tumors) and causes of death. It will be conducted in factories producing VC (monomer or polymer). Only male workers, aged between 40 and 55 years, will be considered for study. For each worker exposed a worker never exposed to VC, of the same age (plus or minus two years), working in the same plant, will be used as a control. Both exposed and non-exposed workers will be interrogated by the same physician. The form contains some identification items (age, civil status, place of residence), information on exposure, including the whole occupational history, on tobacco and alcohol habits, and on health status. The subjects in the study will be seen yearly for four years in order to follow their health status and note possible changes in relation to VC exposure.

Description provided by IARC and DKFZ with ICRDB/NCI support.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.2086,

EPIDEMIOLOGY OF MALIGNANT MELANOMA IN THE GERMAN DEMOCRATIC REPUBLIC (GDR) AND IN THE FEDERAL REPUBLIC OF GERMANY (FRG)

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It is legally compulsory in the GDR to report malignant melanoma of the skin and epidemiological data have been ascertained and trends established from 1955 through 1975. The 12 year period 1964 through 1975 is being analyzed in greater detail and the incidence trend calculated. Absolute figures for malignant melanoma are being calculated per 100,000 of the respective resident populations and the age-adjusted incidence established. Mortality statistics are used to investigate whether the number of deaths from malignant melanoma is on the increase and regional differences in incidence are being analyzed to serve as pointers to factors causing and favoring tumors. An attempt is to be made to calculate incidence for the FRG, where analogous geographical, racial and endogeneous and exogeneous influences should produce comparable data.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.2087,

CANCER RISK AND OCCUPATIONAL EXPOSURE

M.B. Aksoy, Istanbul Medical School, Sect. of Haematology, *Capa, Istanbul, Turkey* (00506)

The occurrence of malignancies among persons with hematological abnormalities is being investigated among the workers who have been chronically exposed to vinyl chloride in a polymerization plant of a petrochemical industry in Yanimca, Izmit. The first hematological results showed no significant abnormalities in 43 workers with exposure varying from three months to ten years (mean: four yrs). However one worker with an exposure to vinyl chloride of three yrs died of pleomorphic rhabdomyosarcoma.

Description provided by IARC and DKFZ with ICRDB/NCI support.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.2088,

MALIGNANT LYMPHOMAS IN TRUJILLO, PERU

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The aim of this study is to establish the epidemiological (relative frequency, age, sex and birth place), clinical and histopathological features of malignant lymphomas in a ten-year period (1971-1980). Data will be obtained from the clinical history and registered in a special protocol. In all instances histological slides will be reviewed in order to reclassify the diagnoses according to the Classification suggested by the WHO.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.2089,

CANCER AND CARDIOVASCULAR DISEASES AMONG WORKERS EXPOSED TO FLUOROCARBONS

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'Freons', halogenated hydrocarbons, are widely used in refrigerators, air conditioners, as propellant gases in spray-products and as solvent in industry. The chemical structure of these compounds has some similarities with known carcinogens such as ethylene dibromide and ethylene dichloride, as well as with some anesthetic gases (especially halothane), which are epidemiologically suspected to have some carcinogenic potential. Heavy exposure might result in cardiac arrythmias as has been reported in humans after the use of medical spray-products. However, in spite of possible adverse health effects of 'freons', they are looked upon as non-toxic substances with relatively high permissible exposure levels. Since there are no epidemiological data available, a cohort study has been initiated, comprising about 600 individuals occupationally exposed to 'freons' during the 60s and 70s. Incidence and mortality from all types of cancers as well as deaths from other causes will be studied. Expected numbers of incident cases and deaths will be calculated from the national rates as provided by the Swedish National Cancer Registry and the National Registry of Causes of Death.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.2090,

MAPPING AND EPIDEMIOLOGICAL EVALUATION OF DATA FROM THE SAARLAND CANCER REGISTRY

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Registered cancer cases and deaths in the Saarland from 1970 to 1974 are being geographically mapped. In the first part of the study 2,400 cases of lung and bronchus cancer were analyzed in relation to incidence, geographical distribution and sites of industry and air pollution in Saarland. 370 cases of lung and bronchus cancer from the city of Saarbruecken were analyzed similarly, with the inclusion of occupation

and measurement of air pollution using chemical and physical estimations and bioindicators. 380 cases of lung and bronchus cancer in industrial agglomerations, 4,000 cases of stomach and intestinal cancer and all cases of leukemias are now being mapped for the period 1970-1974.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.2091,

RED PALM OIL CONSUMPTION AND CANCER IN SALVADOR, BRAZIL

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Animal and in vitro studies have shown that vitamn A can protect variety of tissues, especially epithelial, against cancer induction. Human epidemiology has generally been consistent with this finding, but inconclusive because of the association of vitamin intake with that of many other nutrients, and with social and economic factors. This study will examine the vitamin A consumption of cancer cases and controls in Salvador, where a high proportion of the vitamin A intake of many inhabitants comes from a cooking oil, red palm oil. The oil is distinctively flavored and colored, and is used with specific dishes. Non-users of the oil receive, on average, less than the Recommended Daily Allowance (RDA) of vitamin A while regular users consume several times the RDA. All cancer cases presented at the major hospitals in Salvador will be interviewed and a blood sample taken. A hospital control, and in some instances, a neighborhood control will also be interviewed. It is expected that 2,000 cases will be seen over a two year period.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.2092,

CANCER EPIDEMIOLOGY IN TANNERY WORKERS

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It is known that tannery workers are potentially exposed to different carcinogens. About 4,000 tannery workers are concentrated in a small village near Florence (Italy). The purposes of this study are: (1) to define the mortality patterns of the population of the village (S. Croce sull'Arno) from 1960 to 1980; (2) to conduct a case-control study on the cancers for which an observed number of deaths higher than the expected will be found; (3) to conduct a cohort study on tannery workers for defining their cancer incidence and mortality (period: 1970-1985). The control group for the mortality data will be the Italian population and the population of another small village without tanneries. The data will be related with industrial hygiene data, mutagenesis and carcinogenesis tests, and biological tests on exposure to carcinogens, which will be programmed and conducted by other research groups.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.2093,

STOMACH CANCER IN KENT, UNITED KINGDOM

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Preliminary data from the South West Thames Cancer Registry suggest that there are regional variations in male stomach cancer registrations within the county of Kent. These data are being augmented by local authority mortality statistics. There are approximately 300 deaths/annum in Kent attributed to stomach cancer. One objective is to compare coal-mining areas with non-coal mining regions. It is eventually planned to investigate the role of trace metals (e.g. copper, zinc etc.) as possible carcinogens.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.2094,

EPIDEMIOLOGY OF MALIGNANT MELANOMA

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The project aims to provide a detailed and comprehensive description of malignant melanoma in New Zealand. Current research centers on the role of climatic factors in the etiology of skin melanoma. Regional incidence and mortality rates from the New Zealand Cancer Registry, and indices of regional climatic differences relating to ultraviolet light exposure are being collated and will be tested for associations. Sex, age, site, domicile, occupation, and country of birth will be included in the analysis. In addition, fluctuations in annual incidence rates are being tested for correlation with climatic variations.

Description provided by IARC and DKFZ with ICRDB/NCI support.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.2095,

EPIDEMIOLOGY OF CHILDHOOD CANCER

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The Northern Region of England has one of the two truly comprehensive registries of malignant disease in childhood in the United Kingdom. The purposes of the study are to look for etiological clues to the causation of cancer by carefully studying a well-defined total population of children. Approximately 70-80 children per year develop cancer in the North Region.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.2096,

CANCER REGISTRY OF RAGUSA

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Population-based morbidity and mortality studies of cancer are hampered by the unavailability or by the unreliability of official data. The institution of a Cancer Registry using methods of data collection comparable with similar registries makes it possible to study morbidity/mortality rates in different populations, and to carry out epidemiological investigations. The Province of Ragusa (population 220,000) has six hospitals and no private clinics. The crude cancer mortality rate is about 170 per 100,000 (1977). Data on cancer patients are collected in hospitals or in clinical pathology or radiology departments. An inquiry by a health visitor is made whenever possible. Mortality data are obtained from death certificates and submitted to cross check with hospital records.

Description provided by IARC and DKFZ with ICRDB/NCI support.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.2097,

CELL SURFACE MARKERS IN CHRONIC LYMPHATIC LEUKEMIA

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Chronic lymphatic leukemia (CLL) has an equal sex distribution in Northern Nigeria, but is seen twice as commonly in women under the age of 45 and twice as commonly in men over 45 years of age. Because of the unusual sex and age distribution, the lymphocytes of CLL are to be characterized as T-cells or B-cells, and by other criteria, in an attempt to shed light on the epidemiology of this disease. It is anticipated that some 30 cases will be studied.

Description provided by IARC and DKFZ with ICRDB/NCI support.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.2098,

CASE-CONTROL STUDY ON RISK FACTORS FOR STOMACH CANCER IN BAVARIA AND HESSE

R.R. Frentzel Beyme, Deutsches Krebsforschungszentrum, Institut fuer Dokumentation Information und Statistik, Dept. of Epidemiology, *Im Neuenheimer Feld 280, D6900 Heidelberg 1, Federal Republic of Germany* (02455)

During the last 25 years, Bavaria has shown the highest mortality rates for this cancer in the Federal Republic of Germany, whereas the adjacent region of Hesse had the lowest rates for both sexes. A case-control study is to be carried out simultaneously in both regions to study etiological factors for stomach cancer. The objectives include investigations into the influence of dietary factors, occupational exposure and psycho-social risk factors. The comparison groups for the cases in Bavaria and Hesse will consist of gastroenterology patients, other patients and neighborhood controls. The relevant information will be obtained by use of a special questionnaire and interview by trained personnel.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.2099,

CANCER RISK IN NICKEL-EXPOSED WELDERS

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Nickel has been found to be a potential human carcinogen for persons occupationally exposed during smelting and refining. This study is designed to investigate any conceivable cancer risk connected with exposure to nickel fumes during welding with nickel-containing electrodes. A follow-up study, starting after 1950, will determine mortality experience. Approximately 20 factories in the Federal Republic of Germany contribute a total of about 1,500 exposed persons. The comparison group is chosen from the same factories and is mainly composed of metal cutters and turners not exposed to nickel fumes. Estimates of exposure will be derived from the average use of nickel electrodes during employment and duration of employment. Smoking habits will also be assessed.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.2100,

CELL TYPE DISTRIBUTION IN HISTOLOGICAL SPECIMENS OF LUNG CANCER

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There are data supporting the fact that the distribution of different cell types of lung cancer depends also on the source of the histological specimen. This information may be useful for avoiding biases caused by the data source in epidemiological studies on lung cancer and cell types. The purpose of the study is to revise cell-type diagnoses in about 2,000 cases of lung cancer, obtained from the Institute of Pathology of Florence. The 2,000 lung cancer diagnoses are from bronchial biopsy and operation specimen series; in addition, 400 cases of lung cancer for which a cytological diagnosis using the Saccomanno method is also available will be classified in the same way. The study will also give information about the distribution of sex and age among the different histological types.

Description provided by IARC and DKFZ with ICRDB/NCI support.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.2101,

OCCUPATION AND BLADDER CANCER

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Study of a chemical factory in the West of Scotland has produced finding of an excess of six times the number of cases of bladder neoplasm than expected in the population. None of the previously demonstrat-

ed chemical carcinogens known to cause bladder cancer are in use in this factory. Detailed occupational histories of these cases have not yet shown a common internal link. The histology of these cases has been submitted to a panel of expert pathologists for confirmation of the diagnosis. The study is continuing.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.2102,
CLUSTERING IN ALIMENTARY CANCER

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An investigation has demonstrated epidemicity in alimentary cancer using the population data for Ayrshire and the appropriate cancer registration data which have been shown to be sufficient for statistical analysis. Epidemicity has been found in rural rather than in urban areas of this country, and demonstrations of space/time clustering in previous years have been repeated in the same areas using data from the most recent years available. Investigations are proceeding in order to find out whether this statistical finding has biological significance.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.2103,
EPIDEMIOLOGICAL INVESTIGATIONS OF RADIATION DAMAGE IN PATIENTS TREATED WITH 224RA

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In about 2,000 persons treated with 224Ra for ankylosing spondylitis (Bechterew's Disease) or bone tuberculosis, the effects of this particular type of radiation are being investigated. In collaboration with orthopedic hospitals the patients are subjected to follow-up examination. The results of these investigations, in particular the onset of malignant and degenerative disease and causes of death, are evaluated with a view to establishing dose-response. Further knowledge about the risk of radiation cancers in general is thus gained.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.2104,
ASBESTOS AS A 'PROMOTOR' CARCINOGEN IN EXTRAPULMONARY SITES

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The lack of organ specificity for non-pulmonary cancer in persons occupationally exposed has been noted. It is proposed to examine epidemiological evidence of: (1) increased frequency of cancer in many non-pulmonary sites and (2) alteration in leukocyte counts, in order to examine whether asbestos, like whole body radiation, may be characterized as a 'promotor' carcinogen for non-pulmonary sites.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.2105,
EVALUATION OF BREAST CANCER MASS SCREENING

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The impact of breast cancer mass screening programs will be evaluated using a computer simulation approach. First, mathematical models for description of the epidemiology and natural history of breast cancer will be developed. These models should reproduce both the age-specific incidence and mortality figures, and the distribution of incidence cases over the prognostic classes at clinical surfacing. A study of the population and clinical epidemiology of breast cancer in the Netherlands will underly this modelling. Second, results from breast cancer screening projects (yield, attendance, interval cancers, etc.) will be evaluated and used for further refinement and improvement of the model: it should be able to reproduce relevant data from both screened and unscreened populations. Such a validated breast cancer screening model can be used for predictions about the results of existing and alternative screening policies. This would be of value in decision making on mass screening for breast cancer.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.2106,
CARDIFF CERVICAL CYTOLOGY STUDY

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The main objective of the Cardiff Cervical Cytology Study is to evaluate screening for cervical cancer. The study is based on a defined population: all ever-married women, aged 25-69, resident within the Cardiff City area. The basic design objective was that all eligible women should be screened three times. The defined population was enumerated by house-to-house visiting, and eligible women were offered appointments for a cervical smear test at specially organized clinics. The study began in late 1065 and the first round of visiting the city finished early in 1971. The defined population numbers some 71,000 women of whom 46,000 (65 percent) accepted the offer of the test. Subsequent to the first smear women were re-called for second and third smears at two to three yearly intervals. Some 38,000 have so far had second smear and over 30,000 have had a third. The study should provide estimates of the prevalence and incidence of the various pathological states, estimates of false negative and false positive error rates. Death and registration rates for invasive cancer in the Cardiff City are are being monitored.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.2107,
IDENTIFICATION OF HIGH RISK FACTORS FOR BREAST CANCER IN PATIENTS WITH MAMMARY GLAND FIBROADENOMATOSIS

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Epidemiological data have been collected by means of a special punch card, including 15 questions about high-risk factors for breast cancer (hormonal, genetic and environmental), and various breast diseases have been diagnosed in the breast screening program (10,000 women) carried out in the Estonian SSR from 1974-1980. The data obtained will be analyzed to find out: (1) whether there is an association between high-risk factors for breast cancer (increased age at first delivery, postponed natural menopause, family history of breast cancer, acute mastitis, breast trauma, etc.) and mammary gland fibroadenomatosis and (2) whether it is possible to identify the patients with precancerous mammary gland diseases ('cystic' and 'ductal' histological types) by high-risk factors. The study will be carried out in three groups of patients: (1) 500 women with mammary gland fibroadenomatosis (histological verification), (2) 500 women with mammary gland fibroadenomatosis (by mammography), (3) 1,000 women with no evidence of breast lesions (control group).

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.2108,
EVALUATION OF MASS SCREENING FOR STOMACH CANCER

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Among all cancer deaths in Japan, mortality from cancer of the stomach ranks first. Since 1960 mass screening programs have been conducted in many places in Japan. 3.6 million people were screened in 1978. The major objectives of the study, which is supported by the Ministry of Health and Welfare of Japan, are to evaluate the gastric mass survey program and to establish the most effective screening methods. The evaluation will include epidemiological factors taking into account sampling bias or patient self-selection bias, natural course and survival rates, technological points such as sensitivity, specificity, false negative rate and predictive value, and post-benefit analysis.

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3.2109,
EFFECT OF EXOGENOUS AND ENDOGENOUS FACTORS ON INCIDENCE OF DYSHORMONAL DISEASES AND BREAST CANCER

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During the last two decades the incidence of breast cancer has considerably increased in all countries. Modern therapy has not been very successful. Therefore the study of the epidemiological aspects of this site is of great importance. The effect of exogenous and endogenous factors on the incidence of dyshormonal diseases and breast cancer will be studied over four years in a case-control study using controls drawn from the local population. Information is obtained by questionnaire and includes medical and reproductive histories and use of contraception.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.2110,
LONG-TERM SPATIAL ANALYSIS OF CANCER MORTALITY IN RELATION TO DEMOGRAPHIC AND ENVIRONMENTAL FACTORS

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The spatial analysis of mortality due to malignant neoplasms in the population of Cracow will cover the ten-year period 1974-1984. The city of Cracow has over a million inhabitants and its four districts differ in regard to degree of air pollution, smoking habits, fertility and other social and environmental factors. The aim of the study is to make a comparison between mortality from malignant neoplasms in the four districts. Death certificates taken from the statistical office on a monthly basis have been used in the analysis of malignant neoplasms. Cancer mortality data are analyzed by sex, place of residence and primary site. Age-specific and age-adjusted rates are computed for the total population and for each district. Until now, data covering the five years 1974-1978 have been collected and are currently under analysis. The pilot study done for the year 1974 has shown that the most frequent causes of death in Cracow by sex were lung carcinoma in men and breast carcinoma in women. The highest age-adjusted rates were in the city center where the fertility rate was low and the level of atmospheric pollution, tobacco consumption and the proportion of working-class population appeared to be high.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.2111,
AUCKLAND BREAST CANCER GROUP - BREAST CANCER SURVEY

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The purpose is to study the epidemiology of breast cancer in a multi-racial society in New Zealand. This comparison of case characteristics is both between races and within a race. The controls for the latter are 1,000 women attending general practices in Auckland, New Zealand. They will be matched by age and locality with the breast cancer cases. An average of 280 new cases of breast cancer per annum occur in Auckland. importance is attached to socio-economic groups, height-weight ratios, diet, parity, history of contraceptive practices and previous breast disease. High risk families in Caucasian and Polynesian communities are under review.

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3.2112,
REGIONAL CANCER REGISTRY, BADEN

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The Regional Cancer Registry in North Baden (2.2 million inhabitants) is being expanded to cover the district of Baden (4 million inhabitants) and to include all cancer sites. Histologically proven cancer cases are collected and incidence rates determined. Basic data in order to prepare analytical epidemiological studies are also collected. An investigation into the regional distribution of cancer incidence rates for stomach, colon and rectum is being carried out in the suburbs of Karlsruhe, Heilbronn and Mannheim, which vary in social status.

Description provided by IARC and DKFZ with ICRDB/NCI support.
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3.2113,
MORTALITY AND CANCER MORBIDITY AMONG SWEDISH CADMIUM EXPOSED WORKERS

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Certain epidemiological data indicate that occupational exposure to cadmium may increase the risk of cancer, especially cancer of the prostate. In a cohort study the mortality and cancer morbidity among about 1,000 workers exposed to cadmium for more than one year will be compared with a Swedish age-adjusted average, and with a control group of workers from another plant. The cohort of exposed workers will be made up from three different plants, one cadmium-nickel battery assembly plan and two cadmium-copper alloy plants. Workers employed 1945 or later will be included in the study.

Description provided by IARC and DKFZ with ICRDB/NCI support.
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3.2114,
HORMONAL ASPECT OF ENDOMETRIAL CANCER

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Case-control study is being carried out in an attempt to clarify the etiological relevance of steroid metabolism to endometrial cancer. Steroid data for 24 cases are being compared with those for 55 controls matched for age (post-menopausal). Results so far obtained indicate that this cancer is associated with a reduction in urinary steroids, the production of which is stimulated by the pituitary luteinizing hormone. In the analysis of the epidemiological background data for 78 cases were matched with those for one or more age-matched controls. The history of endometrial cancer patients showed a low level of reproduction, results which are in agreement with the endocrinological data. Evidence is also available to indicate that the incidence of endometrial cancer in Japan is now rising.

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3.2115,
HORMONAL ASPECTS OF CERVICAL CANCER

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To investigate the relation between cervical cancer and steroid metabolism a case-control study of the steroid and epidemiological characteristics of patients is under way. Patients who gave birth to their first child significantly earlier than healthy controls of corresponding age, with a similar age at menarche, showed reduced excretions of adrenal steroids including 11-deoxy-17-ketosteroids and some corticosteroid metabolites in comparison with the controls, evidence indicating that cervical cancer is associated with a maturation deficiency of the adrenal gland (arrest of adrenarche). A possible relationship between early sexual activity and arrest of adrenarche may be of etiological significance in the production of this tumor (JNCI 59: 41-47, 1977; 61: 35-39, 1978). Work continues.

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3.2116,
CANCER MORTALITY IN RELATION TO DRINKING WATER IN THE NETHERLANDS

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In the Netherlands the Rhine and Meuse rivers provide directly or indirectly the drinking water for about one third of the country's population. Among pollutants identified in the water are several mutagenic and carcinogenic organic compounds. Recent epidemiological studies carried out in the USA indicate that there may be a possible correlation between consumption of drinking water derived from poluted surface water and elevated cancer mortality rates in man. 20 cities have been selected for a survey of organic constituents in drinking water and 19 cities for correlation studies of seven cancer sites. Selection of cities was based on the type of water source (ground or surface) and treatment (ozone or chlorine); 4.6 million inhabitants of the Netherlands, about 33% of the population of the country, are included in the study. The cancer sites considered are esophagus, stomach, colon, rectum, bladder and lung. Standardized mortality rates are being correlated to the concentration range of organic groups, i.e. Trihalomethanes, total alkylbenzenes, total chlorobenzenes, total phthalates, and specific organic compounds, i.e. chloroform, bromodichloromethane trichloro-ethene, and the hardness of the drinking water.

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3.2117,
IMMUNOLOGICAL CRITERIA IN THE DETECTION OF HIGH OCCUPATIONAL RISK

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The aim of the investigation is to study immune response among textile workers exposed to direct dyes. In 1976 162 textile workers and 54 healthy controls were examined. Benzidinehapten and 3-hydroxyanthranilic acid antigen were detected in the blood serum of the textile workers using specific rabbit immune sera. The results of blast transformation of peripheral leucocytes and phagocytosis reactions and the quantitative determination of immunoglobulin levels in the textile workers' blood serum indicate disturbances in immunology arising from contact with dyes. It is hoped that these data will make possible the elaboration of immunological criteria for revealing occupational cancer risk.

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3.2118,
CORRELATION OF AIR POLLUTION AND CANCER

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In this collaborative project between the International Agency for Research on Cancer and the National Institute for Public Health (RIV) correlation study between air pollution and cancer will be developed, which will exploit the unique automated system of air pollution monitoring existing in the Netherlands. The pollution data collected are such that it is possible to produce an integrated average exposure to sulphur dioxide, the oxides of nitrogen, ozone and carbon monoxide, for a large number of areas covering the entire country. The Netherlands National Vital Statistics Office will be consulted for information on cancer and other death rates, for the areas considered to be meaningful for atmospheric pollution exposures. The Automated Pathological Diagnoses Storage and Retrieval System (PALGA) has an important potential for epidemiological studies as the information about cases of cancer is based on histological diagnoses.

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3.2119,
DOCUMENTATION OF OCCUPATIONAL DISEASES

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Registration and analysis of occupational cancer with special attention to asbestos and vinyl chloride. Since 1975 such data are registered according to an electronic data processing protocol in order to provide an analysis of the development of these diseases.

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3.2120,
POPULATION SCREENING FOR BREAST CANCER BY SINGLE OBLIQUE VIEW MAMMOGRAPHY

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The long-term effects on morbidity and mortality from screening the total female population over 39 years of age in a demarcated geographical region by single oblique view mammography are being examined. With the use of available computer-based population registries about 70,000 women have been systematically and periodically screened for breast cancer since April 1974. An efficient organization was built up with the initial aim of demonstrating the feasibility of population screening. Initial prevalence rates, interval cancer rates and repeat screening detection rates are studied to obtain information on optimum time intervals for screening. Changes in morbidity and mortality are traced. Economic, epidemiological, sociological and psychological effects are studied.

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3.2121,
ORAL CANCER AND ORAL PRECANCEROUS LESIONS IN INDIAN RURAL POPULATIONS IN RELATION TO TOBACCO HABITS

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Oral cancer is one of the most common forms of cancer in India. There is a strong belief that such cancer may be preceded by certain white lesions in the oral cavity, which are thus termed precancerous. It is known, mostly through hospital-based studies, that oral tobacco habits are associated with oral cancer and precancerous conditions. The main objectives of the present study are to (1) investigate the degree of association between tobacco habits, oral cancer and precancerous conditions and (2) elucidate the natural history of oral precancerous conditions from clinical and histological viewpoints. The study design is prospective in nature. In a first survey in 1967-1968, in five districts in different parts of India where different tobacco habits prevail, 50,00 individuals were interviewed about their tobacco habits and examined for the presence of oral precancerous conditions. Since 1969 these individuals have been followed up annually, clinically, histologically, and cytologically, for change of habits and development of oral precancerous conditions. Follow-up surveys comprising a period of 10 years have been completed. A comprehensive report of the follow-up study will be published in Community Dentistry and Oral Epidemiology.

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3.2122,

REGISTRY OF MALIGNANT LYMPHOMAS SUSPECTED TO BE ZOONOTIC IN ORIGIN

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A registry has been established to study the possible transfer of leukemogens from various species (leukemic or not) to man. The registry is open to contributors from any country and physicians wishing to register cases or obtain additional information should contact the Principal Investigator. Data are accepted (by post) if these include: type of lymphoma, age, sex, profession, duration of animal contact expecially with pets (dogs and cats), cattle, pigs, sheep, poultry, etc., as well as diet (high or no consumption of milk, meat, eggs) and residence (urban or rural). These data will be correlated with the epidemiology of leukemia - lymphoma in animals in the relevant areas and will be statistically analyzed.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.2123,

SQUAMOUS CARCINOMA OF HEAD AND NECK IN SOUTH AFRICA

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This study is designed to correlate genetic characteristics of patients with environmental factors thought at present to be initiators and promotors of squamous cell carcinoma (SCC) of the head and neck. The following parameters will be assessed for each patient: (1) Genetic markers, including history, ABO, Rhesus and Mn blood grouping, HLA typing to include ABC and D loci and factor Bf polymorphism. (2) Initiation of carcinogenesis in which serum of patients will be tested for the presence of Herpes Virus Tumor Associated Antigen (AG4) using passive hemagglutination test. If present this represents the inclusion of viral DNA in tumor cells. (3) Environmental factors, including geographical origin, occupational exposure, tobacco, alcohol, snuff, and a history of other diseases, e.g., syphilis. New patients attending the Joint Radiotherapy/Otolaryngology Clinic at Groote Schuur Hospital, Cape Town, with a positive diagnosis of SCC of head and neck will be studied over an 18 month period. It is hoped to study approximately 150 people in this way. Controls from matched patients with infectious or benign disease are readily available.

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3.2124,

BURKITT TUMOR PROJECT

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For more than one decade many aspects of research into Burkitt's lymphoma have been studied at this center. Tumor specimens are provided to research groups and a serum bank on all patients throughout their illness is maintained. Epidemiological studies have included geographical variation and a longitudinal follow-up of the natural history of EBV infections. Current studies include HIA typing of patients and controls and cross sectional serosurveys for malaria and EBV antibodies among rural and urban populations.

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3.2125,

CANCER MORTALITY IN URBAN AND RURAL DISTRICTS OF NORTH-RHINE WESTPHALIA (WEST GERMANY)

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The mortality data for the period 1971-1979 for various types of cancer (lung, stomach, bladder, colon) in North-Rhine Westphalia are being summarized for each of the municipal districts. This study aims to establish a data base for the selection of some urban and rural districts which seem to be suitable for epidemiological investigations into factors causing cancer.

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3.2126,

REFERENCE REGISTRY OF BONE TUMORS

W. Remagen, Universitat Basel, Inst. of Pathology, Bone Tumor Registry, *Schoenbeinstr. 40, c/o Kantonsspital, 4056 Basel, Switzerland* (02333)

Bone tumors are extremely rare. Reference registries are necessary in order to accumulate diagnostic and epidemiological data which cannot be obtained by single institutions. Diagnostic aid is given to all contributors, and histo-pathological, radiological, and clinical material is collected at the registry for further epidemiological and histo-pathological evaluation. The registry commenced in May 1972; to date, 2,400 cases have been registered, 450 of them malignant. The registry also serves as a central reference registry to the German-Austrian-Swiss Study Group on Tumors of the Jaw-bones. Catamnestic evaluation of osteosarcoma cases in the jaw-bones, and of the rest of the skeleton, is being carried out collecting data on age and sex distributions, localizations, radiological and histological patterns, and correlating them to prognosis.

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3.2127,

PROPORTION OF LUNG CANCER CAUSED BY PROFESSIONAL EXPOSURE TO CHEMICAL CARCINOGENS

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A number of chemicals are known as lung carcinogens in humans, such as arsenic asbestos, Bis(chloromethyl) Ether, Cloromethyl Methyl Ether, chromium, nickel, soot, tar and mineral oils. There is still disagreement about the proportion of tumors attributable to these exposures the total of cases which occur in a defined population. The purpose of this study is to measure the risk from occupational exposures in the population living in a highly industrialized area near Milano, where all economic activity is being surveyed by the local Occupational Health Service in order to identify occupational hazards. The study will give information on the possible impact of primary prevention measures on lung cancer risk. All new lung cancer cases occurring in the population under study in a three year period, about 200 cases, will be included in the study. Three hospital controls, free of respiratory diseases, will be used for each case. Interviews will be conducted to obtain information on occupational history, specific chemical exposures, tobacco consumption and social class.

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3.2128,

EPIDEMIOLOGICAL MONITORING OF THE POPULATION OF THE SEVESO AREA IN RELATION TO TETRACHLORODIBENZO-P-DIOXIN (TCDD) POLLUTION

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This Institute, in charge of the epidemiological monitoring of the population of the Seveso area, has devised a general plan of research with the following primary objectives: (1) mapping of TCDD risk in the whole area, taking into account chemical, veterinary and dermatological data; (2) identification, on the basis of this mapping, of groups with different levels of TCDD exposure; (3) mortality studies; (4) a cancer incidence study using a cancer register based mainly on hospital admission/discharge charts; (5) a birth defect register based on screening. Health Services of the area are involved in the first-stage of the screening, and a special pediatric team is in charge of reviewing cases reported by the first screening; (6) follow-up of high risk groups and control groups in order to evaluate hepatotoxic, neurotoxic, mutagenic and teratogenic effects following TCDD exposure.

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3.2129,

SCREENING FOR CANCER DETECTION AND PREVENTION IN NORD- AND SUEDWUERTTEMBERG, FEDERAL REPUBLIC OF GERMANY

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A screening program for cancer detection and prevention was started in the Federal Republic of Germany in 1971. This study investigates the results of the screening program in females. The sites studied are cervix and corpus uteri, breast, rectum, skin and urinary tract. Prevalence and incidence rates are established related to age. Screening results are checked by biopsy results. The accuracy of documentation of the screening data is also controlled and methods of improving it are studied. The low interest of the population in the screening program is also being examined.

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3.2130,

EXPOSURE-BASED CASE-CONTROL APPROACH TO DISCOVERING OCCUPATIONAL CARCINOGENS

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Of the thousands of chemicals in the environment, only a few have at present been demonstrated to be human carcinogens. There is no human evidence one way or another for almost all of the others. The discovery of unsuspected hazards is an important public health challenge. The very large number of agents to be considered renders inadequate conventional 'one-factor-at-a-time' epidemiological study methods. A few methods have been suggested which would have the effect of scanning the occupational environment to detect hitherto unsuspected human carcinogens. Even the most sensitive of these suffers from the non-specificity of job titles in ascribing occupational exposures. A case-control type approach based on exposure histories, and not simply job-title histories, of incident cases and controls, pinpoints not only high risk occupations but also specific chemicals, and provides statistical sensitivity. Exposure histories are obtained in a two-stage process. probing interview is carried out to obtain descriptions of each of the persons' jobs. Basing themselves on technical documentation and personal consultations with expert collaborators, engineers and chemists, then scrutinize each person's work history and draw up a list of possible chemical exposures. A pilot study has shown the method to be feasible. Eligibility criteria for cases are: male, aged 35-70, diagnosed in any of the the 17 major Montreal area hospitals with cancer of esophagus, stomach colon, liver, pancreas, lung, skin melanoma, prostate, testis, bladder, kidney, and lymphoma. Two control series will be used for each site, one selected from cancer patients with other sites and another from the general population. A sub-objective is to compare results obtained using cancer controls with those obtained from population controls. In total, 1,200 patients and 400 population controls will be interviewed each year. The distribution of chemical exposures among patients having a common tumor is analyzed.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.2131,

EPIDEMIOLOGY, HISTOCHEMICAL AND BIOCHEMICAL FEATURES OF COLON CANCER PRECURSORS

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Previous morphological, biochemical and histochemical studies were performed to prove the existence of two types of chronic non-specific colitis. The genetic determination of the first type of colitis was hypothesized, and some biochemical and histochemical differential diagnostic signs established. The aim of this study is to search for correlations between these two types of chronic colitis and cancer of the colon. The incidence of colorectal polyps and colon cancer will be determined in three groups of patients, with different ethnic origins, but living in the same geographical areas and cultural conditions in a County of Hungary.

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3.2132,
MALAYSIAN CHILDHOOD LEUKEMIA

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With improved socio-economic conditions malignancy is now an important cause of childhood mortality in Malaysia. Epidemiological data are needed to elucidate differences in incidence and the different ratios of lymphoid and myeloid leukemia in occidentals and orientals and the childhood and adolescent peaks in mortality from leukemia. 168 consecutive cases of leukemia in children under 15 years of age admitted to the University Hospital, Kuala Lumpur from 1967 to March 1980 will be studied epidemiologically to determine if there are any differences in incidence, clinical features, types of leukemia and response to treatment as compared with Caucasian children. The possible value of BCG immunization in conferring protection against leukemia and the risk of malignancy in family members of children with leukemia will also be examined and compared with a control group of children.
Description provided by IARC and DKFZ with ICRDB/NCI support.
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3.2133,
SOFT TISSUE SARCOMA AND AGRICULTURAL CHEMICALS

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This is a case-control study of soft tissue sarcoma cases identified by the New Zealand Cancer Registry in which work histories will be obtained from 100-150 patients with soft tissue sarcoma or their relatives and a control group of other cancer patients. The objective is to see if the Swedish findings relating to soft tissue sarcomas with the use of agricultural chemicals including phenoxyherbicides and chlorophenols hold true in New Zealand.
Description provided by IARC and DKFZ with ICRDB/NCI support.
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3.2134,
GESTATIONAL TROPHOBLASTIC DISEASE IN YOGYAKARTA AND POSSIBLE ETIOLOGICAL FACTORS

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From the data available it is clear that trophoblastic neoplasms are frequent in Asia, including Indonesia, and in other tropical countries. Factors resulting from the different conditions of life in various parts of the world, such as race, nutrition, socio-economic status, hygiene, number of pregnancies and abortion may be responsible. In order to study these factors it is proposed to analyze the data from Yogyakarta, Indonesia, which has a high frequency of trophoblastic neoplasia. This study will focus on the epidemiological aspects of choriocarcinoma and hydatidiform mole with special reference to incidence, geographical distribution and etiological factors. Data on pathologically confirmed cases of choriocarcinoma during 1973-1981 and of hydatidiform mole from 1976 through 1981 will be collected, using data from hospital based cancer registration.
Description provided by IARC and DKFZ with ICRDB/NCI support.
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3.2135,
EPIDEMIOLOGICAL STUDY ON LUNG CANCER

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A case-control study on lung cancer is proposed in Fukuoka city in order to evaluate mainly familial factors along with other etiological factors such as smoking, occupation, air-pollution, and previous diseases. Five hundred hospitalized lung cancer cases are being asked to complete a uniform questionnaire. Controls, matched for age, sex, and residence are selected from the general population, and are asked to complete the questionnaire mailed to them. Concurrently, family composition and vital status are verified by Koseki - the Japanese population registration system.
Description provided by IARC and DKFZ with ICRDB/NCI support.
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3.2136,
FOLLOW-UP STUDY ON MORTALITY OF FRESHWATER ANGLERS

S. Tokudome, Saga Medical School, Dept. of Community Health Science, *Nabeshima, Saga 84001, Japan* (02292)

This is a follow-up study on mortality from 1975 to 1985 among approximately 10,000 members of non-professional freshwater anglers' society in order to examine possible increase in malignancy at such sites as lip, skin, lung, and stomach. The observed deaths are compared with those expected derived from mortality rates for the general population of Japan. In the meantime, relevant environmental and host factors are also examined.
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3.2137,
GASTRIC CANCER AND ENVIRONMENTAL MUTAGENS

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The objective is to delineate environmental factors in the etiology of gastric cancer. Living gastric cancer patients will be identified (survey of hospital records relating to gastroscopy and gastric surgery) and age- and sex-matched patients who have had cystoscopy and hernia or gallbladder surgery will be used as controls. Patients and controls will be interviewed on: (1) preparation and ingestion of foodstuffs and history of tobacco and alcohol use, (2) occupational exposure, (3) place of residence in Siena province and years outside this area, (4) genetic data and location of all first degree relatives. 24 hour urine specimens for mutagenicity studies, and drinking water specimens for nitrite and nitrate content studies will be collected. The mutagenicity data on Salmonella histidine revertants will be compared between the following groups: (a) living patients and age- and sex-matched controls and spouses before and after cessation from smoking, (b) first degree relatives of living and deceased patients and controls and spouses of each. Relatives living in the same household as patients will be analyzed separately from those living outside these households. The data will be compared with those obtained in similar on-going studies of San Marinese in San Marino and in the Detroit area of the U.S.
Description provided by IARC and DKFZ with ICRDB/NCI support.
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3.2138,
SOCIAL CLASS DIFFERENCES IN CANCER INCIDENCE IN SWEDEN 1961-1973

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The aim of this study is to examine whether there is a social class gradient in cancer incidence, all sites, in Sweden in the period 1961-1973. The study is based on record linkage between the 1960 population census and the Swedish cancer registry.
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3.2139,
RESEARCH PROJECT 'THOROTRAST' - INVESTIGATIONS TO EVALUATE THE LONG TERM EFFECTS CAUSED BY ARTIFICIAL RADIATION IN MAN

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Thorotrast, a 25% colloidal solution of Thoriumdioxide was used as a contrast medium between 1930-1950. After intravenous injection the ThO2-particles were stored in the reticuloendothelial system (RES). The project aims at discovering the late effects of chronic radiation exposure by studying a large number of patients injected with Thorotrast, comparing these results with a corresponding control group and examining the relationship between late effects and radiation dose. The study includes: biophysical investigations to calculate the total effective radiation dose; clinical, biochemical and radiological examinations to determine the state of health; classification of the causes of death for patients who died; statistical analysis of the results obtained. To date the names of 5159 Thorotrast patients and 5160 control patients have been obtained from records in different hospitals of West Germany: 901 Thorotrast patients and 669 control patients have been examined clinically. Living patients were reexamined every two years. Apart from this epidemiological study the following investigations are being carried out: animal experiments to (1) investigate the distribution of Thoriumdioxide particles within the body and calculate the resulting tissue doses and (2) to estimate the non-radiation effects of deposited Thoriumdioxide.
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3.2140,
PROSTATE CANCER SURVIVAL IN ALBERTA, CANADA

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The survival study of Alberta patients diagnosed between 1969-1973 with prostate cancer is concerned with epidemiological factors which were collected for a previous prostate cancer incidence study. The purpose of utilizing these data is to evaluate their possible effects on survival rates.
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3.2141,
STUDIES ON THE FREQUENCY AND INCIDENCE OF LYMPHOMA AND LEUKEMIA IN TWINS

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The project relates to the higher incidence of lymphomas and leukemias found in twins, and breaks this down into the type, age, sex, etc. of the twins.
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3.2142,
ANALYSIS OF CANCER EXPERIENCE IN THE FRAMINGHAM HEART STUDY

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The Framingham Heart Study has followed 5209 persons since 1949 by means of biennial examinations and hospital and death record surveillance. The primary aim has been to identify personal characteristics and physiological measurements related to the occurrence of heart disease. Data on other major illnesses have also been obtained. The analysis of cancer experience in this cohort will relate the incidence and mortality from cancer at each specific site to a wide variety of measurements accumulated during the last 25 years of follow-up.
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3.2143,
RADIATION-ASSOCIATED THYROID CARCINOMA

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An attempt is being made to find patients who had radiation to the thyroid area in childhood, study them

intensively by clinical and laboratory means, and detect the presence or absence of thyroid carcinoma. Patients who have possible tumors as a result of radiation are treated by thyroidectomy. The natural history of the thyroid tumors and the value of surgery, prophylactic thyroid hormone suppression, and radioactive iodide therapy of the neoplasms, as well as immunological methods for control of metastatic disease, are being studied.

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3.2144,

JAPAN-HAWAII CANCER STUDY

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In recent years the Japanese in Hawaii have experienced cancer incidence and mortality rates which are intermediate to the rates of indigenous Japanese and US-Whites. Because genetic variables are presumably held constant in comparisons between native and migrated Japanese, this shift in the cancer experience of the 'Westernized' Japanese in Hawaii strongly suggests that environmental factors play a major role in oncogenesis. Furthermore, this spontaneous sociomedical experience among the Japanese provides a unique opportunity to isolate specific environmental, biochemical and pathologic variables which may be etiologically associated with different types of cancerous lesions. Of special interest is the observed reciprocal relationship of gastric and colorectal cancer among the migrant Hawaii Japanese. They have manifested a falling rate for gastric cancer and a rising trend for malignant colorectal tumors. The study has utilized the examined population of the Honolulu Heart Program, which consisted of 8,006 men of Japanese ancestry who were born from 1900 through 1919 and seen from 1965 to 1968 in Hawaii. Approximately 6,800 of the men have since returned for a repeat examination, and these are the men now under surveillance in the Japan-Hawaii center study. There are three major end points in this surveillance: (1) The occurrence of new cases of cancer; (2) deaths due to different types of cancer; (3) appropriate pathologic findings from surgical specimens or necropsies.

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3.2145,

EPIDEMIOLOGICAL ANALYSIS OF EFFECTS OF RADIUM

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Epidemiological studies are being conducted in order to determine the health effects of exposure to radium. Persons exposed to radium in various parts of the United States are being traced from records of radium dial companies and from other sources. Follow-up of persons located includes determination of vital status and analysis of causes of death (obtained from death certificates) for all, and medical examination, measurements of body radioactivity, and analysis of autopsy reports or materials for part of the group. Analyses of morbidity and mortality are made within the group in relation to body burden of radium. Dose-response patterns are being determined for bone sarcomas with reference to bone sarcomas and carcinomas of the mastoids and the paranasal sinuses. Further analyses will involve other diseases. Mortality and morbidity in specific subgroups of radium cases (e.g., radium dial workers ascertained from employment lists) are being compared with U.S. statistics, with consideration of sex, and other demographic characteristics. At present, about 2,000 persons have been located and measured for radioactivity. Studies of the health of the offspring of certain groups (i.e., female radium dial workers) are also planned.

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3.2146,

IMMUNODEFICIENCY-CANCER REGISTRY

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The Immunodeficiency-Cancer Registry is a non-population based registry which attempts to collect all case reports of cancer in individuals who have a prior history of naturally occurring immunodeficiency disease. There are approximately 16 defined entities which are included in the Immunodeficiency-Cancer Registry having been accepted by the World Health Organization Committee on Primary Immunodeficiencies. Efforts are underway, however, to develop a population-base for the registry. One survey of U.S. medical institutions was performed during a 9-month period, November, 1975-July, 1976 to elicit responses from immunologists and paediatricians about the incidence of these 16 diseases; preliminary results indicate that the methodology, when improved, should yield a reliable indicator of the frequency of immunodeficiency diseases in the general population, and thus produce better statistics on the cancer risk for immunodeficient patients. For each case of immunodeficiency disease and cancer registered in the registry, we request (1) clinical history demonstrating immunodeficiency, (2) laboratory tests of immune function, (3) surgical pathology reports and autopsy reports and tumor specimens for independent pathological review.

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3.2147,

SEARCH FOR AN ETIOLOGICAL AGENT IN HODGKIN'S DISEASE AND RELATED LYMPHO-PROLIFERATIVE DISEASES

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There have been several recent reports of familial and non-familial clustering of Hodgkin's disease. The unusual aggregations suggest the possibility that Hodgkin's disease is caused by an environmental agent, possibly a horizontally transmitted virus. Results of HL-A typing indicate that out of a total population, only a subset is susceptible to development of Hodgkin's disease upon exposure to this hypothetical environmental agent. Some of these more susceptible individuals may possibly be found among the members of families with multiple cases of malignant lymphoproliferative diseases. The University of Southern California, school of Medicine, Cancer Research Program is currently involved in trying to identify these most susceptible individuals. In order to follow up the earlier studies of Hodgkin's disease as well as to obtain new information on the other malignant lymphomas, a broad study has been initiated of all malignant lymphoproliferative neoplasms diagnosed during 1972 and 1973 in Los Angeles county. The approximately 2,400 (ALL 180, CLL 24, multiple myeloma 360, Hodgkin's disease 440 and non Hodgkin's lymphomas 1,180) neoplasms expected during this two-year period are being studied in detail. The basis for the histological diagnosis will be reviewed by Dr. Lukes and his co-workers and, as a minimum, the pathological slides on all Hodgkin's and non-Hodgkin's lymphomas during 1972 will be reviewed.

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3.2148,

NATIONAL HUMAN MONITORING PROGRAM FOR PESTICIDES

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The National Human Monitoring Program for Pesticides is responsible for determining incidences, levels, and other evidence of pesticide exposure in the general population of the conterminous United States, and for identifying changes and trends. This programme currently comprises two major projects. The older of these consists of the collection and organochlorine pesticide residue analysis of adipose tissue samples collected from residents of cities selected according to a proportionate stratified-random design. For each of these 40 areas an annual quota reflecting age, sex, and race distribution at the most recent national census is defined. Approximately 1,600 human fat specimens are scheduled for collection annually. In addition to the individual results of the multi-residue analysis, data collected for each person sampled include: age, race, sex, geographic location, occupation, height, weight, and diagnoses at the time of sampling. All data are managed electronically, making retrievals of any of the above possible. More recently, in cooperation with the Public Health Service's Health and Nutrition Examination Survey II (HANES II), blood serum and urine are being collected from a sub-sample of 7,500 persons in the general population of 75 cities over a 3-year period to yield baseline data on levels of selected organochlorine insecticides in serum. Urine analysis will provide information on organophosphate and phenoxy herbicides, and other new classes of pesticides. A wide range of epidemiological studies is planned.

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3.2149,

HEALTH EFFECTS OF ASBESTOS EXPOSURE IN NAVAL SHIPYARD WORKERS

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A retrospective cohort of 9,000 male shipyard workers employed at the Pearl Harbor Naval Shipyard in 1950, and subsequently through 1968, has been identified. Complete work histories have been obtained for each man, as well as records of environmental levels of asbestos. Follow-up of these men for their vital status as of 1974 is in progress. Mortality from all causes, respiratory diseases, and site-specific cancer will be compared with that expected based on the mortality experience of the Hawaii population of comparable age, sex and race. Smoking histories will be obtained from the living cohort in Hawaii, who will then be followed prospectively for morbidity and mortality over the next several years. The possible synergism between smoking and asbestos exposure in the risk of cancer will also be examined.

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3.2150,

NEOPLASIA-PREDISPOSING GENES IN MAN

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A method has been developed which identifies a class of genes relatively important in neoplasia-predisposition in the general population and which measures the risk of malignant neoplasms for heterozygous carriers of each gene in this class. This method is based on autosomal recessive syndromes associated with cancer and leukemia. The heterozygous carriers of genes for each of these syndromes occur in the population at a frequency between 0.01 and 0.001, so that detecting a significant increase in risk of malignant neoplasm for the heterozygous carrier of any of these genes would imply that that gene is an important neoplasia-predisposing gene of man. An association between malignant neoplasms and each gene in this class can be detected by a retrospective study of the illnesses and causes of death in families with homozygous probands (affected with a particular autosomal recessive syndrome), since heterozygotes are frequent in such families. It is possible to measure the general risk of malignancy associated with each gene studied and to detect associations between specific types of malignant neoplasms and individual genes. These associations may provide useful leads for investigating the genetic basis of tumor induction in man by specific oncogenic agents.

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3.2151,

LONG-TERM MORTALITY OF STEELWORKERS

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The objective of this study is the identification of work areas, occupations, and processes within the steel industry that are associated with unusual mortality from specific diseases indicative of health hazards in the work environment. Two cohorts of steelworkers consisting of (1) all male workers employed at seven US steel plants in 1953 and (2) all oven workers employed at twelve coke plants, plus controls, in the USA and Canada in 1961 have been followed for mortality through 1970. Mortality rates for specific causes of death among men employed in various jobs and work areas are compared with rates from the total steelworker population. Reports have been prepared on coke oven workers, crane operators, and open hearth workers, sheet and tin mill workers, and masons. Methodological studies have been prepared that discuss proportionate mortality versus mortality rates, effects of using different kinds of control groups, and retiree mortality patterns as they compare to the total population-at-risk. The updating of vital status of all workers through 1975 was recently completed, along with the corresponding updating of mortality by work area, and the re-evaluation of cause-specific mortality patterns among coke oven workers. Other work areas in which excess cancer mortality was observed were the foundry (genito-urinary cancers), electric furnace (urinary cancers), sheet and tin mill (lymphatic and haemotopoietic cancers), and blacksmith shop (respiratory cancers).

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3.2152,

VIRGINIA TUMOR REGISTRY

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A central registry collecting data from several (32 at present time) Virginia hospitals, computerizing this data. Incidence and survival data are obtained on all cancer patients.

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3.2153,

MORTALITY EXPERIENCE OF PRINTING PRESSMEN IN THE UNITED STATES AND CANADA

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With the assistance of the Printing Pressmen's Union, a cohort of all members of this union in 1960 has been established (this particular cohort contains some 65,000 individuals). The mortality experience of the individuals concerned is being examined. As in other studies, expected deaths will be age, year and sex specific. In a second study, a cohort has been established of all members of the union local in New York City which includes all printing pressmen employed by newspapers and similar shops ('web pressmen') in 1954. Although this cohort contains fewer than 2,000 individuals, it will be possible to undertake virtually complete tracing of all its members and to undertake detailed consideration of appropriate hospital and pathological data. Again, expected deaths will be compared with those observed, by cause. A preliminary analysis has been completed.

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3.2154,

THE SEROEPIDEMIOLOGY OF THE EPSTEIN-BARR VIRUS (EBV)

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The aims of this study are (1) to provide further evidence for an etiological role of EBV in Burkitt's lymphoma (BL) and nasopharyngeal carcinoma (NPC), (2) to relate the spectra and titres of antibodies to EBV-determined antigens with the clinical status, the prognosis and the effectiveness of therapy of these two malignancies, (3) to ascertain the antibody status prior to the development of BL in a prospective study of BL in the West Nile district of Uganda, (4) to determine the effects of immunosuppressive diseases, such as Hodgkin's disease, or of immunosuppressive therapy, as used in case of organ transplant patients, on latent, persistent EBV infections and the EBV-related antibody patterns, (5) to evaluate the demonstration of EBV-associated nuclear antigen in the carcinoma cells of NPC biopsies as an aid in the diagnosis of this malignancy.

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3.2155,

CANCER SURVEILLANCE SYSTEM

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As part of the SEER program (surveillance, epidemiology and end results) of the National Cancer Institute, the aim is to collect from defined population of 2.3 million data on incidence and survivorship of all major forms of cancer.

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3.2156,

THE RELATIONSHIP OF UVB (ULTRAVIOLET) RADIATION TO CANCER OF THE SKIN IN MAN

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There is strong circumstantial evidence that skin cancer in man is causally related to chronic exposure to solar ultraviolet radiation. series of automatic, integrating UVB meters has been designed, built and installed in various locations. These meters measure sunburn-effective UVB continuously. Measurements of UVB are being compared to either incidence or prevalence of skin cancer in selected areas sufficiently differing in insolation in order to determine the relationship of UVB, stratospheric ozone concentrations and physical sunlight exposure to the induction of skin cancer in man.

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3.2157,

STATISTICAL METHODS IN CANCER EPIDEMIOLOGY

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The spontaneous occurrence of cancer in humans, or induced occurrence in laboratory animals, reflects the interplay of many variables. Also multivariate in nature are the factors influencing survival times or remission times of individuals with cancer, whether treated or left untreated. The multivariate statistical problems which arise may relate to identifying individually important variables which may be causative, making prognosis of survival or other predictions for cancer patients with a specified multivariate vector, and seeking to identify optimal therapeutic procedures for such patients. Data available for such analyses may be prospective or retrospective in nature, and for the prospective case will generally involve incomplete observations. Recent developments in mathematical models and statistical approaches for relating response to multivariate regressors, specifically models involving hazard functions and generalized logistic regression, open the way to handling such problems, and it is the effective use of such models and approaches that I plan to study. In some instances these approaches may bear modification as, say, using a classification approach when data are abundant but variables to be studied few in number. I anticipate that tie-ins with other problems of cancer epidemiology will develop. Related, or variant methods, may be appropriate in the study of potential environmental carcinogens. Methods for safety evaluation of such agents represent a preventive epidemiology approach.

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3.2158,

CANCER OF THE PANCREAS

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The study is designed to evaluate quantitatively the environmental factors suspected to be associated with the aetiology of cancer of the pancreas, and to investigate other possible risk factors. For each case, two controls are selected at the same hospital. Both index cases and controls are interviewed on demographic variables, past medical history and social and occupational history. The population will consist of approximately 500 cases and 1000 controls.

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3.2159,

RESPIRATORY EFFECTS OF CHLOROMETHYL ETHERS

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A prospective study of 125 male workers at a chemical plant by periodic chest x-rays and questionnaires was conducted from 1963 to 1968. In 1965 a spirogram was done in 103 men. Additional follow-up has been continued to the present. Ninety-one men had been exposed to the chloromethyl methyl ether containing bis (chloromethyl) ether as a contaminant. Each man was assigned an exposure index obtained by multiplying a semiquantitative time-weighted average exposure rating against the years of exposure. The men were divided into an unexposed and three exposed groups according to the magnitude of the index. The groups were similar except that the most heavily exposed group had more non-smokers and more light current cigarette smokers than the other groups. There was a dose-response relationship between chemical exposure and the prevalence of chronic cough and expectoration, and the 10 year incidence of bronchogenic carcinoma with no cases among lightly exposed men and increasing risk in moderately and heavily exposed men. Although the groups did not differ with respect to the frequency of abnormal forced vital capacity and forced expiratory volume in one second, there was a rough relationship between the degree of chemical exposure and the frequency of low end-expiratory flow rate on the spirogram. There was an inverse relationship between smoking habits and the risk of lung cancer. All of the cancers were small cell in type. Observation of the cohort is continuing.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.2160,

EPIDEMIOLOGY OF HISTOLOGICAL TYPES OF LUNG CANCER

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The continued annual increases in lung cancer mortality seem excessive in view of the static smoking behavior during the past decade, suggesting that other environmental influences need more study. A pilot study of incidence during 1968-1972 among residents of three counties in the Portland metropolitan area identified 2,002 cases. Most were smokers (97% in males, 80% in females); a minority had a family history of cancer (males 32%, females 42%). The different histological types had major differences in their socio-economic, geographical, and occupational risk patterns, suggesting that perhaps they should be regarded as distinct diseases. Major sex differences in socio-economic patterns of risk suggested the importance of occupational confounding among men. Occupational risk differences among both sexes far exceeded those noted with other risk factors, suggesting that occupational factors deserve primary emphasis in future efforts toward lung cancer control. Several occupations had high risks for three or more histological types, but much more common was the situation in which only a single histological type was excessively frequent in the presence of an unremarkabale rate for total lung cancer. Thus the identification of occupational hazards for lung cancer will become significantly more

sensitive if histology-specific rates are used rather than total rates. The study is currently being extended to include the years 1963-1977. In those occupations and industries where excessive lung cancer risks are confirmed, it is hoped to initiate hazard identification studies.
Description provided by IARC and DKFZ with ICRDB/NCI support.
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.2161,
STUDY OF ANIMAL CONTACTS IN LEUKEMIA
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Recent evidence has suggested that there may be significant relationships between leukemia occurring in household pets and that occurring in humans. The present analysis, conducted in collaboration with Dr. Hipolito Pabon of Colombia, is based upon the Tri-State Leukemia Survey of a decade ago. Detailed animal contact histories of large number of leukemic children as well as controls were taken. The results are being analyzed in terms of the numbers and types of animal contacts among the leukemic children and controls during their life-times as well as during the relevant pregnancies of the mothers. Analysis continues.
Description provided by IARC and DKFZ with ICRDB/NCI support.
SUPPORTED BY (Nc Supporting Organization Reported) funds n.a.

3.2162,
AMERICAN BURKITT'S LYMPHOMA REGISTRY
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OBJECTIVES: 1. To identify and confirm cases of Burkitt's lymphoma, particularly living patients, who became ill when living in the U.S. 2. To study tissues and sera from these patients for evidence of oncogenic viruses or immunity to such viruses.
Description provided by IARC and DKFZ with ICRDB/NCI support.
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.2163,
ETIOLOGY OF HUMAN CANCER
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The objective is to study the epidemiology of human neoplasms and to develop etiologic hypotheses through close bedside observation of individual patients. Adult and pediatric cancer patients are interviewed for clues to the etiology of their cancer. Clues identified through the interviews are pursued in clinical and epidemiological studies. In addition, laboratory studies have been carried out in several families with strong histories of cancer to identify possible inherited defects or environmental risk factors.
Description provided by IARC and DKFZ with ICRDB/NCI support.
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3.2164,
EPIDEMIOLOGY OF CANCER IN A LARGE NON-SMOKING POPULATION
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Approximately 73% of the population residing in the state of Utah are members of the Church of Jesus Christ of Latter-Day Saints (LDS -commonly called Mormons). This church proscribes the use of alcohol, coffee, tea, and tobacco. Using a population-based cancer registry with data from 1966 onward, cancer incidence is estimated to be 20% less in the LDS than the non-LDS within the state. Major contributions to this decrease are made by cigarette-associated sites. However, unexplained differences in the area of uterine cervical cancer, stomach and colon cancer exist. Decreases in cancer unrelated to religion are also noted, such as pancreas. Currently, analysis of registry records is being carried out to better characterize the differences by socioeconomic class, urban-rural differences, etc. In the near future, case-control studies to better identify specific etiologic agents will be mounted in ovarian cancer, cervical cancer, pancreatic cancer, colorectal cancer. A paper on cancer (melanoma and prostate) in relation to religion will be published in 1980.
Description provided by IARC and DKFZ with ICRDB/NCI support.
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.2165,
STUDIES ON THE PRESENCE OF ANTIBODIES TO MOUSE MAMMARY TUMOR VIRUS IN PATIENTS WITH BREAST CANCER AND SUITABLE CONTROLS
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OBJECTIVE: Search for antibodies to mouse mammary tumor cells and mouse mammary tumor virus in sera of breast cancer patients by using techniques such as fixed and membrane immunofluorescence tests and horseradish peroxidase test as seen by light microscopy. Furthermore, use of immunoelectron-microscopy techniques such as horseradish peroxidase and immunoferritin labeling. The search is comprised of sera from patients of various ages and of different nationalities and races and suitable controls. Sera from patients during various stages of disease and treatment are being investigated. Relationship of antiviral antibodies to suppression of in vitro lymphocyte stimulation is being studied.
Description provided by IARC and DKFZ with ICRDB/NCI support.
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.2166,
EPIDEMIOLOGICAL STUDIES ON THE FREQUENCY OF TUMORS IN FISH FOUND IN POLLUTED WATERS AND THOSE FOUND IN UNPOLLUTED WATERS
E.R. Brown, University of Health Sciences - Chicago Medical School, Medical School, Dept. of Microbiology, *2020 W. Ogden Ave., Chicago, Illinois* 60612
OBJECTIVE: An ongoing (1967) study to show that the presence of carcinogens in water directly influences the incidence of tumors in fish and mammals (including human beings) utilizing such waters for extended periods.
Description provided by IARC and DKFZ with ICRDB/NCI support.
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.2167,
EPIDEMIOLOGIC SURVEY ON HAWAII RESIDENTS
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In 1975, a brief epidemiological questionnaire was added to the on-going Health Survey of Hawaii, a representative, statewide survey patterned after the US National Health Survey. About 6,000 households are surveyed annually, and the epidemiological questionnaire will be administered for a period of 5 years. This questionnaire seeks information on smoking, drinking and dietary habits, which can be related to various demographic data (age, sex, race, place of residence, education, income, etc.), which are collected routinely in the survey. Data from the first year of the epidemiological survey are now being analyzed in relation to some of the interesting differences observed in cancer incidence and mortality among the various ethnic groups in Hawaii. The cohort developed through this survey will be followed prospectively for cancer risks in relation to antecedent dietary and smoking habits.
Description provided by IARC and DKFZ with ICRDB/NCI support.
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.2168,
FAMILIAL AGGREGATION OF HODGKIN'S DISEASE
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Using all cases in Hodgkin's Disease in five counties during a four-year period, the secondary familial occurrence rate will be determined and compared with expected rates in the general population from (1) the same geographic area and time-period; and (2) extrapolated estimates of earlier rates for the same area. California Tumor Registry cases 1970-1973, numbering 440, serve as the source of cases. A mail survey questionnaire serves as the investigating tool.
Description provided by IARC and DKFZ with ICRDB/NCI support.
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.2169,
PROGRAM IN BIOMETRICS OF CANCER EPIDEMIOLOGY
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The principal objective of the program is to continue to develop, apply, and disseminate the kind of statistical technology which will be of immediate practical use in epidemiological investigations and other phases of cancer control. However, there is a gradual shift in emphasis from the technical or technological aspects to the serious strategic problems which limit the effectiveness of research in cancer epidemiology.
Description provided by IARC and DKFZ with ICRDB/NCI support.
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.2170,
EPIDEMIOLOGY OF HEPATIC ANGIOSARCOMA
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This project started about four years ago with the discovery of the association between hepatic angiosarcomas and long-term exposure of industrial workers to vinyl chloride. Subsequently, a survey of pathologists in the USA was conducted and to date about 250 cases of human hepatic angiosarcoma have been identified and the slides reviewed. As noted, some of these cases were caused by vinyl chloride. Other cases were caused by or associated with exposure to Thorotrast or to arsenical compounds. The majority of the cases have no known environmental or industrial aetiology. The epidemiological study which is continuing involves obtaining detailed work and exposure histories from all these patients or from their living relatives. The pathological aspects of the study are conducted by Drs. Thomas, Popper and Teller. The epidemiological aspects are under Dr. Falk and other epidemiologists at the Center for Disease Control in Atlanta, Georgia.
Description provided by IARC and DKFZ with ICRDB/NCI support.
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.2171,
MORTALITY EXPERIENCE OF CERAMIC TILE SETTERS IN THE NEW YORK CONSTRUCTION INDUSTRY
I.J. Selikoff, City University of New York, Mount Sinai School of Medicine, School of Medicine, Dept. of Community Medicine, *1 Gustave L. Levy Pl., New York, New York* 10029
We have been interested in obtaining information concerning the mortality experience of individuals working in the construction industry in New York, potentially indirectly exposed to asbestos dusts within that industry, but not directly so exposed by virtue of the nature of their own work. One such group has been the ceramic tile setters, a 'finishing trade', working in the same buildings as trades using asbestos materials in other work, but whose own materials do not contain asbestos. We have established a cohort of all ceramic tile setters in the New York construction industry in 1955 who were members of their union for at least five years. This was done with the cooperation of the Tile Setters' Union. The mortality experience of this cohort is being investigated through 1973. A sample of 100 tile setters was also clinically examined.

Description provided by IARC and DKFZ with ICRDB/NCI support.
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.2172,

EPIDEMIOLOGY OF CANCER OF THE CERVIX IN HIGH RISK POPULATIONS

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This study examines factors that have been found to be associated with cancer of the cervix: large number of sexual partners; contraceptive types which expose women directly to their partners; early age at first intercourse, marriage, and pregnancy, number of pregnancies and use of the vaginal douche. These factors are being examined in women known to be at higher than usual risk of cancer of the cervix: Blacks and, because of their low socio-economic status, Chicanos. In addition, a number of investigators have inquired into the presence of microorganisms or antibodies to them in patients with cancer of the cervix and in controls. Almost always, cases reveal much larger percentages possessing antibodies to herpes type 2 virus. The aim is to examine whether cases can be distinguished from controls on the presence of Herpes in instances where there has been only one sexual partner as well as in instances where there have been many. It would also be of interest to know whether among cases with only one and those with many partners the proportion of women with antibodies is the same, and higher than among controls with one or many partners. If these conditions were obtained, it would suggest that herpes type 2 virus is strongly implicated. The sources of lower social class Chicano and black women with cancer of the cervix and appropriate controls were the Los Angeles County-University of Southern California Hospital, the Martin Luther King Jr. Hospital in Los Angeles, Harbor General, and California Hospital. Controls consist of women patients at the same hospitals, matched on age, with non-neoplastic, non-pelvic diseases. Each case and control will have 15 ml of blood drawn. Antibody titre to herpes virus types I and II was quantitated using a modification of release of 51 chromium. Data collection was completed in July 1979. 255 Chicana and 121 black cases have been interviewed. In addition, data on 151 black and 194 Chicana controls were gathered.

Description provided by IARC and DKFZ with ICRDB/NCI support.
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3.2173,

THYROID CARCINOMA IN NON-ORIENTAL HAWAIIAN NECROPSY POPULATION

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As ascertained in a previous study (Arch. Path., 92, 6-13, 1971) the prevalence of occult thyroid carcinoma in a Hawaiian Japanese necropsy population was 24 percent in 100 consecutive necropsies of the Japanese born in Hawaii and Japan. The present study is to determine the prevalence of thyroid (occult) carcinoma in whites and other races using the same histological and cytological criteria.

Description provided by IARC and DKFZ with ICRDB/NCI support.
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3.2174,

INCIDENCE OF SECOND SQUAMOUS CANCERS OF THE HEAD AND NECK IN SMOKERS AND THOSE WHO HAVE CEASED SMOKING

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The aim of the study is to compare equal groups of individuals who have been smokers and who have been cured of one squamous cancer of the head and neck (excluding skin) dividing them into two subgroups: (1) those who continue to smoke three years after the control of the first cancer; and (2) those who cease smoking with the discovery of their first cancer. The incidences of second cancer in the two groups can then be compared over a long period extending to 20 years or the lifetime of most patients.

Description provided by IARC and DKFZ with ICRDB/NCI support.
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3.2175,

MORTALITY EXPERIENCE OF WORKERS IN THE PAINTING TRADES IN THE U.S. AND CANADA

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Workers in the painting trades have a variety of exposures to known or suspected carcinogenic agents, ranging from asbestos dusts to benzene and other solvents. Vinyl chloride exposure has also been identified in some circumstances. With the cooperation of the Painters' Union in the United States and Canada, we are establishing a cohort of all registered members of the union in 1965. These individuals will be followed prospectively from that point onwards and their mortality experience analyzed. It will probably be possible to categorize the full cohort by trade (general painters, dry wall construction workers, sandblasters, iron painters, paper hangers, wood finishers, paint makers, etc.) and the mortality experience of the various groups will be separately considered. Another cohort of all members of the Painters' Union in New York City in 1960, who had maintained membership for at least five years, is also available and will be studied prospectively from that point to the present. In order to obtain background information concerning types of lesions which may be of particular interest, 1,000 members of the union have already been examined clinically, with appropriate laboratory studies, and another 2,500 men will be studied during the two coming years. In addition, industrial hygiene studies of the environment in the painting trades are being undertaken.

Description provided by IARC and DKFZ with ICRDB/NCI support.
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.2176,

LONG-TERM PROSPECTIVE OBSERVATION OF ASBESTOS INSULATION WORKERS IN THE NEW YORK METROPOLITAN AREA

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On January 1, 1943, there were 632 members of the Asbestos Insulation Workers' Union in the New York metropolitan area. The entire cohort has been followed prospectively since. All those alive January 1, 1963, were clinically investigated and, among other things, cigarette smoking habits were recorded. Mortality experience of the cohort is being analyzed. By January 1, 1963, 262 individuals had died and approximately 250 more deaths had been recorded by the end of 1976. In addition, 890 workers joined this union between January 1, 1943, and December 30, 1962, and their experience is also being studied epidemiologically and clinically. Their mortality experience will reflect risk past World War II.

Description provided by IARC and DKFZ with ICRDB/NCI support.
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3.2177,

CANCER EXPERIENCE OF VINYL CHLORIDE POLYMERIZATION WORKERS

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During 1974, over 1,200 vinyl chloride polymerization workers were examined in a clinical survey, and a great deal of clinical, biochemical, x-ray and pulmonary function data recorded. In addition, details concerning vinyl chloride and other chemical exposures were noted, with complete occupational histories (including other than vinyl chloride employment). This cohort of vinyl chloride-exposed workers (approximately 1/5 of the vinyl chloride polymerization workers employed in the U.S.) is being observed prospectively. Their mortality experience will be analyzed and compared with expected deaths by cause.

Description provided by IARC and DKFZ with ICRDB/NCI support.
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3.2178,

NATIONAL LARGE BOWEL CANCER PROJECT

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To establish correlations between geographical distribution of colorectal cancer rates and, e.g., the distribution of dietary, cultural, geochemical phenomena that may lead to a better understanding of the etiology of these cancers and eventually to their prevention. We are especially interested in the relationship between carcinogenic factors (e.g., in animal fat and beef) and protective factors (e.g., antioxidants such as selenium and vitamins) that together give the observed incidence rates.

Description provided by IARC and DKFZ with ICRDB/NCI support.
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.2179,

MORTALITY EXPERIENCE OF TEXTILE DYERS AND PRINTERS

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Utilizing pension and welfare fund records of the Textile Workers' Union of America, a cohort is being established of all registrants in this fund in 1960 whose participation had begun in 1950 or before. In this initial investigation, the mortality experience of the entire group will be analyzed for the period 1960-1975. Preliminary study indicates that some 2000 deaths will be available for such analysis.

Description provided by IARC and DKFZ with ICRDB/NCI support.
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.2180,

EPIDEMIOLOGY OF MALIGNANT MELANOMA

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The objectives include a study of the role of sunlight in the aetiology and tumor progression of malignant melanoma. In addition, there are studies which will be related to family and ethnic factors in malignant melanoma.

Description provided by IARC and DKFZ with ICRDB/NCI support.
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3.2181,

RELATION OF INFECTION WITH HEPATITIS B AGENT TO NEOPLASIA IN PATIENTS WHO HAVE RECEIVED KIDNEY TRANSPLANTS

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Patients who received renal transplants have a high incidence of malignant tumours, particularly reticulum cell sarcoma. A prospective study is being undertaken to determine whether the pretransplant presence of HBsAg or anti-HBs has any effect on the subsequent development of tumors.

Description provided by IARC and DKFZ with ICRDB/NCI support.
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3.2182,

EPIDEMIOLOGICAL STUDIES OF URANIUM MINERS AND MILL WORKERS

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Uranium miners have been found to have an excess of lung cancer and mill workers to have an excess of lymphomas. A much larger group of mill workers is now being studied by a retrospective cohort study to determine the magnitude of the lymphoma excess. Identification of the substance responsible is being attempted. Two groups of uranium miners are being studied, one of about 4,300, and a much larger one of about 15,000. These groups are being used to determine exposure-response curves, and the different factors which influence the shape of those

curves; effects of exposure on the sex-ratio of offspring, the effect of age at first exposure on incidence and latent period, and the dose rate effect.
Description provided by IARC and DKFZ with ICRDB/NCI support.
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.2183,

STUDY OF THE INCIDENCE AND NATURAL HISTORY OF GENITAL TRACT ANOMALIES AND CANCER IN OFFSPRING EXPOSED IN UTERO TO SYNTHETIC ESTROGENS

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Synthetic estrogenic substances (DES) have been administered to pregnant women for approximately three decades, primarily with the intent of preventing spontaneous abortions. From 250,000 to 1,000,000 females and an equal number of males were exposed to DES during gestation. Recently, studies have been reported linking such exposure to DES with development of specific malignancies and other abnormalities of the female lower reproductive tract. Whether significant abnormalities of the genitourinary system also occur among males is not known. The aims of this project are to follow the course of development of persons exposed to DES in utero (and comparison groups of unexposed persons) in order to detect the occurrence of and secure treatment for possible anomalies or malignancies which may arise. Over a period of five years of follow-up, for subgroups at various ages when entering the project, the experience of groups remaining free of all pathology, developing new pathology, continuing with pathology similar to that at entry, or treated in accordance with one or more special protocols, will be analyzed. The risk of these outcomes will be determined among cohorts where DES exposure status is known, and treatment protocols may be devised and implemented for particular outcomes which are observed.
Description provided by IARC and DKFZ with ICRDB/NCI support.
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.2184,

DESAD PROJECT - INCIDENCE AND NATURAL HISTORY OF GENITAL TRACT ANOMALIES IN WOMEN EXPOSED IN UTERO TO NON-STEROIDAL ESTROGENS

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This study is intended to assess, comprehensively, the magnitude and severity of the health hazards to exposed daughters which may result from the administration of exogenous, non-steroidal estrogens (DES) to pregnant women over the past three decades in the United States. Beginning with available medical records in selected areas of the country, exposed and unexposed offspring have been identified, contacted, and entered into the study in a manner designed to eliminate selection bias. For subjects presenting themselves independently or by referral from physicians, verification of exposure must have been obtained before entry. These self-selected groups are examined and followed in the same manner as those identified by review of records. At entry into the study, all participants receive a standard gynecological and colposcopic examination, provide cervical and vaginal cytology specimens, have biopsies taken when indicated by colposcopy, and complete a general female health history interview. Information regarding the participant's mother is also obtained. At yearly (or closer) intervals, each participant is to return for examinations similar to those at entry and provide updated health information. To date, over 1,500 exposed and 750 unexposed women indentified through the review of prenatal records have entered the study. Over 1,800 women in the walk-in and referral categories have entered. Many participants have now been followed four to five years. Publications have been completed concerning the baseline pathological, cytological, colposcopic, gynecological, and obstetrical findings. Evaluation of the changes over time of these findings, recommendations as to health care and/or treatment, and planning for the long-term follow-up of this cohort remain as the important tasks of this study.
Description provided by IARC and DKFZ with ICRDB/NCI support.
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.2185,

PROSPECTIVE STUDY OF THE RELATIONSHIP OF HORMONAL AND SOCIOLOGICAL FACTORS TO THE DEVELOPMENT OF CANCERS OF VARIOUS SITES

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The objective is to see if serological changes found in cancer patients antedate the development of their disease by comparing serum specimens from patients and controls taken at the same time and before cancer had developed in the patients. Serum was collected in 1974 from nearly 26,000 volunteers in Washington County, Maryland, and stored at minus 100 degree F. In addition to identification data, information was collected on marital status, education, smoking, date of last menstrual period (for women), and medications, with special emphasis on hormonal preparations. A cancer registry has been maintained in the county since 1958. When sufficient numbers of cases have developed since 1974, serum of cases and matched controls will be withdrawn from storage to be examined for hormone, antibody, protein, or trace metal levels, as indicated by previous concurrent case-control studies.
Description provided by IARC and DKFZ with ICRDB/NCI support.
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.2186,

A PROSPECTIVE STUDY OF CANCER RISK IN TUBERCULOSIS

I.I. Kessler, University of Maryland, Baltimore Professional Schools, School of Medicine, Dept. of Epidemiology & Preventive Medicine, *655 W. Baltimore St., Baltimore, Maryland* 21201 (D-IARC-79-831)
Interest in the long-hypothesized association between tuberculosis and cancer has been intensified by laboratory studies demonstrating that tubercle bacilli (i.e. BCG) potentiate host immune responses to challenge. Recent experiments in man suggest that BCG not only evokes non-specific cell-mediated immunity but also increases host resistance to specific tumors such as melanoma, sarcoma and breast cancer. In view of these findings, a type of natural experiment in cancer prevention is underway. A large cohort of tuberculosis patients is followed prospectively through time to death or survival as of December 31, 1974. The outcome variables of interest are cancer mortality and morbidity. Observed cancer risk will be compared with that of the contemporaneous general population similar in age, sex and race. The prospective design of the study will make it possible to study the association (if any) between tuberculosis and all types of cancer: Those in which it is significantly positive, those in which it is significantly negative and those in which there is no significant relationship at all. Retrospective studies do not have this capacity. Should a significant relationship between antecedent tuberculosis and cancer be demonstrated in this population and confirmed by additional studies, the findings could ultimately lead to mass BCG or tuberculin vaccination among the young as a cancer preventative.
Description provided by IARC and DKFZ with ICRDB/NCI support.
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3.2187,

IDENTIFICATION OF HIGH-RISK OCCUPATIONAL GROUPS

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Evidence from the laboratory as well as from clinical observations and epidemiological studies is substantiating earlier findings on the role of occupational factors in human carcinogenesis. Recent clinical and epidemiological evidence relating environmental exposure to such materials as asbestos, vinyl chloride, radiation, etc. strongly suggests that a major effort should be undertaken to identify occupational agents which may be responsible for human cancer, parkinsonism and other chronic disease. An etiologically meaningful analysis of occupational histories must have at least two characteristics: first, the analysis must be conducted in such a fashion as to permit comparisons with the findings of previous investigators; and second, the analysis must make identification of potentially dangerous occupational exposures possible. To accomplish these dual purposes, two completely independent analyses of occupational data are being undertaken, the first in accordance with the United States Census Bureau Index of Industries and Occupations, making it possible to compare results with those of previous investigators who have used the same index, and the second classifying all occupational exposures judgmentally, for the purpose of identifying all possible potentially hazardous occupational or industrial categories. After identifying specific occupational hazards in this fashion, previous investigators could be contacted with a view to reanalyzing their data in terms of the potentially dangerous occupations or industries newly identified.
Description provided by IARC and DKFZ with ICRDB/NCI support.
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3.2188,

STUDY OF LYMPHOID TISSUES IN NEOPLASIA

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This study is designed to measure the risk of subsequent development of cancer in persons who have undergone surgical removal of the vermiform appendix and/or palatine tonsil and to compare this risk with that in a control population. There has been a recent increase of interest in the lymphatic system and its relationships to normal and abnormal growth processes. To this end, an attempt is being made to trace a cohort of approximately 5,000 persons who were appendectomied and another cohort of approximately 4,000 persons who had their tonsils removed at the Johns Hopkins Hospital from 1925 to 1936. When traced, the mortality and, perhaps, incidence of cancer among them will be compared to that of a matched control group who underwent other types of surgery at Johns Hopkins during the same period of time. Both the appendectomy and tonsillectomy cohorts have been identified and follow-up as to survival and cause-specific mortality is now underway.
Description provided by IARC and DKFZ with ICRDB/NCI support.
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.2189,

AN INVESTIGATION OF THE MALE ROLE IN CERVICAL CANCER

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Studies utilizing a number of different approaches suggest that the male sex partner may play a role in the aetiology of cervical cancer. Demographic analyses reveal higher cervical cancer mortality rates among married and previously married women than among single women or virgins. A possible association between penile and cervical cancer has been demonstrated. Considerable evidence has accumulated on the relationship between cervical cancer and the venereally transmitted genital herpes virus, HSV-2. The results of these studies have increased the likelihood of a significant male role in cervical carcinogenesis. The study is designed to provide an additional test of the venereal hypothesis in the pathogenesis of cervical neoplasia. The approach represents an attempt to answer the following question: Is the risk of developing cervical cancer increased among the wives of men who - at sometime in their lives - were married to other women who developed cervical cancer? The study begins with the identification of a large group of women who had cervical cancer in Greater Baltimore during the past 20 years. The husbands of these women are investigated to the extent of identifying all their previous and subsequent wives ('case' wives). A random sample of 'control' wives, similar to the 'case' wives in demographic and marital characteristics is then selected. The cohorts of 'case' and 'control' wives are traced prospectively to death or survival at a recent point in time. The ultimate risk of cervical neoplasia among the two cohorts is compared, utilizing actuarial techniques. This approach affords a direct test of the role of any venereally transmitted male factor in cervical cancer, whether it be viral, chemical or otherwise.
Description provided by IARC and DKFZ with ICRDB/NCI support.
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3.2190,

TRI-COUNTY STUDY OF CANCER OF MOUTH, ESOPHAGUS, PHARYNX, LARYNX, STOMACH, COLON, RECTUM, LUNG AND BLADDER

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There have been suggestions that diet, alcohol ingestion, oral conditions, and smoking are related to cancer of the mouth, esophagus, and stomach, and that alcohol ingestion and smoking are related to cancer of the larynx. It has also been hypothesized that cruciferous vegetables lower the risk for colon cancer of the lung and bladder. These relationships are the subject of this inquiry. To avoid hospital-related bias and to obtain detailed information on each case, all new cases of cancer at these sites in Erie, Niagra and Monroe Counties in New York State are interviewed. All controls are matched on age (within 5 years) and sex and reside in the neighborhoods of the cases. To obtain all corroborative evidence possible as to dietary habits of subjects, a sample of spouses of cases and controls are also being interviewed. Cases and controls are also asked to complete a 24-hour dietary recall. 1,047 cases comprised of 179 mouth, 108 esophagus, 197 larynx, 37 pharynx, 169 stomach, 270 colon, and 87 rectum cancers have now been interviewed and interviews with lung and bladder cancer cases have begun. In addition, 805 controls, 116 control spouses and 119 case spouses have been interviewed. Data collection will continue as scheduled over the next several years. Multivariate analyses of the results will be carried out for each site as sufficient numbers are obtained. Analysis of 100 case/spouse and 100 control/spouse pairs to determine extent of agreement with regard to the subjects' dietary habits has been completed and a paper is in press.

Description provided by IARC and DKFZ with ICRDB/NCI support.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.2191,

STUDY OF THE SOCIO-ECONOMIC, ENVIRONMENTAL, AND DEMOGRAPHIC FACTORS THAT MAY INFLUENCE HEALTH STATUS OF UNITED STATES POPULATIONS

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The long range objective is to develop predictive relationships between the socio-economic, demographic and environmental characteristics of regional and local populations and the general health status of these populations. Special attention has been given to the identification of the causes of mortality that may be related to the effluents from existing or proposed major energy systems. A procedure for standardizing mortality measures using county-level socio-economic, environmental, and demographic variables is being developed. The data are derived from 1970 Census Data, 1969-1971 US Vital Statistics, and recent pollution, climate, cigarette and alcohol consumption data. This data base is fully developed for the entire continental United States. Preliminary analyses of subsets of data suggest that about 50% of the variation in various mortality measures can be attributed to socio-economic, environmental, and demographic variables. Current investigations are examining a number of questions including whether the relative contribution of different variables to explained variance in mortality is consistent among geographic regions and whether the influence of pollution on mortality patterns is consistent among populations of differing socio-economic characteristics. The goal of these analyses is an improved understanding of the interplay of factors underlying death and disease risks which in turn will allow more precise predictions of the expected health status of human populations.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.2192,

CHILDHOOD ENVIRONMENT AND RISK OF HODGKIN'S DISEASE

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The objectives of this study are (1) to evaluate the hypothesis that risk of Hodgkin's disease is a function of factors in the childhood environment which inhibit infectious transmission; in particular, family size, birth order, and social class; (2) to re-evaluate the association between tonsillectomy and Hodgkin's disease; (3) to evaluate occupational exposures and Hodgkin's disease; (4) to establish a serum bank. This is a two-part population-based case-control study. Part I is conducted in a defined population in eastern Massachusetts. A 4 1/2 year incidence case series has been identified and surviving cases interviewed at home. Age- and sex-matched controls are drawn from the general population and similarly interviewed. Siblings of cases comprise a second control group. Sera are obtained from cases and sibs. Part II is conducted in a defined population in Detroit, Michigan. A similar incidence series has been identified and information is gathered from live cases and sibling controls by mail questionnaire.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.2193,

RISK OF NEOPLASIA IN NEIGHBORHOOD ASBESTOS DISEASE

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It is known that mesothelioma can occur in relatives of asbestos workers. However, it is not known whether or not mesothelioma or lung cancer occurs with greater frequency in persons with low-level exposure, for example, those living near an asbestos plant. We have established cohort of all males over the age of 18 living within a half mile of an asbestos plant in Paterson, New Jersey, 1942-1943; there were approximately 2,500 such individuals. As a control group, we have listed a cohort of men with identical qualifications in another neighborhood of the same city, with similar social strata, but without an asbestos facility. All members of both cohorts are being traced through 1974 and their mortality experience evaluated. We have successfully traced over 95 percent of both groups. In addition, lung tissue of those who have died is being analyzed for its asbestos content, quantitatively, and settled dust in homes at varying distances from the index factory, taken from attic rafters, etc., is being studied for its asbestos fiber burden. In both the epidemiological and environmental investigations, workers employed in the factory and their families are excluded. The first mortality analyses of these data are now completed. Total mortality, total cancer and lung cancer deaths did not differ in the two neighborhoods 20-35 years after first exposure. Follow-up will continue.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.2194,

EPIDEMIOLOGY OF MALIGNANT MELANOMA

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The incidence of malignant melanoma has increased markedly over the past thirty years. The male incidence per 100,000 in Upstate New York has increased from 1.3 in 1941 to 3.4 in 1970. In the same period female incidence rates increased as well. This study aims to examine the effect of sunlight exposure, geography, ethnicity, genetics, hormones, exposure to chemical carcinogens and irradiation on the development of the disease. Cases and controls are being interviewed at Roswell Park Memorial Institute. We plan to continue to interview cases as they occur over a period of five years, until we have approximately 800 cases. Control matched 2 for 1 on age and sex with cases are patients with neoplasms probably unrelated to melanoma, e.g., cancer of the lung and colon. Data collection is on-going. We have interviewed 357 melanoma cases and 375 controls. A preliminary analysis is being planned.

Description provided by IARC and DKFZ with ICRDB/NCI support.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.2195,

OCCULT CARCINOMA OF THE THYROID GLAND

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A comparative study of occult carcinomas of thyroid glands was done to evaluate relative prevalence in the Japanese living in Hawaii (24%), and in Northern Japan (28%), Canada (5%), Columbia, South America (5.6%) and southern Poland (9%). The Japanese were found to have a much higher prevalence of these lesions although the prevalence of clinical cancer was not increased. The proiect is being continued in the Hawaii-Japanese, and various environmental factors such as diet will be analyzed. Other races in Hawaii are also being studied.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.2196,

SELENIUM OCCURRENCE AND HUMAN CANCER MORTALITY - FAT AND BEEF CONSUMPTION AND HUMAN CANCER MORTALITY

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The aim of this study is to relate selenium occurrence to human cancer mortality. Crude and some age-adjusted mortality show an inverse relationship to selenium bioavailability. Age-adjusted mortality for various cities and states in the United States has been obtained, but less than state-wide data is difficult to obtain. We would like to relate selenium in blood or bioavailability in various countries throughout the world. A major report has appeared in Arch. Env. Hlth 31, 231-235, 1976. The relation between fat and beef consumption to human cancer is also being studied.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.2197,

CASE-CONTROL STUDY OF USE OF OXIDATIVE HAIR DYES AMONG FEMALE CANCER PATIENTS

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This case-control interview study will attempt to determine whether women with cancers at the sites listed below have a history of more frequent exposure to oxidative hair dyes than women who are of the same age and social class, but who are either healthy or hospitalized for illnesses other than cancer. Cancer patients will be interviewed at both the Princess Margaret Hospital, Toronto, and the Ontario Cancer Foundation Clinic, Victoria Hospital, London. It is proposed to interview about 35 patients with cancer at each site at each center. In Toronto, two controls for each case will be selected at random from the same neighborhood as the cases; in London, two controls for each case will be selected from female patients admitted to the hospital in which the clinic is located. Controls will be matched to the cases for age, within 5 years on either side of the case's age. Results for breast and endometrium have been published and publication of the full study is expected within one year.

Description provided by IARC and DKFZ with ICRDB/NCI support.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.2198,

HISTORICAL-PROSPECTIVE STUDY OF THE LONG-TERM HEALTH EFFECTS OF EXPOSURE TO FIBROUS GLASS AND MINERAL WOOL

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Objective is to determine the cause-specific mortality experience of workers in the fibrous glass and mineral wool industries for periods up to 50 years after first exposure and relate this to duration and intensity of exposure and to the experience of the general population. Cohorts consisting of male workers with one year or more experience (exposure) in manufacturing between Jan. 4, 1945, and Dec. 31, 1963, will be developed. Vital status of this cohort will be determined as of Dec.31, 1973. Total cohort size is

estimated to be about according to statistical analysis. The risk of death from selected causes will be established with a detailed examination of malignant neoplasms.
Description provided by IARC and DKFZ with ICRDB/NCI support.
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3.2199,
NATURAL HISTORY OF CARCINOMA IN SITU OF THE VULVA AND RESPONSE TO VARIOUS FORMS OF THERAPY
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Carcinoma in-situ of the vulva is a 'new' disease with a rapidly rising incidence curve. It occurs in young women and does not seem to be associated with invasive carcinoma of the vulva. Some cases have disappeared spontaneously. The present study continues to find, record, and observe cases of carcinoma in-situ of the vulva, to gather data regarding race, age, parity, concomitant venereal disease, concomitant cancer of other location, occupation and - in some cases - response to various modes of therapy.
Description provided by IARC and DKFZ with ICRDB/NCI support.
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3.2200,
BACKGROUND RADIATION AS A CARCINOGENIC HAZARD
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OBJECTIVES: To compare cancer incidence and mortality rates with background radiation levels in various regions of the world. Comparisons include components of background radiation, and all the various types of malignancies and anatomical sites.
Description provided by IARC and DKFZ with ICRDB/NCI support.
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3.2201,
ASSOCIATION OF LUNG CANCER WITH CIGARETTE SMOKING
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The objective of this retrospective study is to analyze differences in lung cancer incidence rates as a function of cigarette type and smoking habits among case-control groups in Austria, France, Germany, Italy, Scotland, Cuba and U.S.A. Interviews with hospital patients are conducted to obtain data regarding cigarette brands smoked, number of years using each brand, total number of years smoking, patterns of smoking, drinking habits and demographic data. Data for approximately 500 cases and 1,000 controls are collected annually in each participating country. Central data analyses are performed by Enviro Control, Inc., Rockville, Maryland 20852, U.S.A. (Dr. C.J. Lynch).
Description provided by IARC and DKFZ with ICRDB/NCI support.
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3.2202,
ESTROGENS AND BREAST CANCER RISK; RESERPINE AND BREAST CANCER RISK; ESTROGENS AND ENDOMETRIAL CANCER RISK
B.E. Henderson, University of Southern California, School of Medicine, Dept. of Pathology, *2025 Zonal Ave., Los Angeles, California* 90033
OBJECTIVES: (1) To determine the role of estrogens given for menopausal symptoms in the development of breast and uterine cancer. (2) To evaluate female hormone levels in female relatives of bilateral breast cancer patients less than 50 years old. (3) To evaluate female hormone levels and dietary practices in high school students of the Seventh-Day Adventist Academies in Los Angeles.
Description provided by IARC and DKFZ with ICRDB/NCI support.
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3.2203,
CASE-CONTROL STUDY OF OCCUPATION AND CANCER
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This study aims to explore differences between cases and controls in relation to occupation, exposure to chemicals, tobacco and alcohol use, diet, past history and family history. Cases are identified through the Cancer Surveillance Program at Los Angeles County/University of Southern California. Controls are selected on a nearest-neighbor basis, and matched by age, race, and sex. It is expected that, depending upon site, 200-600 cases and matched controls will be studied.
Description provided by IARC and DKFZ with ICRDB/NCI support.
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3.2204,
CHARACTERIZATION OF PROSTATIC CARCINOMA AMONG BLACKS
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The aims of the study are to: 1) Compare the clinical features, plasma hormone (testosterone, oestrone, oestradiol, and prolactin) levels, epidemiological factors, and tumor morphology in high-risk U.S. Blacks, 2) search for factors that may be associated with the development of prostate cancer in the U.S.A., 3) determine in postmortem material the frequency of incidental (non-invasive) carcinoma of the prostate in the two population groups and 4) study the relation between incidental carcinoma and non-neoplastic prostatic diseases and morphological changes in the liver, adrenal glands, breast, testis, and pituitary gland. All new untreated patients with prostate carcinoma are being admitted to the study. Blood samples are drawn from all male patients after admission to the urological services of the collaborating hospitals. All patients with histologically confirmed carcinoma of the prostate and all controls are interviewed about social and demographic factors, family history, food consumption habits, sexual history, past history of illnesses and operations, history of urogenital diseases, and use of contraceptives by sexual partners. Hospital control patients, age-matched, and free of clinically demonstrable neoplastic, urological, and endocrine conditions are used. In addition, the whole prostate gland is collected from consecutive necropsy cases of black men in Washington, D.C. Whole glands with attached seminal vesicles are accessioned, entered into a blind study, weighed, step-sectioned. From patients with the clinical diagnosis of carcinoma undergoing prostatic surgery, the histological grade of the tumor and other morphological features are correlated with clinical staging, hormonal studies, and epidemiological data. As of January 1978, 170 American and 78 African matched pairs (cancer and control) had entered the study.
Description provided by IARC and DKFZ with ICRDB/NCI support.
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.2205,
GENETIC STUDIES OF BREAST CANCER
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The purpose of this study is to identify patients with hereditary types of breast cancer. Patients with family histories of the disease are selected for study; controls are selected from the same patient population but have family histories of neoplasms other than breast. Both groups are studied simultaneously with similar methodological approaches. Family and medical histories are obtained by questionnaires; all reported tumors are verified by a medical, hospital, pathological and/or vital statistics report. Patients are classified according to age at clinical onset, single or multiple primaries, type of family history and associated familial neoplasms. Patients were classified according to family history of breast cancer at time of ascertainment; families in which patients had an affected mother exhibited lifetime probabilities of 30 percent. When affected mothers and patients were further categorized according to age at diagnosis and laterality, families in which both patient and affected mother had premenopausal onset were characterized by a lifetime probability of 40 percent. When one or the other or a close relative had bilateral disease the probability was 34 percent. Unilateral or postmenopausal disease in both was associated with a 20 percent probability. Fifty percent probability was obtained when both had premenopausal disease and one or the other or a close relative had bilateral disease, compared with a probability of 13 percent when the disease in both was unilateral and postmenopausal. A family history of breast cancer in the sister of a patient was associated with lifetime probabilities little different from those expected for women from the general population (7 percent). The only exception was when the patient and her affected sister both had premenopausal disease and one or the other or a close relative had bilateral disease (lifetime probability 50 percent).
Description provided by IARC and DKFZ with ICRDB/NCI support.
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3.2206,
EPIDEMIOLOGY OF HEPATOMA AND CHRONIC LIVER DISEASE IN RELATION TO HEPATITIS B INFECTIONS IN TAIWAN
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In Taiwan, where alcohol abuse is rare, chronic liver disease accounts for approximately 25% of all deaths of adult males. Approximately half of these deaths are attributed to hepatoma, most with underlying cirrhosis, the other half to cirrhosis without hepatoma. Acute and chronic hepatitis are also very common. There is a high degree of association between these conditions and the hepatitis B surface antigen (HBsAg): hepatoma 90%, cirrhosis 80%, chronic hepatitis 70%, acute hepatitis 60%. Approximately 10-20% of the general, apparently healthy population are HBsAg carriers. Although most carriers are asymptomatic, liver function studies are frequently abnormal. This study will identify approximately 1,000-2,000 apparently healthy HBsAg carrier males 40-59 years of age. These will be followed for at least five years to determine the frequency of morbidity and mortality from liver disease. The liver disease rates in these carriers will be compared with those of 9,000 to 18,000 non-HBsAg carriers selected from the same population. Familial aggregation of HBsAg and chronic liver disease is also under study.
Description provided by IARC and DKFZ with ICRDB/NCI support.
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3.2207,
MEDICAL SURVEILLANCE AND INTERVENTION - BLADDER CANCER
D.L. Bayliss, U.S. Dept. of Health & Human Services, Public Health Service, Center for Disease Control, National Inst for Occupational Safety & Health, Biometry Section, *4676 Columbia Pkwy., Cincinnati, Ohio* 45226 (D-IARC-79-983)
As aromatic amines, specifically beta-napthylamine, benzidine, and di-chloro-benzidine, have been responsible for cancer of the bladder in up to 100 percent of workers, the continued and increasing use of such carcinogens, not only in dye and pigment production but also in pharmaceuticals, detergents, food colors and specialized chemicals, makes it imperative that surveillance should continue so that situations similar to the current bladder cancer epidemic in New Jersey be prevented. A cooperative agreement is being developed with the National Cancer Institute to place all such exposed workers under medical surveillance. This will include periodic examinations and constant follow-up to detect early changes consistent with the development of bladder cancer.
Description provided by IARC and DKFZ with ICRDB/NCI support.
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3.2208,
RISKS AND BENEFITS OF BREAST CANCER SCREENING PROGRAMS
J.C. Bailar, U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst., Editorial Office, *9000 Rockville Pike, Bethesda, Maryland* 20205
OBJECTIVE: Reassessment of epidemiological evidence bearing on the benefits of periodic screening

of asymptomatic women, and on various risks and costs. Primary attention is given to hazards of radiation carcinogenesis in breasts exposed to x-radiation during mammography.
Description provided by IARC and DKFZ with ICRDB/NCI support.
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3.2209,
MORTALITY EXPERIENCE OF HOUSEHOLD CONTACTS OF ASBESTOS WORKERS

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From 1941 to 1945, 933 men were employed in an asbestos products factory in an eastern US city. Approximately 2,225 individuals lived in their households at the time of employment. This group is being identified and will form a cohort for the prospective evaluation of their mortality experience 1946-1980. It is already known that household contact disease may occur ('conjugal' asbestos disease); this information will provide quantitative information concerning the extent of that risk. Moreover, while mesothelioma is known to occur among household contacts, the risk of other disease has not been investigated. It is expected to obtain information in this regard as well. In parallel clinical studies, over 700 family contacts have so far been examined; one-third have chest x-ray abnormalities consistent with asbestos exposure. In the overall cohort more than 500 deaths have occurred including five from mesothelioma.
Description provided by IARC and DKFZ with ICRDB/NCI support.
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.2210,
PREDICTION OF LUNG CANCER RATES BY SPUTUM CYTOLOGY

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In assessing the lung cancer risk of a worker population, it is highly desirable to have an early prediction method so that excess risk can be detected early. For new chemicals suspected of being pulmonary carcinogens, sputum cytology may reduce by half or more the time needed to determine the existence of risk, thus possibly saving many lives. Several sputum samples from about 15,000 uranium workers have been collected over a period of 18 years. Using Dr. Saccomanno's classification, the samples will be analyzed to show correlation with age, tobacco smoking and radiation exposure. Persons with various grades of atypia will be followed to see how their sputum changes over the years, and to determine subsequent lung cancer mortality associated with each class of atypia (up to 18 years). Multiple correlation analyses will be done (utilizing support from NCI). These analyses will permit assessment of the use of sputum cytology as a survey tool assessing the lung cancer risk of a population before lung cancer has appeared.
Description provided by IARC and DKFZ with ICRDB/NCI support.
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3.2211,
THE PHILADELPHIA PULMONARY NEOPLASM RESEARCH PROJECT

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The objective of this study is to investigate the natural history of lung cancer in a population of male volunteers aged 45 and over. A total of 6,027 men was enrolled in a prospective study from December 1951 to December 1955 and followed with semi-annual chest photofluorograms and symptom questionnaires for 10 years. Medical information on all illnesses and deaths was collected. Data were placed on computer tape by 1968 and the results have been under continual analysis. A total of 121 men developed lung cancer at a rate of 2.3/1,000 man-years. The risk increased with increasing age, was higher in Non-Whites than in Whites, and bore a dose-response relationship to cigarette smoking. None of 830 non-smokers developed lung cancer. The dose-response relationship between smoking and lung cancer held true for adenocarcinoma as well as for squamous cell and small cell carcinoma, but the gradient was not as steep. The characteristics of 'early' lung cancer have been described. Screening contributed little to the survival rate. Survival factors have been described. Chronic cough was found to be an additional risk factor. During the occult phase of the lung cancer chronic cough and expectoration were found to increase prior to X-ray detection of the cancer compared with matched controls. A study of the diameter at detection and tumor volume doubling times of those cancers presenting as round nodules on X-ray sugests that the 'lead time' was almost two years on the average before such cancers would be detected as a result of symptoms. Further analysis is continuing.
Description provided by IARC and DKFZ with ICRDB/NCI support.
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3.2212,
NATIONAL WILMS' TUMOR STUDY - FAMILY HISTORY

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The National Wilms' Tumor Study is a randomized clinical trial testing various treatment regimens in children. In connection with the trial a questionnaire eliciting information regarding family history is obtained for patients registered in the study.
Description provided by IARC and DKFZ with ICRDB/NCI support.
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.2213,
EPIDEMIOLOGIC CHARACTERISTICS OF PRE- AND POST-MENOPAUSAL BREAST CANCER PATIENTS

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The goal is to define the epidemiological characteristics of breast cancer in pre- and post-menopausal women and to relate these characteristics to the pathobiology of the tumour as manifested by oestradiol and progesterone receptors, histology and cellular ultrastructure. This case-control study concerns breast cancer patients undergoing surgery at university and community hospitals, surgical or medical patients not having breast or gynaecological surgery at the same hospitals, and subjects from the community. Data collection is by interview of all subjects and review of charts of hospital patients. Laboratory studies on tissue and serum from breast cancer patients will include quantitative oestrogen and progesterone receptor determinations, evaluation of histology and ultrastructure by a standardized protocol, and oestrogen and progesterone serum determinations. Statistical analyses will estimate the relative strength of association between breast cancer and pre- and post-menopausal women and such factors as age at menarche, age at first delivery, obesity, and family history of breast cancer. Associations between risk factors and tumour cell biology and morphology will be sought by comparing the laboratory results in women with and without single or multiple risk factors.
Description provided by IARC and DKFZ with ICRDB/NCI support.
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3.2214,
EPIDEMIOLOGY OF BENIGN AND MALIGNANT BREAST DISEASE IN CINCINNATI, OHIO IN WOMEN AGED 35 YEARS AND OVER

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Epidemiological characteristics are being studied in 10,500 women screened for breast cancer. The initial objectives are to establish and describe the circumstances surrounding entry into the detection program and the development of breast cancer and benign breast disease.
Description provided by IARC and DKFZ with ICRDB/NCI support.
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3.2215,
TRENDS IN MORBIDITY AND MORTALITY OF UTERINE CANCER IN RELATION TO MASS CYTOLOGICAL SCREENING

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A population-based registry of all uterine tumors in Jefferson County, Kentucky, has been maintained since 1953. Jefferson County has had mass cytological screening since 1956 and by as early as 1967 over 90% of the population had been screened. Morbidity and mortality trends as well as patient survival and a record of histological type have been monitored. Over the period of the study mortality from cervix cancer has decreased significantly when compared to mortality trends in United Kingdom and Ireland and in Denmark. The study continues.
Description provided by IARC and DKFZ with ICRDB/NCI support.
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3.2216,
MORTALITY AND INDUSTRIAL HYGIENE STUDY OF ALUMINUM WORKERS

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Workers in the aluminum reduction industry are exposed to a variety of substances, hydrogen fluoride fumes, dust, carbon monoxide and coal tar pitch volatiles (CTPV) such as benz(a)pyrene. CTPVs are released in the anode preparation area in plants using pre-baked anode and in the pot lines where Soderbery self-baking cells are used. The release of CTPV is thought to be termperature dependent and sufficiently high temperatures are reached in both anode preparation and electrolysis of aluminum to achieve this. Thus, there is concern for the health of aluminum workers who may be exposed to carcinogens within CTPV such as benz(a)pyrene. Industrial hygiene surveys of the aluminum reduction industry have revealed levels of CTPVs well above the current occupational health standard of 0.2 milligram per cubic meter by the benzene soluble fraction method. A variety of studies have been carried out to describe the cancer mortality experience of workers in aluminum reduction facilities. In order to fully define the specific cancer risk within the industry, a retrospective case-control study is being carried out on aluminum reduction workers. Industrial hygienists will assist in classifying job categories and in verifying related industrial hygiene data. Existing data generated from a previous study will be used. 190 lung cancer cases and 760 controls matched on date of birth, date first employed and length of employment have been selected, work histories coded, and some preliminary analyses made. Environmental measurements are being calculated for the various job titles included in the study, so that the analysis can take full advantage of exposure-response data.
Description provided by IARC and DKFZ with ICRDB/NCI support.
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3.2217,
COLORADO CENTRAL CANCER REGISTRY

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This on-going descriptive epidemiological study of malignant disease in Colorado is currently examining allegations of cancer excess in an area of Rocky Flats near Denver, Colorado. Study to date does not support such allegations.
Description provided by IARC and DKFZ with ICRDB/NCI support.
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.2218,
SECOND PRIMARY MALIGNANCIES FOLLOWING RADIOTHERAPY OR CHEMOTHERAPY OR BOTH FOR HODGKIN'S DISEASE

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The objective is to determine whether intensive radiotherapy or chemotherapy or their combination used in management of Hodgkin's disease is the

cause of an increased incidence of secondary primary malignancies within 20 years after exposure. If an increase is found, it is desired to identify the details of the exposure responsible, the time relationships of the effect, and the spectrum of types of second malignancy. Approximately 2,000 patients with Hodgkin's disease treated in 1960 or later will be enrolled and followed for incidence of second malignancies. Patients will be ascertained through the collaboration of approximately 10 clinical centres in the United States and Canada. The study is planned as an independent test of the hypothesis derived from observations made at the National Cancer Institute, U.S.A, of an increased incidence of the total group of all malignancies. This increase is approximately 3-fold in patients given extensive chemotherapy or intensive radiotherapy and may be severalfold greater in patients given intensive courses of either therapy after relapse following an intensive course of the other therapy.

Description provided by IARC and DKFZ with ICRDB/NCI support.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.2219,

PROSPECTIVE STUDY OF PATIENTS WITH GENITAL TYPE II HERPESVIRUS INFECTIONS

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Women with virologically proven genital herpes are being followed prospectively with regard to the possible development of cervical atypia. Comprehensive epidemiological data are also being collected on these individuals.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.2220,

AGE-DISTRIBUTION OF LUNG CANCER IN PATIENTS AT VETERANS ADMINISTRATION HOSPITAL - HINES, ILLINOIS

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The age-distribution study previously reported now spans the 35 years between 1939 and 1973. As anticipated, the number of cancers contributed by the generation born between 1890 and 1900 fell off in the last quinquennial period of 1969 to 1973. This is now, after all, an aging cohort. There were 350 patients in the younger age groups (35-59 years) in the 1939 to 1943 period (90 percent of the total) and only 464 patients in the same age range in the 1969-1973 period (56 percent of the total). This supports the view that the younger cohorts are not fully replacing the older and aging generations. The total number of cases in this hospital during the 1969 to 1973 period did not increase.

Description provided by IARC and DKFZ with ICRDB/NCI support.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.2221,

NASOPHARYNGEAL CARCINOMA IN ALASKAN NATIVES - ESKIMOS, INDIANS AND ALEUT

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A moderately high incidence of nasopharyngeal cancer has been noted in Alaskan natives. The cases diagnosed in 1966-1976 are being reviewed. A case-control study of risk factors: occupation, work and home conditions, fuels used, history of tuberculosis, use of steam baths, etc., is under way. Material is being collected for study of histocompatibility antigens and Epstein-Barr virus (EBV) antibody titers, as well as evidence of EBV in tumor tissue.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.2222,

EPIDEMIOLOGICAL STUDIES IN ETIOLOGY OF CANCER IN TWIN VETERANS, II

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This study comprises an evaluation of familial factors in cancer by means of a Twin Registry of 16,000 pairs of veteran twins, using questionnaires and mortality follow-up. Preliminary analyses of accumulated data indicated that additional follow-up is needed for meaningful estimates of cancer concordance, and ascertainment of mortality and morbidity is being continued.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.2223,

ECOLOGICAL, STATISTICAL, ETHOLOGICAL, AND RELATED BIOLOGICAL STUDIES ON AIR POLLUTION, SMOKING AND OTHER ENVIRONMENTAL VARIABLES (ABBREV)

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Statistical and other studies are being conducted to test a four-part hypothesis that: (1) Among common air pollutant chemicals there are some that are mutagenically or otherwise hazardous to health; (2) such chemicals accelerate development of and increase risk of occurrence and mortality from chronic diseases of aging (e.g., cancer, heart disease), and also alter intergenerational DNA leading to birth defects and their consequences, in proportion to exposure; (3) chronic disease risk and resultant mortality are influenced significantly by individual genetic/constitutional characteristics; and (4) these individual characteristics also significantly influence certain behavioral physiological characteristics, such as tobacco smoking and coffee drinking. Three subsidiary hypotheses are that (5) smoking is, for many, symptomatic of physiological deficiencies that nicotine tends to alleviate, with smoking functioning partly as an example of behavioral regulation of physiological homeostasis, (6) viruses can also function mutagenically, along with certain environmental pollutant chemicals, leading to accumulation of somatic mutations, and (7) recent urban mortality rate data are more strongly correlated with air pollution levels of, say, 10 years ago than with recent levels. The basis for (7) may be a result of cumulative, and possibly multiplicative (cf. Orgel's theory), long-term effects of cell alterations inflicted by pollutant chemicals and other factors, including viruses. Methods of multivariate statistical analysis are used in these multi-regional, multi-environmental variable studies, especially an optimal subset selection (algorithm) modification of multiple regression analysis. Data used are human mortality rates for all cancers, cancers of various sites, and leukaemia, along with other chronic diseases (e.g., heart disease) for individual metropolitan populations, and environmental chemical concentration data and other environmental variable data.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.2224,

HUMAN RADIATION CARCINOGENESIS STUDY

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For the past 25 years the health status of the following three populations of persons given radiation treatment for benign conditions many years before has been followed: (1) 2,872 persons given x-ray in infancy for thymic enlargement and their 5,055 untreated siblings; (2) 606 women given x-ray treatment for acute post-partum mastitis controlled by 554 untreated sisters and by 539 women with a history of acute post-partum mastitis not treated with x-ray treatment and 206 of their untreated siblings; and (3) 971 persons given x-ray treatment to the head during childhood for lymphoid hyperplasia of the nasopharynx, 417 persons treated with intranasal radium capsules for the same condition and the 2,751 non-irradiated siblings of the irradiated subjects. In the thymus-irradiated series (1), an increased incidence of neoplasms and of illnesses with auto-immune features was observed over that seen in the non-irradiated siblings and in the general population. Only thyroid neoplasms occurred in sufficient numbers to permit analysis of incidence as a function of dose and other factors. Radiation-induced thyroid cancer shows a linear dose-response. Jews and females have an increased risk of developing thyroid cancer. In the breast-irradiated women (2), the incidence of breast cancer is increased over that in the controls beginning 15 years post exposure and shows a dose-response with an apparent peak at 400 r (air). A histopathological comparison review of breast cancers experienced by the irradiated women and by controls indicates no differences. A program of periodic mammographic-thermographic screening has been implemented in this series. In 1961, the head-irradiated population (3) was shown to have an increased incidence of radiation-induced neoplasms. They are being resurveyed at the present time.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.2225,

REGISTRY FOR RESEARCH INTO HORMONAL TRANSPLACENTAL CARCINOGENESIS

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The Registry has been established to collect clinical, pathological and epidemiological data on cases of clear cell adenocarcinoma of the genital tract in women born after 1940 regardless of whether or not the patient has a history of prenatal exposure to hormones, and all cases of genital cancer (vulva, vagina, cervix, endometrium, tube, ovary) in any female with a reasonable possibility of exposure in utero to any exogenous sex hormones, including steroidal oestrogens and progestins. Material for review is sought from all such cases occurring in the United States or other countries. Cases may be reported to: Registry for Research on Hormonal Transplacental Carcinogenesis, MARP 303, 5841 South Maryland Ave., Chicago, IL 60637. Pathological studies are conducted at Massachusetts General Hospital in Boston with Drs. Scully, Robboy and Welch as collaborators.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.2226,

EPIDEMIOLOGICAL STUDIES OF CANCER

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Various projects are being conducted: 1) A case - control study of interpersonal contact as a risk factor for leukemia/lymphoma in the Metropolitan Atlanta area; 2) laboratory epidemiological studies of families owning cats shedding feline leukemia virus (in collaboration with several tumor virus laboratories in the USA; 3) ad hoc field investigations of community clusters particularly leukemia/lymphoma; 4) retrospective assessment of leukemia risks among persons exposed to atmospheric atom bomb tests in the US in 1957 (in collaboration with other Federal groups); 5) prospective assessment of possible cancer risk in Michigan residents ingesting polybrominated biphenyl in 1973-74 (in collaboration with the State of Michigan and various Federal groups); 6) a follow-up study of women who have died of carcinoma of the cervix to determine whether or not the disease was potentially preventable.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.2227,

DEVELOPMENT OF STATISTICAL AND COMPUTER METHODS FOR THE ANALYSIS OF INCIDENCE AND MORTALITY DATA

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The aim of this continued study is to develop and make available methods for the dissection of generation, age, and time period effects from the matrices of data provided by cancer registries and vital statis-

tical systems on the occurrence of human cancer. Currently the study is in an interim phase, with separate programs for the calculation of rates and a series of fitted trend lines, and for multivariate analysis (least squares and maximum likelihood). A simplication of the system is the next goal. Papers have been published on malignant melanoma and breast cancer (male and female). Attention will continue to be concentrated on these sites.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.2228,

SURVEILLANCE FOR DRUGS THAT MAY BE CARCINOGENIC

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The objective is to evaluate medicaments for possible carcinogenic effects. To seek hypotheses, 150,000 persons will be classified according to use and non-use of various medicaments by means of computer-stored records collected from 1969-1973 by the San Francisco Kaiser-Permanente Clinic (1.3 million prescriptions for 3,400 drugs). The development of various kinds of cancer will be followed up by surveillance of hospital records. Drug-cancer associations found would be subjected to further study. More detailed evaluation of hypotheses would be by case-control studies using the Kaiser-Permanente records, with attention to potential confounding variables.

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3.2229,

CARCINOEMBRYONIC ANTIGEN (CEA) AND OTHER BIOLOGICAL MARKERS IN CANCER-PRONE FAMILIES

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Carcinoembryonic antigen (CEA) was studied in 224 direct-line members and 96 unrelated spouses from pedigrees manifesting the cancer family syndrome (heritable predisposition to adenocarcinomas of the colon and endometrium). Distributions of CEA per se showed Poisson-like properties and values were therefore transformed by taking square roots. Effects of age and duration of smoking were adjusted for by linear regression. Cancer patients and relatives at high genetic risk had a significantly greater mean CEA than relatives at low genetic risk. Surprisingly, unrelated spouses had mean levels of CEA which were strikingly similar to those in the corresponding cancer risk class of their direct-line mates. A highly significant intraclass correlation in CEA was also observed between the direct-line relatives and their spouses, whereas the intraclass correlation between direct-line full siblings was lower, and that between spouses of full siblings was negible. These results suggest the existence of both genetic and connubial effects on CEA in the cancer family syndrome, presumably due to a common environmental agent acting in concert with genetic predisposition to oncogenesis. A battery of biological markers were studied among high risk members of certain pedigrees, and an index of cancer risk incorporating CEA, percentage of T lymphocytes, lymphocytic transformation, aryl hydrocarbon hydroxylase, and IgA shows good potential for delineating individuals susceptible to cancer. Agreement of the observed number of aberrant index scores with the expected number of deleterious-gene carriers based upon Mendelian segregation and the age distribution of the sample provides preliminary support for the identification of cancer risk utilizing multiple biological markers. Work continues.

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3.2230,

EPIDEMIOLOGY OF CHILDHOOD RHABDOMYOSARCOMA

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A survey has been conducted of the entire state of North Carolina to determine the incidence of rhabdomyosarcoma in persons 0-14 years of age during 1967-1976. A threefold increase in incidence has been found during the study period. A case-control approach is being used to study the descriptive epidemiology of childhood rhabdomyosarcoma as well as associations with potential antenatal, childhood, familial and environmental etiological exposures.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.2231,

EPIDEMIOLOGICAL STUDIES OF CANCER IN LOUISIANA

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Death certificates for cancer of the lung, nasopharynx, pancreas and bladder will be identified for selected Louisiana parishes for the years 1960-1975. Controls will be matched by parish of residence, year of death, age (within 2 years), sex and race. The frequency of occurrence of names attributable to groups with a common heritage will also be compared, as will relationship of residence at death and distance from selected industries, and water source. The objective is to determine single or multiple factors which can be identified as associated with a greater risk in cases compared with controls. This will form the basis of subsequent additional observational studies. Sub-studies on populations exposed to unique substances are included.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.2232,

EPIDEMIOLOGY OF UTERINE CERVIX CANCER IN AN AREA OF LOW INCIDENCE

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Over the last 20 years the State of Utah has had 25% lower mortality than the U.S.A. as a whole from cancer of the uterine cervix. Members of the church of Jesus Christ of Latter-Day Saints (Mormons) have rates of cervical cancer 50% below those of the non-Mormons in Utah. The Mormon population also has a higher fertility rate and age of marriage than non-Mormons. A case-control study to investigate the etiology of cervical cancer in both Mormons and Non-Mormons residing in the State of Utah is under way. Cases are identified through a population-based cancer registry, and controls matched for age and county of residence are identified from the general population. Cases and controls are interviewed concerning age when first married, first pregnancy, commencement of sexual intercourse, divorce, number of sexual partners, and venereal disease exposure. A preliminary report is being prepared.

Description provided by IARC and DKFZ with ICRDB/NCI support.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.2233,

DIET AND COLON CANCER IN A LOW RISK POPULATION

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The incidence of colon cancer in Utah is 30 to 35% below USA rates. Important risk differences by place of residence and religion are also present in the Utah population. A case-control study to explore the effect of diet on these unusual risk factors is under way. Cases of colon cancer are identified and a population control chosen. Interviews obtain extensive dietary information. Dietary items are also analyzed by their components for elements associated with colon cancer such as high fat intake.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.2234,

LATE EFFECTS OF CANCER TREATMENT IN CHILDREN INCLUDING SECOND MALIGNANT NEOPLASMS - CHILDREN'S INTERNATIONAL CANCER INVENTORY

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As treatment for childhood cancer was becoming more successful and survivors were increasing, an interest developed in studying these children for late effects to organ systems of radiation and chemotherapy. Also of interest was the rate of second tumors in these survivors, whether treatment-related or not. Begun in 1972 at three pilot institutions, the study has been expanded to include children with cancer at 13 institutions, particularly with reference to: (1) the relationship of second malignant neoplasms (SMN) to therapy and other aetiological factors, (2) the incidence of SMN, (3) histopathology of SMN (4) survival of patients with SMN, (5) unusual tumors in children with cancer, (6) congenital anomalies in patients, (7) data regarding siblings and other family members for cancer and congenital defects, and (8) other deleterious sequelae encountered in patients cured of cancer in childhood. All studies are now active, including a case-control study of the 200 SMN in our registry to 1979.

Description provided by IARC and DKFZ with ICRDB/NCI support.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.2235,

OHIO CENTRAL DATA BASE FOR CHILDHOOD CANCER

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The objective is to provide baseline information on demographic patterns for cancer morbidity and mortality in Ohio children. This includes case-finding information regarding type of cancer by age, race, sex, place of residence, staging at initial diagnosis and institution of initial diagnosis. Abstracts are being prepared on hospital discharge of all newly diagnosed children with cancer beginning January 1975 from all the major treatment centers for children in Ohio. These abstracts utilize forms currently in use in a broader data collection program, the Children's Hospital Automated Medical Program (CHAMP), a medical research computer center located in Children's Hospital, Columbus, Ohio. In addition, an epidemiological questionnaire to be completed by parents is also being collected. This includes general questions on family history, including cancer in relatives and malformations, with additional specific information on patients with leukemia, brain tumors, Wilms' tumor and malignant lymphoma.

Description provided by IARC and DKFZ with ICRDB/NCI support.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.2236,

INTERNATIONAL CASE-CONTROL STUDY OF BLADDER CANCER

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The objectives of this study are: (1) To estimate the risk ratio and attributable risk of developing lower urinary tract cancer (bladder cancer) associated with coffee drinking in geographic areas which vary with respect to exposure rates and ethnic composition; (2) to estimate the risk ratio and attributable risk of bladder cancer associated with drinking other beverages, smoking, participating in certain occupations, use of analgesics, and ingestion of artificial sweeteners and bracken fern. In Boston (Massachusetts), Manchester (United Kingdom) and Nagoya (Japan), all new cases of bladder cancer in geographically defined populations were ascertained over two to three year periods. Controls were selected from the general population. Exposure information was collected by home interview. Analysis of the data is in progress.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.2237,

PANCREATIC CANCER - ETIOLOGY AND DIAGNOSIS

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The aims of this study are to focus attention on the problem of pancreatic cancer at a multi-disciplinary level and collect data prospectively on all patients with suspected pancreatic cancer with a view to elucidating the etiological factors. Controls are patients who at laparotomy are found not to have a pancreatic cancer. Additional aims are to fully investigate all such patients prior to laparotomy, using all recognized methods of investigation, and to develop new methods, as well as to improve the current techniques, of investigating the pancreas.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.2238,

PROPORTIONAL OCCUPATIONAL ANALYSIS USING DEATH CERTIFICATE DATA

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Occupational data for a random sample of 8,000 Connecticut adults who died between 1959 and 1961 have been collected and coded. Occupation, industry, birthplace and cause of death for this general population sample will be compared with those of deceased Connecticut Tumor Registry incidence cancer cases. Such analyses will control for sex, age at death, and socioeconomic status. These data are currently being used in the studies of occupational factors in urinary bladder cancer and chronic leukaemia in Connecticut. It is hoped that the results of these and similar studies on other cancer sites will suggest new hypotheses regarding associations between occupational exposures and subsequent cancer experience.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.2239,

EPIDEMIOLOGICAL STUDY OF ENDOMETRIAL CANCER

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Endometrial cancer incidence in northern California Caucasian women had been rising steadily over the last decade, at a rate considerably greater than chance expectation: hormonal influence from prior reproductive events and female hormones taken therapeutically (or prophylactically) are suspected causes. Using case-control methods, it is intended to study childbearing practices (e.g., age at first birth, child spacing, number of children, infertility, etc.), together with the use of post-menopausal and other hormones, of 900 women who develop endometrial cancer and of appropriate control women who do not. Information will be collected by hospital or home interview from study subjects living in five San Francisco Bay Area counties. We anticipate being able to identify the kinds of pregnancy and childbearing experience that distinguish those women who are at greatest risk of subsequent endometrial cancer. Relative risks will be computed for women who chose to remain childless, for those who deliberately decided on late childbearing, and for those who were unable to conceive.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.2240,

DEFINITION OF EPIDEMIOLOGICAL CHARACTERISTICS OF PRE- AND POST-MENOPAUSAL BREAST CANCER

R.S. Paffenbarger, University of California, Berkeley Campus, School of Public Health, Dept. of Biomedical & Environmental Health Sciences, *Berkeley, California* 94720

Using case-control methods, interviews of Caucasian, Negro, and Oriental women in the San Francisco Bay Area, totalling over 2,500 breast cancer patients and 5,000 controls, will be conducted in the three-year period beginning July 1, 1976. Characteristics receiving special attention include age, catamenial and childbearing events, indicators of early fertility, exogenous hormone and drug use, sociocultural factors, family history of cancer, radiation exposure, truncated dietary histories, and various physical measurements. Extent of disease (staging), histological diagnoses, and survival are established. Associations between epidemiological characteristics and breast cancer (pre-menopausal vs. post-menopausal) will be sought.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.2241,

REPRODUCTIVE CAPACITY AND BREAST OR OVARY CANCER RISK

R.S. Paffenbarger, University of California, Berkeley Campus, School of Public Health, Dept. of Biomedical & Environmental Health Sciences, *Berkeley, California* 94720

Recent work by MacMahon et al. showed that increased risk of breast cancer in women with fewer children may be due to late age at first childbirth. Similarly, Joly et al. have shown that increased risk of ovary cancer may be due to delay in first pregnancy. A differing view could be that late childbirth or late pregnancy and carcinogenesis relate to a common hormonal aetiology. A special contribution of the study (2,250 cases of breast cancer and 900 cases of ovary cancer) is to determine whether increased cancer risk differs according to whether the late childbirth or pregnancy is due to lower fertility or to a voluntary delay of pregnancy. Since the hormonal pattern resulting from early pregnancy may not be the same as that associated with basic reproductive capacity, this case-control study, with emphasis on reasons for early or late pregnancy, will assess need for specific hormonal studies of breast and ovary cancer risk.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.2242,

MORTALITY EXPERIENCE OF NITROSAMINE-EXPOSED WORKERS

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A cohort of workers exposed to nitrosamines in the manufacture of rocket fuel has been identified. The long-term mortality experience of these workers who were exposed for 15 years (or less) is being investigated in a non-concurrent prospective epidemiological study.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.2243,

MORTALITY STUDIES IN RELATION TO OCCUPATIONAL EXPOSURE TO CHEMICALS

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These studies are part of a continuing program to evaluate the relationships between occupational exposure to chemicals and cause-specific mortality. A retrospective cohort approach is followed, with potential exposure classified on the basis of industrial hygiene surveys and employee work histories. The following units are included in current studies: styrene-based products (manufacturing and research), production of nitrogenous organic dyes, a fiber production process using methylene chloride as a solvent, and a manufacturing unit with diverse chemical operations.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.2244,

EPIDEMIOLOGICAL AND GENETIC STUDIES IN PROSTATIC CANCER

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This program has assembled and is studying known and suspected epidemiological and genetic events, factors and attributes possibly related to risk of prostatic carcinoma, sorting out those which may directly or indirectly influence onset of the lesion. Additional objectives are to explore strategies for prevention and early detection of this prevalent cancer, to identify individuals at increased risk, to provide hypotheses useful in repeat studies and prospective designs, to establish a rationale for the natural history of prostatic cancer, to structure models for oncogenesis in the human prostate, and to develop an information base for clinical and population screening programs which may contribute to reduction of morbidity and mortality rates from this disease in the population. The research design is a collaborative retrospective matched-pair case-control study designed and directed by Dr. I.D. Rotkin at the University of Illinois College of Medicine with sampling at 3 cooperating institutions in 2 widely separated metropolitan areas, the West Side Veterans Administration Hospital in Chicago, Northwestern University Medical School in Chicago and the Kaiser-Permanente Medical Center in Los Angeles, providing multiple-hospital access to large populations of prostatic cancer patients and opportunity for reproducibility comparisons by institutions, by geography, by race and by socioeconomic levels; and also full studies of 500 securely diagnosed patients against 500 cancer- and BPH-free controls. Epidemiological information is obtained with interviewer-administered questionnaires and related instruments inquiring into behavioral, environmental, sociocultural, sexual, physical, psychological and clinical factors associated with risk of this carcinoma. Familial studies are conducted into 3 generations of each kinship, with patients and controls as probands, in searching for genetic influence upon initiation of oncogenesis.

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3.2245,

FACTORS ASSOCIATED WITH GEOGRAPHICAL DIFFERENCES IN AGE-SPECIFIC CHRONIC DISEASE DEATH RATES, INCLUDING VARIOUS SITES OF CANCER

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Marked race-sex-specific differences have been demonstrated in the risk of dying at ages 45-54, 55-64, 65-74, for counties and for the 510 state economic areas within the United States, as well as between portions of other countries. The geographical patterns are quite similar for various time periods, from 1949-1951 to 1968-1972. Mortality patterns for malignant neoplasms (all sites) and for lung cancer and cancer of the pancreas are correlated with death rates for the cardiovascular diseases (P less than 0.01). These patterns suggest that geographical differences in the patterns of cigarette smoking and other environmental variables may be responsible. Various techniques are being used to identify and adjust for possible shortcomings in the vital statistics data for epidemiological studies of this type. Many risk factors and suspected risk factors have been found to have statistically significant associations with the risk of dying. Several approaches are being used to test hypotheses as to the factors which are causally associated with these differences in the risk of dying and in the risk of cancer and other chronic diseases. Death rates for 1973-1976 are being compared with rates for earlier time periods, and are being used for testing the strength of various factors.

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3.2246,

TRACE ELEMENTS AND CANCER

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Determination of dietary intakes of trace elements in populations in different countries based on analyses

of food consumption data is being undertaken. An international data bank is being developed. Correlations between apparent dietary trace element intake and cancer mortality are being computed to test etiological hypotheses. The anti-carcinogenic effect of selenium is being explored both experimentally and on the basis of epidemiological studies. The interrelationships between diet and cancer are being investigated on the basis of the protective effect of selenium and other trace elements against cancer.

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3.2247,

INFLUENCE OF SMOKING ON CAUSES OF DEATH AMONG ASBESTOS INSULATION WORKERS

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On 1 January 1967 the entire membership, 17,800 men, of the Asbestos Workers' Union in the U.S.A. and Canada was registered. Smoking habits were recorded at the time of registration. The entire group has been followed prospectively from 1967 and death rates are being calculated taking smoking into account. For smoking-specific rates, the current data derived from the American Cancer Society's Cancer Prevention Study are being utilized, since this gives smoking-specific death rates 1960-1972. By the end of 1975, more than 2,000 deaths had occurred. Analysis is being undertaken according to cigarette, pipe and cigar smoking, age at beginning to smoke, amount smoked, duration of employment and duration from onset of employment, as well as other parameters. Specific causes of death which are of interest include various types of cancer and asbestosis.

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3.2248,

SKIN CANCER IN ARIZONA

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The aim is to determine skin cancer (basal cell and squamous cell types) incidence in the population, with reference to skin types, hereditary factors, eye color, and mode and efficacy of treatment.

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3.2249,

MORTALITY STUDY OF LEAD WORKERS

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Lead phosphate administered subcutaneously to rats has resulted in the induction of renal tumors and renal tumors have also been induced in rats by lead acetate-containing diets. Lead oxide appears to act synergistically with benzo(a)pyrene in pulmonary tumorigenesis in Syrian hamsters; lead is reportedly cumulative in the lung. Workers in lead smelters and battery plants breathe or ingest lead as a result of poor hygiene. Possible carcinogenic or co-carcinogenic effect deserves examination. Although the authors of a study on cancer among lead battery plant workers concluded that their results do not support a specific cancer risk, the data suggest that such a risk may be present. In order to further assess the possible excess cancer risk to lead exposure, a further retrospective cohort study is planned on workers exposed to lead and its compounds.

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3.2250,

ASBESTOS AND CANCER IN PATIENTS WITH LOW OR NO OCCUPATIONAL EXPOSURE

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Previous studies in this Department have failed to demonstrate a relation between numbers of asbestos bodies and the presence of carcinoma of the lung or gastrointestinal tract in workers with very low asbestos exposure. Asbestos bodies, however, represent only a part, and perhaps only a small part, of the total lung asbestos burden, which is composed of coated bodies as well as uncoated fibers. It is possible that a relation exists between numbers of uncoated asbestos fibers and the presence of bronchogenic carcinoma. This study will attempt to quantify and type the uncoated asbestos fibers as well as asbestos bodies at various sites in the lung. A new preparative method, already used for examining and identifying the nature of the cores of asbestos bodies by electron diffraction, will be used to identify further these same bodies by electron microprobe analysis. An additional preparative method has been devised for recovering uncoated asbestos fibers. Relations between numbers of coated and uncoated asbestos fibers, as well as their relative locations within the lung, will be tabulated, and an attempt will be made to correlate numbers or types of fibers with the presence or absence of carcinomas. It has previously been shown here that numbers of asbestos bodies are related to occupation; an attempt will be made to establish whether a similar situation exists for uncoated fibers or whether they are derived from the environment.

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3.2251,

CANCER IN PERSONS EXPOSED TO EXOGENOUS ESTROGENS

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The purpose of this research is to estimate the range of cancer risk from prenatal exposure to exogenous estrogens among mothers and their exposed male and female offspring. Two matched control groups of unexposed mother-offspring pairs will be identified and the cancer incidence among these groups will be compared to that in the at-risk group. One group will be based on physician-matched controls, the second control group will be selected using Connecticut birth registration data. Cancer experience will be determined by linking the names of members of the cohorts to those of patients reported to the Connecticut Tumor Registry. All cancer sites will be considered, with particular attention paid to reproductive system cancers. To date more than 1,000 exposed mother-offspring pairs and 1,000 physician matched control pairs have been identified and detailed information has been abstracted from their prenatal medical records. An additional 500 exposed pregnancies have been identified and data collection is in progress. Individual follow-up is being conducted for each mother and offspring in all cohorts.

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3.2252,

CANCER RISKS IN COSMETOLOGISTS

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This study will investigate the incidence of cancer of all sites among cosmetologists who were licensed to practice in Connecticut before December 1965 and will provide a more definitive estimate of risk suggested by the preliminary results according to which cosmetologists may have increased risk of acute leukaemia. This extension will enlarge the study group from 12,000 to 17,000, including cosmetologists whose date of birth was previously unavailable. Follow-up status as of December 1978 will be determined for all cosmetologists. The expected number of cases of cancer by individual sites will be estimated by applying to the group at risk the cancer incidence rates of the general Connecticut population, specific for age, calendar year, sex and site. Cancer cases among the cosmetologists will be ascertained through December 1978 by computer linkage of the names in the study group with those reported to the Connecticut Tumor Registry.

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3.2253,

SEROEPIDEMIOLOGICAL STUDY OF HERPES SIMPLEX VIRUS IN CARCINOGENESIS OF THE CERVIX

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It is proposed to investigate by a longitudinal study a possible relationship between herpes simplex viruses (HSV), the development of cervical dysplasia, and its progression to cervical cancer. One of the critical issues is the timing of herpes infection in relation to onset of the neoplastic process and a feature of the proposed research is the serial observation and testing of patients to clarify the temporal relationship of herpes infection and carcinogenesis. In considering a longitudinal approach, the relatively low incidence of cervical cancer and the long latency present serious problems of sample size and duration of follow-up. The number of women in the study as well as duration of follow-up can be reduced by following a defined population of women who already have the cancer precursor, dysplasia of the cervix. We have been investigating the possible relationship of steroid contraceptives and carcinogenesis of the cervix by means of a long-term prospective study of women with dysplasia of the cervix. The proposed study on the role of HSV in carcinogenesis of the cervix uses this resource of clinical and laboratory data. Sera already collected from these patients will be used for serial viral antibody studies. Further follow-up of patients and collection of samples will continue.

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3.2254,

CERVICAL CYTOLOGY PROGRAM

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Arkansas ranks 12th among the states of the U.S.A. with regard to mortality from uterine cervical cancer. The existence of rural communities, non-white populations and areas with low physician:population ratio constitutes high risk conditions. There is insufficient screening and follow-up. The program is designed to reach the high-risk woman by utilizing ancillary facilities in statewide local health departments, public health nurses and a system of newly developed colposcopy clinics. These clinics provide for definitive diagnosis for about 85-90% of women found to have abnormal Papanicolau smears. The program aims to follow up (1) all women with abnormalities to ascertain the course of dysplasias of the cervix and (2) all women with normal cytological smears prospectively in relation to epidemiological factors, socioeconomic status, oral contraceptives and other factors.

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3.2255,

CARDIOVASCULAR DISEASE EPIDEMIOLOGY IN 40,000 EMPLOYED CHICAGOANS

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A second-generation prospective epidemiological study on hypertensive and atherosclerotic diseases, particularly coronary heart disease, is in progress to solve key unanswered questions. Almost 40,000 men and women, both white and black, chiefly 25-64 and identified in a Chicago Heart Association screening project from 1967 to 1973, are being followed for 10 years to determine mortality rates. Three other cohorts are also being followed: men aged 40-59 in 1958 and men aged 25-39 in 1959, employed by the People Gas, Light and Coke Company in Chicago and men aged 40-55 in 1958, employed by the Western Electric Company. The contributions of several variables to the risks of death are being assessed. The causes of death to be examined include lung cancer and all neoplastic diseases.

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3.2256,

FAMILIAL AGGREGATION OF CANCER IN A MEXICAN-AMERICAN COMMUNITY

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A closed population of Roman Catholics of Mexican/Spanish ancestry for which birth, marriage, parenthood, and death records exist from its founding in the mid-1700s to the present is being studied. These church, hospital, and civil records provide the data base for reconstructing families back to 1900 and before. Such families will be examined statistically to see if cancer mortality aggregates non-randomly among them, so as to determine heterogeneity in genetically based risk for various cancer sites. In addition, the fertility of victims of cancer will be ascertained to make short-term predictions of the proportion of cancer mortality which may be related to genetic factors. Environmental influences will be taken into account in the statistical methods used to assay the pedigrees. The age pattern of incidence for cancer, the effect of mortality from competing causes, and the changing incidence and age patterns of degenerative diseases in general, and cancer in particular, will be studied. This study will constitute both a complete cancer-epidemiological study of a rather uniform population and a cancer-genetic study.

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3.2257,

THE EPIDEMIOLOGY OF GYNECOLOGICAL CANCER

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The objective of the study is to delineate the role of exogenous hormones in the etiology of endometrial, ovarian, and vulvar cancer. All residents of selected counties in the states of Washington and Utah who developed one of these cancers during a two-year period have been identified through population-based cancer registries. Cases were interviewed and their responses compared to those of a random sample of women in the population. The interview centered on use of exogenous hormones, recall being aided by displays of commonly used preparations. Some results have been published for endometrial cancer; additional results for this and the other sites will appear in the next two years.

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3.2258,

DESCRIPTIVE EPIDEMIOLOGY OF PRIMARY MALIGNANT BONE TUMORS, CONNECTICUT, 1935-1974

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Using some 1,000 cases of bone cancer from the Connecticut Tumor Registry (1935 to 1974), a descriptive epidemiological study will be carried out in the hope that this might suggest possible aetiological factors. Secular trends for bone cancer incidence and mortality will be analysed with respect to age, sex, site of neoplasm, socioeconomic status, place of residence (urban and rural), and the geographical distribution among Connecticut towns. In addition, the different histological types will be examined for possible relationships with the above variables. Diagnostic criteria and period of diagnosis will also be studied.

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3.2259,

ENVIRONMENTAL INFLUENCES ON CANCER MORBIDITY IN THE PITTSBURGH REGION

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This project involves the use of regression modelling techniques to determine if there are differences in cancer morbidity rates for water supplies (including sources and source types) which cannot be explained by available information concerning socioeconomic status, housing density, industrialization, etc. Specifically, the Third National Cancer Survey cancer morbidity data for 19 different anatomical sites are being regressed against census tract data aggregated by water utility service areas. Residuals from these regressions are cross-classified separately with water service areas, water sources, and water source types to determine if the residuals are independent of these major water classifications.

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3.2260,

CANCER MORTALITY AMONG AMERICAN INDIANS, 1968-73

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Using mortality data tapes for 1968-1973, earlier studies will be up-dated and special attention paid to lung cancer among American Indian males (ICD 162-163). An attempt will be made to identify salient variables in cancer mortality for American Indians, American Whites and American Blacks using an eco-genetic approach and regional and zonal matched analysis.

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3.2261,

GENETIC EPIDEMIOLOGY OF CANCERS AND OTHER MAJOR CHRONIC DISEASES

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Genetic predisposition and environmental influences are frequently suspected of acting either alone or, probably more often, together to result in the occurrence of cancer and other major chronic diseases (such as coronary artery disease). From geneological records of the Latter-Day Saints (LDS) Church (Mormons) in Salt Lake City a computerized pedigree file with 4-8 generations for a large proportion of Utah residents (75% LDS) is being constructed. Computer files of medical data including a 10-year computer file of incident tumour cases in the state of Utah and a 20-year file of death certificates are being linked to the pedigree file. Analyses will be performed to (a) estimate heritability of specific cancers (and other chronic diseases), (b) identify specific families with strong genetic predispositions, (c) elucidate specific genetic transmission mechanisms with environmental factors taken into account as penetrance functions. Major cancer sites include breast, lung, colon, prostate, and all other major sites.

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3.2262,

GENETIC EPIDEMIOLOGY AND NATURAL HISTORY OF BREAST CANCER

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Epidemiological and experimental studies are underway to investigate host, agent and environmental factors associated with breast cancer. A working model has been developed that relates epidemiological evidence linking reproductive experience and the risk of breast cancer to our findings regarding breast secretory activity in different groups and evidence of secretion of exogenous substances through the breast. Current research focuses on genetic markers associated with breast cancer, cytopathologic characteristics of normal and malignant breast tissue, metabolic activation of mutagenic agents by breast tissue, and secretion of potentially carcinogenic substances in breast fluid. In addition, a study of women's beliefs and health practices concerning breast cancer is underway.

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3.2263,

STATISTICAL ANALYSIS AND QUALITY CONTROL (SAQC) CENTER FOR A CENTRALIZED CANCER PATIENT DATA SYSTEM (CCPDS)

P. Feigl, Fred Hutchinson Cancer Research Center, Program in Epidemiology & Biostatistics, *1124 Columbia St., Seattle, Washington* 98104 (D-IARC-79-1066)

The basic task to be performed by the SAQC/CCPDS project is to plan, develop, implement and operate a computerized system to deal with uniform acquisition, quality control, storage, retrieval, and analysis of basic cancer patient data submitted quarterly by 20 comprehensive cancer centers located throughout the United States. Accomplishments include: the establishment of a minimum cancer patient dataset used in common by all participating institutions; the development of training programs to assure a uniform interpretation of each item in the dataset from each institution and the assembling of computer hardware and software for editing and storing abstracts of approximately 50,000 diagnosed tumors each year. Quarterly summaries on the cumulated data, as well as special detailed reports on topics of interest to oncologists and cancer epidemiologists are provided to each participating institution. The SAQC Center is also coordinating collaborative research among the cancer centers in the etiology of male breast cancer, estrogen receptors and female breast cancer prognosis, and secular trends in osteosarcoma.

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3.2264,

CANCER INCIDENCE IN RELATION TO A SMELTER

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The population in parts of King, Pierce, and Kitsap Counties of Washington State, U.S.A., are exposed to air-borne and soil-deposited arsenic trioxide from a smelter in Tacoma. Arsenic exposure has been linked to respiratory cancer among the Tacoma smelter employees and has been implicated as a carcinogen in other industrial studies. The effect of arsenic on cancer risk in the exposed populations outside the smelter will be evaluated using data from a complete, areawide cancer registry.

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3.2265,

PSYCHODYNAMICS OF CANCER

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The main objective of this study is to collect psychosocial and environmental data on groups of patients hospitalized in a General Medical Center (the Veterans Administration Hospital, Shreveport, Louisiana). The groups to be compared are: (1) non-alcoholic, non-cancerous smokers, (2) non-alcoholic, non-cancerous non-smokers, (3) alcoholic smokers, (4) alcoholic non-smokers and (5) patients with lung cancer. The data being collected from a structured questionnaire consists of (1) family history of cancer and alcoholism, (2) birth order and age difference between adjacent siblings, (3) childhood experiences, (4) present day smoking and drinking habits, (5) exposure to suspected carcinogens and (6) general demographic data. Individuals are also being asked to answer pertinent questions from the Bahnson Psychosocial Scale. Psychological data are being subjected to statistical analysis. Information from 658 case studies has been placed on punch cards and from these transcribed to magnetic tape. Of these,

471 have been separated into five groups, all over 35 years of age: (a) 116 controls who are still smoking, (b) 68 controls who have stopped smoking for a period longer than 5 years, (c) 92 non smokers, (d) 118 alcoholic smokers from a general medical ward, and (e) 77 cases of lung cancer. Preliminary item analyses are being done on 27 parameters to determine significant differences, if any, among the 5 groups. Later approximately 75 more items will be examined. The remaining 197 cases which comprise of individuals primarily under 35 years of age, but also non-smoking alcoholics, patients with cancer of other sites, and alcoholics in alcoholic units of the hospital will be investigated if significant data have been unearthed on the first set of analyses.

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3.2266,

A RECORD LINKAGE FEASIBILITY STUDY TO OBTAIN PREVALENCE AND INCIDENCE RATES FOR MULTIPLE MYELOMA IN US VETERANS

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Since all veterans with multiple myeloma, as for most diseases, are not seen in veterans hospitals, incidence and prevalence rates derived from data on hospitalized patients are underestimated. The present study investigates the feasibility of obtaining medical information on veterans from non-veterans hospital sources to merge with data from veterans hospitals. Information will be obtained from cancer registries, hospital records and death certificates in six geographical regions to permit computation of absolute rates of multiple myeloma by race, age, and geographical area. The denominators for these rates will be veterans living in these areas as reported by the United States Census Bureau. Environmental exposures will be studied in an effort to explain observed rate disparities by race, age and geography.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.2267,

TOBACCO AND ALCOHOL USAGE, MARITAL STATUS, RELIGION AND OCCUPATION AS RISK FACTORS AMONG CIRRHOTICS AND NON-CIRRHOTICS WITH CANCER

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This study is based on a 100 percent sample of 286 males with liver cirrhosis and cancer and a 2 percent sample of 374 males with cancer only who were discharged from the nationwide complex of United States veterans hospitals in a one year period. Cirrhotics and non-cirrhotics with cancer are compared in order to determine: 1) Whether the site distributions and relative risks of cancer are remarkably different by the amounts and types of alcohol consumed or tobacco smoked; 2) whether there are gradient shifts in the relative risks of cancer from one tissue or organ to another, when the uses of tobacco and alcohol range from the least to the greatest amounts; 3) whether the relative risks of cancer by anatomical sites are significantly different in relation to marital status, religion and occupation; and 4) whether, histologically and anatomically, multiple primary cancers are in excess.

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3.2268,

EPIDEMIOLOGICAL STUDY OF BENZENE EXPOSED WORKERS

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The objective of the study is to determine the mortality rates of workers exposed to benzene in petroleum operations. Workers having known exposures to benzene will be identified, and their mortality rates determined and compared with those of other groups. Secondary studies will include proportionate mortality from pooled company records; a study of effects on health, particularly blood counts, as they relate to benzene exposure; development of a job title dictionary for exposure dosage; and establishment of a prospective medical mortality and environmental study. If primary studies reveal excess mortality from specific diseases, especially leukaemia, latency periods, dose relationships and host factors will be studied.

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3.2269,

MORTALITY-MORBIDITY STUDY AND TUMOR REGISTRY FOR PETROLEUM, REFINING, PETROCHEMICAL AND RESEARCH AND DEVELOPMENT WORKERS

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The objective of this study is to conduct a comprehensive prospective epidemiological investigation among petroleum industry workers as a means of determining possible health consequences of occupational exposure. A data gathering, reporting, and interpreting system appropriate for the conduct of a continuing epidemiological study will be established. Patterns of morbidity (illness), mortality and tumor occurrence will be identified and compared with the rates for a suitable control population. Relationships between morbidity and mortality patterns will be related to occupational characteristics, and trends in affected worker populations will be defined. The data received from participants will be analyzed and interim reports to each individual company on its own material made. The project will encompass all disease categories in the International Classification of Diseases and the morbidity portion of the study will be based on all sickness absences of five or more days' duration.

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3.2270,

REGISTRY OF AN X-LINKED RECESSIVE LYMPHOPROLIFERATIVE SYNDROME

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The X-linked recessive lymphoproliferative syndrome is characterized by X-linked recessive immunodeficiency to the Epstein-Barr virus with subsequent agammaglobulinemia, fatal infectious mononucleosis, and malignant lymphoma (including Burkitt's lymphoma) in affected males. Cases of this syndrome are registered to establish diagnostic criteria and investigate the immunopathogenesis of the B cell phenotypic expressions using immunological, virological, pathological, genetic and metabolic techniques. Referrals of possible cases from colleagues for diagnosis and comprehensive studies of surviving family members are welcome.

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3.2271,

CERVICAL CYTOLOGY DEMONSTRATION PROJECT FOR SOUTHWESTERN AMERICAN INDIAN POPULATION

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The objective of this study, in addition to providing cytological diagnostic services to a large group of American Indians and selected non-Indians, is to investigate certain epidemiological aspects of uterine cervical and endometrial cancer. Previous work has shown significant differences in histologically established age-specific rates of cervical carcinoma between Southwestern American Indians and Caucasians, and this work will be extended and amplified. Also to be examined will be the effect of cytological screening on mortality rates for cervical carcinoma. Non-Indian patients attending the University of New Mexico teaching hospital and clinics serve as the control group. Records of about 140,000 patients are currently available in cytology laboratory files in machine-retrievable format.

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3.2272,

FAMILIAL AND GENETIC FACTORS IN MALIGNANCIES

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OBJECTIVES: To document the occurrence of patterns of family aggregation of neoplasms. To study such families by genetic and laboratory investigations, in an effort to elucidate the degree to which heredity and/or the common familial environment contribute to the aetiology of neoplasms. To distribute tissue and blood specimens from such families to interested laboratory investigators, for aetiologic study by cytogenetic, immunological, viral and tissue culture methods. To identify genetic factors and disorders associated with cancer.

METHODS EMPLOYED: Interview of cancer patients with respect to family occurrence of cancer and other disorders, as well as information on prior medical and environmental history; documentation of history by obtaining appropriate vital records and hospital charts; collection and distribution of biological specimens from such families; review of hospital records of series of patients with selected genetic diseases or neoplasms; survey of childhood cancer death certificates in the U.S. since 1960 to identify sib aggregation.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.2273,

RELATIONSHIP OF SMOKING TO CANCER OF THE PANCREAS

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Preliminary studies of the pancreas, performed routinely at autopsy, have revealed histological changes that were associated with cigarette smoking. A more definitive study is under way.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.2274,

SURVEILLANCE OF CHILDHOOD NEOPLASMS IN HARRIS COUNTY, TEXAS

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This population-based registry of cancer in children aims to evaluate occurrence, determine geographical variations, and evaluate annual variations in incidence for specific tumors by census tract, ethnic groups, etc.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.2275,

STATISTICAL DATA MANAGEMENT AND COORDINATING CENTER FOR THE TYLER TEXAS ASBESTOS WORKERS PROGRAM

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The National Cancer Institute has established a complete medical surveillance program for a group of individuals who were exposed to amosite asbestos fibers in the course of their employment at a pipe insulation manufacturing plant in Tyler, Texas. The surveillance program is a collaborative effort, with the two primary components being the Tyler Asbestos Workers Program (TAWP) affiliated with the University of Texas Health Center at Tyler and the Statistical Data Management and Coordinating Center (SDMCC) directed through the Dept. of Epidemiology, the University of Texas System Cancer Center. The primary goal of TAWP is to make medical and scientific expertise and technology available to the

affected workers and to study the pathogenesis and early detection of lung cancer induced by asbestos. The SDMCC is responsible for data collection and analysis of the total program, with particular interest in the epidemiological, laboratory and clinical data produced by TAWP/SDMCC activities.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.2276,

STUDIES ON THE POSSIBLE VIRAL ETIOLOGY OF HUMAN MALIGNANCIES

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Serum samples of patients with cervical cancer and matched non-cancer control women are examined for antibody to individual HSV-2 induced antigens. The study attempts to answer the following questions: (1) Is there an increase in the capacity to react with HSV non-structural antigens? (2) What is the significance of finding HSV-induced DNA-binding proteins in biopsy-obtained cells of women with severe dysplasia and carcinoma?

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.2277,

ANOVULATION AND BREAST CANCER EPIDEMIOLOGY

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The objective of this study is to empirically investigate the onset of breast cancer. Hormonal characteristics of various menstrual cycle patterns have also been measured to develop a pathophysiological hypothesis to explain some of the known breast cancer risk factors. The basic study is being performed in two phases. The first is a review of the breast cancer cases occurring in a cohort of women with concurrently collected menstrual cycle pattern, over a 45-year period, to see if women developing breast cancer can be discriminated from the others. Particular emphasis is placed on menstrual cycle patterns around menarche, menopause, and birth events. Preliminary analyses include relationship between breast cancer risk factors, ponderosity and menstrual cycle patterns. Women with early-age-at-menarche have a greater relative weight as an adult and also acquire regular menstrual cycle patterns at an earlier age. Ponderous adult women have had more cycle variation in the early years of menarche that women with a lower relative weight. The relationship between ponderosity, menstrual cycles and age-at-first-birth is variable. Women with late menopause have a greater relative weight and more menstrual cycle variation in the years prior to the menopause. Greater relative weight and increased menstrual cycle variation at all ages have been shown to be related to increased relative estrogenicity. Work is proceeding in identifying empirical menstrual cycle characteristics and subsequent actual incidence of breast cancer. No associations were found between breast cancer and manifestations of gonadal hormone activity such as menopausal hot flushes, presence of excess facial hair, and other features of body habitus. In keeping with the parity experience, breast cancer patients have different early patterns of sexual activity compared to controls. Work in all areas is progressing.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.2278,

RELATIONSHIPS OF HUMAN AND BOVINE LEUKEMIA

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The epidemiological relationships of human leukemia and bovine lymphosarcoma in Iowa over the past three years have been studied. An excess of acute lymphocytic leukemia (ALL) in males, primarily in the most rural counties of Iowa, was found. There is also a statistically significant correlation of numbers of dairy cows and ALL in males. There is an even greater risk ratio in those counties where cases of bovine lymphosarcoma have been documented. Future research will deal with the refinement of the risks associated with human ALL and the rate of infectivity of the dairy cow population with Bovine Leukaemia Virus (BLV). A serological test will be performed on designated dairy cow populations and data from the Iowa Cancer Registry will be compared. An area that appears to have an excess of cancers will also be studied. This area also happens to be high in dairy cattle density. Various occupational and environmental factors will be studied to see if a relationship can be identified.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.2279,

HEALTH STUDY OF PLUTONIUM WORKERS

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Past and present plutonium workers from six major United States nuclear installations will be followed to determine age-specific mortality rates from all major causes of death, with special emphasis on cancer. Dose-response relationships will be estimated using systemic body burden data from urine tests. The study population, approximately 20,000 individuals, will include all workers with estimated body burdens above one nanocurie, exposed workers with lesser or no body burdens, and random samples of non-exposed workers from the same installations. A cancer incidence study will be undertaken upon a subset of the study population; questionnaire studies of cardiovascular and chronic respiratory morbidity will also be carried out in that subgroup.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.2280,

EPIDEMIOLOGY OF CANCER IN ADVENTISTS - A LOW RISK GROUP

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Seventh-Day Adventists (SDAs) are a conservative religious group who do not smoke or drink by church prescription. For most cancers unrelated to smoking, the age-sex adjusted mortality is 50-70% of the general population. The SDA Church strongly discourages use of coffee, caffeine beverages, highly refined foods and hot spices, recommending low-fat, high-fiber lacto-ovo-vegetarian diet, as well as vigorous exercise. However, apart from smoking and drinking, there is great variation in the degree of adherence to these habits making SDAs an ideal population to investigate the role of diet and other lifestyle characteristics in cancer. Further, the great variation in duration of exposure and age at first exposure to the SDA lifestyle provides an opportunity to determine the effect of lifestyle patterns early vs. late in life, as well as the effect of short term vs. long term patterns of living. This on-going prospective study seeks to (1) confirm with incidence data the previously observed low cancer mortality among SDAs and (2) determine the specific components of the SDA lifestyle which account for their apparent low risk of non-smoking-related cancers. Collection of baseline demographic data from 61,258 California SDAs, as well as detailed lifestyle characteristics from 46,000 of these, is nearly complete. In 5 more years an average 8.5 years of follow-up for the 61,258 subjects with completed questionnaire data (525,412 person-years) will be achieved. After adjusting for the expected low incidence, a probable 2,481 new cancer cases (464 colorectal, 389 breast) will be identified by reviewing records of all hospitalizations reported during annual contact with each subject. After accounting for confounding factors, comparison of site specific cancer incidence between SDAs vs. the general population (as well as among subgroups of the SDA population with differing dietary and/or lifestyle characteristics) is likely to identify new (or confirm suspected) lifestyle changes.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.2281,

FOLLOW-UP STUDY OF PATIENTS TREATED BY X-RAY EPILATION FOR TINEA CAPITIS

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Children treated for tinea capitis between 1940 and 1959 at a major New York City dermatology clinic have been followed to examine the tumourigenic effects of X-radiation to the head (300 - 400 R). Some 2,215 irradiated patients and 1,395 patients given medications for tinea capitis have been traced. The groups are very well matched on sex, race, age and socioeconomic status. A third survey of these groups (average interval since tinea treatment - 20 years) is in progress and is showing a continued excess of basal cell carcinomas, and brain, thyroid and parotid tumors in the irradiated group.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.2282,

CANCER IN PHYSICIANS - A COMPARISON WITH LAWYERS

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This study is testing the hypothesis that physicians may be at an increased risk of dying with cancer because of their exposure to carcinogens in the milieu in which they work. Their mortality experience is being compared with that of lawyers who, in the USA, share the same lifestyle and socio-economic status. Professionals from both groups were either licensed to practice medicine or were admitted to the Bar in the State of Connecticut during the 1900-1975 period. A total of 11,527 male physicians and 6,318 male lawyers have been identified and followed until 1975. All sites of cancer are being investigated since the potential carcinogenicity of infectious agents, chemicals and radiation may affect different target organs. Age-specific mortality rates within five year age categories for physicians and lawyers grouped according to birth cohorts were computed by the modified life table method. The cancer mortality experience of physicians is further being analyzed according to specialities practiced during life.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.2283,

EPIDEMIOLOGY OF CERVICAL CANCER - CHLAMYDIAE AND HERPES

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The goal of this project is to determine whether any of the infectious agents under study are specifically associated with cervical cancer or dysplasia. Prevalence rates will be determined for infection with chlamydiae (bedsoniae) - particularly trachoma-inclusion conjunctivitis (TRIC) agents and herpesvirus hominis (HVH) in the cervixes of women examined at the University of California, San Francisco. Those included in these studies will be normal women (routine examination and birth control advice), women being seen for genital tract inflammatory disorders (such as cervicitis and vaginitis), women being examined at the dysplasia clinic, and women who have once had cervical cancer. Isolation attempts will be made, with cervical scrapings taken at the same time as Papanicolaou smears. Serological studies will also be carried out in an effort to obtain evidence of any prior infection with herpes and TRIC agents. Rates of serological positivity for HVH-2 and TRIC agents will be directly compared for women with cervical cancer or dysplasia. Serological results will also be compared for patients with cervical cancer or dysplasia and for normal controls. These controls will be matched with patients by age, race, and several measures of sexual experience. In addition the various indices of sexual experience in patients with dysplasia or cervical cancer and in the controls will be compared.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.2284,

METABOLIC EPIDEMIOLOGY OF COLON CANCER

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The overall objective of this project is to develop key biochemical and/or microbial indicators which (1) distinguish high and low risk members of cancer families for development of colon cancer and (2) study the mechanism of cancer development in this high risk population. To achieve these objectives, feces from members of cancer families (50 colon cancer-prone symptomatic and 50 colon cancer-prone asymptomatic persons) and 50 age- and sex-matched healthy spouse controls will be analyzed for bile acids, cholesterol and its metabolites, B-glucuronidase, 7-dehydroxylase, cholesterol dehydrogenase and mutagens. The aim is to explore systematically the key metabolites by which a high-risk group for colon cancer is identified and characterized.

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3.2285,

CANCER IN ILLINOIS

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The aim of this project is to investigate the contribution to cancer mortality of specific industrial manufacturing and processing activities in Illinois. Maps depicting mortality rates by county for Illinois on the basis of 1970-1976 data will be constructed. Major sources of carcinogens will be identified. Emissions data, ambient sampling, and dispersion models will be used to estimate levels of ambient exposures to carcinogens at different sites near the sources. Death certificates will be analyzed in order to compute mortality rates for cancer of several sites in tracts near the carcinogen sources. The tracts will be selected to control for confounding variables as much as possible. The relationship between cancer mortality rate, tract, and ambient exposure will be investigated. Possible carcinogen sources include: oil refineries, steel mills, metal refineries, chemical plants, and areas of high use of agricultural chemicals.

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3.2286,

POSSIBLE ASSOCIATION OF DIETARY FACTORS AND NON-CONTRACEPTIVE EXOGENOUS ESTROGENS WITH BREAST CANCER

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A case-control study of breast cancer is seeking possible associations of the disease with the use of exogenous estrogens in post-menopausal women, and with histories of dietary intake high in animal protein and fat. The study design entails a comparison of breast cancer cases with neighborhood and hospital controls in three populations who differ greatly in their risks for breast cancer: Caucasians in Hawaii, Japanese Americans in Hawaii and indigenous Japanese in Fukuoka, Japan. Two hundred cases and their matched controls will have been analyzed for each of the three populations at the end of this projected five-year study.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.2287,

MICROBIOLOGICAL FACTORS CONTRIBUTING TO COLON CANCER

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Chemical causes of colorectal cancer are being sought by the use of a bacterial mutagen assay to detect potential carcinogenic substances in human fecal samples. Preliminary epidemiological work has been done on the frequency of mutagens in feces of Japanese in Japan and Japanese in Hawaii, populations of low and high risk for large bowel cancer, respectively. Five classes of faecal mutagens have been discovered, four of them present in higher amounts in the high risk Hawaiian Japanese than in the low risk Japanese population. Two of these four mutagens are closely associated with the fecal transnitrosase. This is an enzyme which the investigators have discovered in certain strains of E. coli, various fecal bacteria and in human colon and stomach tissue. This enzyme can transfer nitroso groups from a wide variety of nitrosamines to a diverse group of amide acceptor molecules, such as simple primary and secondary amides, ureas and urethanes. The structure of the product is unknown but different from the structure of the N-nitroso-N-alkyl amides, ureas or urethanes. All products are direct acting mutagens on the Ames Salmonella strain TA98. The enzyme is increased when beef is added to the diet of man or experimental animals. The identification and structure of these products will be studied. A newly discovered enzyme, mutagen suppressor enzyme, is also present in fecal bacteria. The enzyme will specifically destroy the product of the transnitrosase, converting these substances into N2, esters, or NO2 and the original acceptor molecule. Mutagen formation is thereby prevented. Both enzymes will be purified, characterized and studied. Mechanisms whereby diet and environmental effects alter the fecal mutagens, fecal transnitrosase and fecal mutagen suppressor enzyme will be sought.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.2288,

INVESTIGATION OF HISTOLOGICAL TYPES OF LUNG CANCER AMONG WOMEN IN THREE ETHNIC GROUPS IN HAWAII

M.W. Hinds, University of Hawaii System, Manoa Campus, Cancer Center of Hawaii, Epidemiology Program, *1997 East West Rd., Honolulu, Hawaii* 96822

This study will determine the histological type-specific incidence rates for lung cancer among Japanese, Chinese and Hawaiian/part-Hawaiian female residents of Hawaii and examine the association of cigarette smoking with lung cancer for each histological type and within each ethnic group. All available hospital records and pathology slides for the approximately 310 Japanese, Chinese and Hawaiian/part-Hawaiian women diagnosed with primary lung cancer during 1968-1977 will be reviewed. Pathology slides will be reviewed by two pathologists in a blind fashion, using standard histological criteria. Smoking history will be obtained from the medical records and estimates of the relative risk caused by smoking for each histological type of lung cancer will be made by comparison to a control group matched for sex, age, ethnic group and census tract of residence.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.2289,

CANCER OF THE BREAST, ENDOMETRIUM, AND OVARY

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This is a large cooperative case-control study, designed to: (1) estimate the effect of oral contraceptive use on the risk of breast, endometrial, and ovarian cancer, especially among women with characteristics such as (a) oral contraceptive use in the presence of benign breast disease and other breast cancer risk factors (family history of breast cancer, etc.), (b) oral contraceptive use prior to first birth, (c) use of sequential compared to combination oral contraceptives and (d) prolonged total use of oral contraceptives; (2) evaluate the pathological nature and prognosis of breast, endometrial, and ovarian cancer which occurs in association with oral contraceptive use when the association appears causal. It is planned to examine up to as many as 10,000 cases of the three diseases combined. Cases will be drawn from population-based tumor registries and the controls will also be population-based.

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3.2290,

TETRACHLOROETHANE EXPOSURE AND SUBSEQUENT MORTALITY FROM CANCER IN U.S. ARMY VETERANS OF WORLD WAR II

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Heavy exposures to chemical hydrocarbons in man result mostly from industrial chemicals and pesticides, but most exposures are recent and do not lend themselves to epidemiological investigation. One member of this class of compounds, tetrachloroethane, has had wide industrial use and was also used by the Army during World War II in the impregnation of clothing against mustard gas. One-fourth of the 39 Army Chemical Processing Companies used tetrachloroethane as a solvent in the impregnation process while the remainder used an improved process in which water replaced this compound. Cases and controls are thus defined on the basis of company assignment and military speciality. The mortality experience of some 13,300 men (cases and controls) is being studied to determine the effect of exposure to the chemical on cancer mortality.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.2291,

CANCER AND STEROID HORMONES

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Hormones are suspected of being related to breast, ovary and endometrial cancer. However, the exact nature of this interrelationship has not been worked out completely. This prospective case-control study aims to assess the interaction of oral contraceptives and estrogenic hormones with risk factors of breast, ovary and endometrial cancer to determine if the factors operate independently, synergistically or not at all in producing the three cancers. The pilot phase of the project is currently under way. One hundred cases will be assessed to make sure that the methods intended for use work. Following this, a much larger study, to examine perhaps up to as many as 10,000 cases of the three diseases combined, is planned. The cases will be drawn from population-based tumor registries and the controls will be population-based also.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.2292,

STUDY OF OVARIAN CANCER IN GREATER WASHINGTON

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In order to gain understanding of the apparently complex etiology of cancer of the human ovary, the National Cancer Inst. (NCI) will design and oversee an interview study of incident cases of ovarian cancer diagnosed in hospitals in the Washington, D.C. metropolitan area and controls discharged from the same hospitals. Although this form of malignancy is relatively common (17,000 cases per year in the U.S.) and is often fatal (10,000 deaths per year), very little is known of its causes. In the past decade, studies have clearly shown that the disease is associated with infertility and low fertility, but the mechanism remains to be elucidated. The existing suggestions of viral factors, of exogenous estrogenic factors, and of specific industrial exposures need further pursuit. NCI will conduct the study in collaboration with a local investigator experienced in the operation of an interview study of ovarian cancer, who will obtain the cooperation of the area hospitals and supervise the study staff. The study staff will be responsible for the identification of cases and controls, the interview of respondents, and the coding of data. NCI will design the protocol and the questionnaire, monitor the progress of the study, analyze the data, in cooperation with the collaborating investigator. A preliminary report has been published in Gynecologic Oncology 7, 1979.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.2293,

FOLLOW-UP STUDY OF LIVER CIRRHOSIS

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More than 10,000 males with liver cirrhosis, divided into categories of age and race, will be followed up over a five to ten year period to determine their overall mortality experience, their site-specific rates of cancer incidence and their cancer risks in relation to levels of tobacco smoked and alcohol consumed. Cirrhotic patients will also be compared with a control group of the same age and race, but without liver cirrhosis, in order to evaluate differences in marital status, religious preference, residence and occupation. Controls and cases will be selected from the 171 United States veterans hospitals located in 48 contiguous states, the District of Columbia and Puerto Rico. This study is a sequel to many previous studies on United States veterans which, generally, found increased risks of floor of mouth, uvula and soft palate, pharynx, esophagus and liver cancers among cirrhotics, heavy smokers, heavy drinkers or among patients with combinations of these attributes.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.2294,

ALCOHOL, TOBACCO AND AGE FACTORS IN THE RELATIVE FREQUENCY OF CANCERS AMONG MALE NEGROES WITH AND WITHOUT LIVER CIRRHOSIS

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Because ethnic factors contribute to distinct distributions of many diseases in the United States and can frequently explain still other factors in their etiology, and because, further, a recent study yielded substantial data on white cancer patients with and without liver cirrhosis, there is a decided need for comparable data on Negroes. These data will facilitate valid racial comparisons in regard to tobacco and alcohol consumption, cancer sites and age disparities among males, with and without liver cirrhosis, and may delineate factors in cancer etiology which are specific to one race. Negro cases (with liver cirrhosis and cancer) and Negro controls (with cancer but not liver cirrhosis) from the 171 veterans' hospitals in the United States will be examined over a six year period. This research will endeavor to demonstrate the extent to which cirrhotics manifest significant excesses of specific digestive organ, oral cavity and pharyngeal cancers with regard to types and amounts of tobacco smoked and alcohol consumed. The probable roles of some occupational exposures in the pathogenesis of cancers in cirrhotics will also be assessed. Subsequent analyses will entail the comparison of data on Negroes with data, already published, on 286 white males with liver cirrhosis and cancer and on 374 white males with cancer only.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.2295,

THE EPIDEMIOLOGY OF MULTIPLE MYELOMA IN UNITED STATES VETERANS

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The specific aims of this research are to determine overall rates of multiple myeloma incidence by race and age, and the specific incidence rates in each state and region of the United States by race among US males, diagnosed and treated in the 171 veterans hospitals located throughout United States. This study will also determine if significant rate differences can be explained by either patterns of hospitalization or ratios of multiple myeloma patients to all other hospitalized patients by age, race and residence. The probable role of climatic factors in the incidence of multiple myeloma in each region will also be evaluated, in addition to occupational exposures, tobacco use and alcohol consumption. The multiple myeloma cases will comprise three year 100 percent sample of male discharges from United States veterans hospitals. Controls (matched to the cases on age, race and bed-sections in the hospitals) will be employed and the denominator for rates will derive from US Census Data on veterans, finally, with multivariate techniques, the contributions of age, residence, birthplace, bed-sections in hospitals, tobacco use, alcohol consumption, occupations and possibly seasonality to any marked disparity in multiple myeloma incidence by race will also be made.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.2296,

CANCER MORBIDITY AND MORTALITY IN A ZONE OF CENTRIFUGAL SPREAD NEAR PESTICIDE FORMULATING PLANTS

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In recent years, the association between exposure to pesticides and the resulting health effects has been investigated. Much of this research has focused on the potential carcinogenicity of the chlorinated hydrocarbons. The effects of contamination of the areas surrounding pesticide formulating plants will be investigated in this study. It is reasonable to assume that the adjacent area, and also the area affected by the meteorological dispersion of contaminants, will experience a higher level of pesticide exposure than those areas outside this zone. The study population will consist of individuals living within specified areas of centrifugal spread in the proximity of three pesticide formulating plants in Colorado. The cancer mortality rate for these areas will be compared to that of a similar control population. Cancer mortality data will be collected from death certificate listings for the years 1970 to 1975. Households within the study population will also be interviewed to obtain morbidity data.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.2297,

EPIDEMIOLOGICAL STUDY OF LEUKEMIA IN MESA COUNTY, COLORADO, U.S.A.

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This is a descriptive and analytical study in Mesa County, Colorado, USA, where the age-adjusted leukemia incidence rates are 2-2.5 times the expected, based on Colorado and US data (41 observed: 20 expected in 1970-1976). In the 1950s and 1960s tailings for a uranium mill were used extensively in Mesa County for construction - as a backfill under basements and around foundation walls. For the analytical study the case-control approach is used. Leukemia patients, patients with other malignancies believed associated with ionizing radiation and patients with cardiovascular disease are interviewed. Work over the past year has confirmed the leukemia excess, but has not shown a direct association with residences containing uranium mill tailings.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.2298,

ANIMAL NEOPLASM REGISTRY - ALAMEDA AND CONTRA COSTA, CALIFORNIA

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The goal of this project is to help determine the etiology and pathogenesis for as many tumor types and tumor sites as possible by comparing naturally occurring cancers in various species including man. Study of the natural history of cancer in domestic animals and the relationship of cancer in man and animals has been limited because of the lack of adequate animal data. The Animal Neoplasm Registry in Alameda and Contra Costa Counties, California, initiated in July 1963, has developed methods of systematically collecting cancer cases diagnosed by practicing veterinarians. This is the first general animal population-based registry in the world of histopathologically confirmed tumors of all types diagnosed in the animal populations of a defined geographic area. A population-based human tumor registry also functions in the area; thus, human and animal cancer cases are available for comparison. From these data, the following types of studies can be done: (1) characterization of animal cancers such as age-, sex- and breed-specific incidence rates; (2) seeking factors or variables that may affect the risk or occurrence of various cancers in animals and relating them to human cancer occurrence; (3) human-animal association to determine if there is increased human cancer in households where an animal with cancer has lived; (4) human-animal comparisons such as age-and sex-specific incidence rate patterns for clues to possible environmental effects; (5) laboratory studies, e.g. attempts to isolate oncogenic viruses from various tumors or other cancerous animal tissues, and (6) treatment evaluation studies such as evaluation of new treatment methods or approaches prior to application to man.

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3.2299,

ESTIMATING THE INCREASES IN SKIN CANCER THAT WILL RESULT FROM INCREASING ULTRAVIOLET RADIATION

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Increasing ultraviolet radiation (from depletion of the stratospheric ozone or from other causes) will result in increasing skin cancer. The purpose of this study is to estimate the amount of the increase as a function of age, sex, locality, site, skin color, and other characteristics. Efforts are being made to ascertain the influence of microclimate, socioeconomic level, and other factors which may influence the observed increase in skin cancer. Separate studies are made for melanoma, non-melanoma, and keratosis in as much detail as possible; also for mortality, incidence, and prevalence.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.2300,

EPIDEMIOLOGICAL STUDY OF THE INCIDENCE OF CANCER AS RELATED TO INDUSTRIAL EMISSIONS IN CONTRA COSTA COUNTY

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The study aims (1) to test the hypothesis that the incidence of cancer of specific sites is higher in the population of the heavily industrialized section of Contra Costa County than in the population of the residential areas; (2) to determine whether any union or occupational groups in Contra Costa County have higher incidence rates for any cancer sites than other unions or occupational groups; (3) and to identify specific environmental factors associated with lung cancer incidence in Contra Costa County. Age, race, sex and site specific cancer incidence rates for an 8 year period will be calculated for the group of census tracts in the predominantly industrial section of Contra Costa County and for the remaining group of tracts in the residential section. Rosters of union members and other occupational groups will be matched with cancer incidence files of the Resource for Cancer Epidemiology. The number of cases observed will be compared in the San Francisco-Oakland SMSA. A case-control study of cancer patients in Contra Costa County will be performed. The site, sex and age of the cancer patients will be decided on the basis of the results of the cancer incidence data obtained in the first part of the study. A questionnaire designed to investigate variables, such as length of residence in Contra Costa County, socioeconomic status, smoking, occupation and other causative and contributing variables, will be administered to cases and controls.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.2301,

LIPID LEVELS AND CHOLESTEROL METABOLISM IN RELATION TO BREAST CANCER RISK

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Thousands of women who have had cholesterol levels measured at multiphasic check-ups are being followed up to determine whether breast cancer incidence rates are related to cholesterol levels.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.2302,

STUDIES ON ENVIRONMENTAL CANCER USING A PRE-PAID HEALTH PLAN

G.D. Friedman, Kaiser Foundation Research Inst., Dept. of Medical Methods Research, *1956 Webster St., Room 310 B, Oakland, California* 94612

Using longitudinal medical records, case-control studies will be carried out to evaluate hypotheses concerning possible environmental factors predisposing to cancer. The first study being undertaken, in collaboration with the Kaiser Permanente Group in Portland, Oregon (Dr. Andrew Glass, principal investigator), and with the National Cancer Institute (Dr. Robert Hoover, project officer), is about the relationship of use of estrogens and other hormones with the development of ovarian cancer.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.2303,

HEALTH EFFECTS IN CHILDREN EXPOSED TO VINYL CHLORIDE

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Although a considerable body of occupational and laboratory toxicological data have demonstrated the carcinogenic action of vinyl chloride monomer (VCM), there appears to be little epidemiological information regarding health effects in children exposed to ambient levels of VCM. A pilot study consisting of a cohort of elementary school children who attended a school situated in close proximity to a PVC manufacturing plant will be conducted for potential health effects 10 to 20 years after exposure. Students will be grouped into three graduated exposure categories based upon estimates of total VCM concentrations received. Plant production history will be linked with pupil records, air monitoring data and dispersion calculations to subgroup the cohort. A number of mortality and morbidity indicators and data bases will be examined in order to contrast all exposure groups with zero exposure population.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.2304,

RETROSPECTIVE COHORT MORTALITY STUDY OF DRY CLEANING WORKERS EXPOSED TO PERCHLOROETHYLENE

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Perchloroethylene is a principal solvent in the dry cleaning industry. This chlorinated hydrocarbon has been shown to cause liver cancer in one strain of mice but not in one strain of rats. The objectives of the study are to identify a population of at least 2,000 individuals in dry cleaning facilities exposed to perchloroethylene as primary solvent and not previously exposed occupationally to either trichloroethylene or carbon tetrachloride who were employed for at least 12 months before 1960, obtain sufficient data to make possible calculation of expected mortality as a function of exposure, carry out follow-up, obtain death certificates and analyze and interpret the results. Eligibles for the cohort have been identified from four union locals, supplemented by solvent histories from sources including: equipment manufacturers and distributors, solvent distributors, and industry representatives. Follow-up will be through the Social Security Administration supplemented as needed by Motor Vehicle Registration and the TelCredit Bureaus. A modified life table analysis will be performed.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.2305,

EPIDEMIOLOGY OF PANCREATIC CARCINOMA AND IDENTIFICATION OF HIGH-RISK GROUPS

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The objectives of this research are to study the epidemiology of cancer of the pancreas, to formulate causal hypotheses and to identify groups at high risk of developing this tumor. A large case - control study, to be performed in Los Angeles County, has been designed to permit simultaneous examination of multiple antecedent risk factors. Cases with cancer of the pancreas will be identified by the Los Angeles County University of Southern California Cancer Surveillance Program. questionnaire has been designed to obtain data on occupational and on environmental exposures - tobacco and alcohol consumption, diet, and medical history and treatment. It will be administered to both cases and neighborhood controls as soon as possible after the cases have been diagnosed. Standard matched-pair analyses of multiple variables will be performed on the data from the questionnaire.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.2306,

CAUSATIVE FACTORS IN CARCINOMA OF THE ESOPHAGUS AMONG SOUTHERN CALIFORNIA RESIDENTS

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The objectives are to study the epidemiology of carcinoma of the esophagus, to test previously suggested causal hypotheses and associations, to discover new associations and to delineate the characteristics of high risk groups by means of a large case - control study designed to permit simultaneous examination of multiple antecedent risk factors. Cases with cancer of the esophagus will be identified by the Los Angeles county University of Southern California Cancer Surveillance Program. A questionnaire has been designed to obtain data on environmental exposures - tobacco and alcohol consumption, diet, occupation, and medical history and treatment. It will be administered to both cases and neighborhood controls as soon as possible after the cases have been diagnosed. Standard matched pair analyses of multiple variables will be performed.

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3.2307,

MALIGNANT MELANOMA - A CASE-CONTROL STUDY IN LOS ANGELES

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The annual incidence of malignant melanoma in Los Angeles is about 10 per 100,000 and appears to be increasing. A case-control study has been designed to test and formulate causal hypotheses and to identify groups at high risk. The specific aims of this study are: 1) To quantify the risk of persons for melanoma in relation to job, medical history and particular patterns of behavior, inheritance and skin characteristics, 2) To distinguish between the determinants of risk to different body sites and the determinants of different pathological types. Cases with malignant melanoma will be identified by the Los Angeles County University of Southern California Cancer Surveillance Program. A questionnaire designed to obtain data on occupational and environmental exposures, behavioral patterns in the sun, medical history and treatment, and skin features will be administered to both cases and controls. In addition, skin color will be determined for cases and controls.

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3.2308,

EPIDEMIOLOGY OF BENIGN BREAST DISEASE

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The aim of the study is to examine the epidemiology of major types of benign breast disease and to compare identifiable risk factors for benign diseases with known risk factors for breast cancer. At the same time a histological classification scheme based on grading of cellular atypia in comparison with the conventional histological classification will be examined. Approximately 1,000 women with first biopsies for benign breast disease in participating hospitals will be admitted to the study by a sampling mechanism designed to represent the spectrum of histological types. Histology slides will be reviewed by two independent pathologists and classified on two separate schemes. A group of about 200 women with breast cancer will also be included. Two types of controls will be used, a hospital control and a friend control. Information on epidemiological characteristics will be obtained by questionnaire. The questionnaire seeks responses on a wide range of topics including environmental influences, familial cancer patterns, medical, maturation, and reproductive history, and various other endocrine-related subjects. Epidemiological characteristics of different histological types of benign breast disease will be compared to each other and to those of breast cancer.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.2309,

EPIDEMIOLOGY OF INTRACRANIAL NEOPLASMS

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A large case-control study of two subgroups of patients with primary intracranial neoplasms is to be performed in Los Angeles County: intracranial tumors of all histological types first occurring in children and young people under age 25 from 1972 to 1977; and incident intracranial meningiomas in men from 1972 to 1975. The study has been designed to test the hypothesis that previous radiation exposure is causally related to the development of these tumors, to test previously suggested causal associations, to discover new associations and to delineate the characteristics of the high risk groups. Cases with specified intracranial tumours will be identified by the Los Angeles County-University of Southern California Cancer Surveillance Program. Questionnaires have been designed to obtain data on radiation exposure, occupation, consumption of tobacco and drugs, medical history, and family history of tumors. Standard matched pair analyses of multiple variables will be performed.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.2310,

HEPATITIS B VIRUS AND PRIMARY HEPATOCELLULAR CARCINOMA

E. Tabor, U.S. Dept. of Health & Human Services, Public Health Service, Food & Drug Admin., Bureau of Biologics, Hepatitis Branch, *8800 Rockville Pike, Bethesda, Maryland* 20014

The objective of the study is to evaluate the incidence of hepatitis B virus infection in villages in Zambia. These data will be correlated with the occurrence of primary hepatocellular carcinoma, and will be used as baseline data to evaluate the effect of hepatitis B vaccine on the occurrence of primary hepatocellular carcinoma, when these vaccines become available for use in humans.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.2311,

A MORBIDITY AND MORTALITY FOLLOW-UP STUDY OF WOMEN TREATED FOR HYPERTHYROIDISM

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Radioiodine (131I) is now the treatment of choice for persons over the age of 20 years. Although there have been several studies of the possible delayed effects of radioiodine, they have been either too small or have not followed these patients for a long enough time to evaluate adequately the possible carcinogenic effects. The objective of this study is to follow up female patients treated for hyperthyroidism at the Mayo Clinic between 1946 and 1964. This is part of the population that was originally followed up in the National Cooperative Thyrotoxicosis Follow-Up Study. Risks of morbidity and mortality, particularly from malignant neoplasms, will be evaluated. The study will attempt to determine if patients treated with therapeutic doses of 131I are at an increased risk of developing malignant neoplasia compared to patients treated for the same condition with non-radiation modalities. The study design is that of a non-concurrent prospective approach. Eligibility criteria for inclusion in the study cohorts include: 1) treated at the Mayo Clinic for hyperthyroidism between January 1, 1946, and December 31, 1964; 2) a confirmed diagnosis of hyperthyroidism; and 3) United States residency. After review of the Mayo Clinic records, a total of 3,696 white females were ruled eligible for inclusion in the study cohorts. The distribution of patients in the various treatment groups is: 1,004 treated with 131I, 2,141 treated surgically, 426 received both 131I and surgical treatment, and 125 received antithyroid drugs. The medical records of these patients have been abstracted for medical and demographic information. Because the patients were not randomly assigned to the treatment groups, the bases for selection for a particular therapy will be evaluated in order to minimize potential selected biases. Dosimetric information for those patients treated with 131I is being collected in order to estimate various organ doses. Follow-up of these patients is being conducted via mail.

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3.2312,

NATIONAL CANCER INSTITUTE PROGRAM OF CANCER SURVEILLANCE, EPIDEMIOLOGY AND END RESULTS (SEER PROGRAM)

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The SEER Program was developed in response to the National Cancer Program requirements for assessing as currently as possible the magnitude of the cancer problem in the United States and for identifying factors related to cancer risk and/or patient survival. The 'cancer problem' has been interpreted to include: 1) newly diagnosed cancer cases that might have been prevented by altering host or environmental conditions and 2) deaths due to cancer that might have been prevented by earlier cancer diagnosis coupled with optimal therapeutic approaches. Therefore, the SEER Program has among its objectives: 1) To assemble and report on a periodic basis, estimates of cancer incidence in the United States. 2) To monitor annual cancer incidence to identify unusual changes in specific forms of cancer occurring in groups defined by parameters of geographical, demographic and social characteristics of the population. 3) To provide continuing information on changes over time in extent of disease at diagnosis, trends in therapy and associated changes in cancer patient survival. 4) To promote the development of hypotheses and specific studies designed to identify cancer aetiological factors (environmental/occupational, sociocultural, etc.) and factors related to patient survival.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.2313,

A CASE-CONTROL STUDY OF BREAST CANCER RISK IN RELATION TO PARENCHYMAL PATTERN

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Approximately 500 women, aged under 50, will serve as cases and will be identified from the files of two hospital mammography units from 1976-1978. About 1,000 controls of the same age will be selected from the same files; these will be women who came for a 'screening' examination. Risk of breast cancer will be estimated as a function of breast parenchymal pattern with attention given to other risk factors both as potential confounding and interacting factors.

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3.2314,

EPIDEMIOLOGY OF CANCER AMONG MORMONS

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The standardized mortality ratio (SMR) for total cancer in 350,000 California Mormons during 1968-1975 and 750,000 Utah Mormons during 1970 -1975 compared with US whites is about 50 percent for 'active' males, about 65 percent for all males, and about 75 percent for all females. For active males the SMR is about 25 percent for smoking-related cancer sites and about 65 percent for all other sites. Mormons are a health-conscious religious group, who appear to be similar to US whites in many respects, such as diet, socio-economic status, and urbanization, but who use substantially less tobacco, alcohol, coffee, and tea than the general population. 'Active' Mormons, and leaders known as High Priests and Seventies, abstain almost entirely from tobacco, alcohol, and caffeine. However, the reasons for the low Mormon cancer rates are largely unknown, primarily because there are no detailed data available on their health characteristics. The objective of this study is to pursue the descriptive mortality data with a questionnaire survey and prospective mortality follow-up of 'active' California Mormon adults, specifically High Priests and their wives. The survey will obtain detailed demographic, life style, dietary, occupational, and medical history data on a representative sample of about 1,000 individuals and limited demographic and life style information on about 20,000 additional persons. Mortality follow-up will be conducted on this cohort for four years. Additional church-based mortality data will be collected for all California Mormons during the years 1960-1967 and 1976-1979 and for all Utah Mormons during 1976-1979, to increase the statistical reliability of the existing data summarized above. The data on life style and health-related characteristics of 'active' California Mormons will be compared with their detailed cancer mortality rates. Distinctive differences between these Mormons and other comparison groups will be highlighted.

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3.2315,

REVIEW OF BILE DUCT CARCINOMAS

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As a follow-up on an earlier study of changing patterns of hepatocellular carcinoma, a similar study embracing autopsy material from the Los Angeles County Hospital 1945 to 1978 dealing with bile duct carcinomas has been undertaken in an attempt to establish the presence or absence of changing patterns of that tumor.

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3.2316,

REVIEW OF INCIDENCE AND CHANGING PATTERNS OF LIVER TUMORS IN LOS ANGELES

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As part of an epidemiological study of tumors in Los Angeles County, a broad survey of tumors of the liver is being undertaken. All liver tumors diagnosed at biopsy or autopsy in the County of Los Angeles are microscopically reviewed, terminology and diagnoses are standardized and patient information regarding age, sex, race and previous exposures to potential carcinogens is obtained. Surveys in the past have dealt with death certificate diagnoses only or have accepted submitted diagnoses; this is an attempt to diagnose more precisely the types of tumors to see whether a low incidence tumor, previously buried in the overall designation of 'liver cancer,' is showing a change in incidence.

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3.2317,

RELATIONSHIP BETWEEN THYROID DISEASE AND BREAST CANCER

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Associations between several thyroid diseases and breast cancer have been reported. This retrospective cohort study is being conducted to evaluate these associations. In a mortality study, over 5,000 women with thyroid disease (hyperthyroidism, hypothyroidism, nodular goiter, Hashimoto's thyroiditis), 2,000 women with no disease and 7,000 population controls will be followed. In a morbidity study 1,600 women with thyrotoxicosis who have been treated with surgery or medical therapy will be followed. Comparisons of rates of breast cancer and other diseases will be made internally according to diagnoses and externally with population mortality and cancer incidence rates.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.2318,

FOLLOW-UP OF FLUOROSCOPICALLY EXAMINED TUBERCULOSIS PATIENTS IN RELATION TO CANCER INCIDENCE

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There is current interest in instituting mass screening programs of mammography to detect breast cancer in early stages. However, there is concern that the radiation used may itself have harmful side effects. In this study, the association between radiation received as a result of fluoroscopic examination during air-collapse therapy for tuberculosis and cancer is being assessed. The occurrence of other diseases both in relation to radiation and to isoniazid therapy will also be examined. This is a retrospective cohort study of approximately 9,000 women and men who were treated for tuberculosis in Massachusetts from 1930 onwards. These persons will be followed up from records and other sources. Rates of mortality and cancer morbidity will be compared internally, between radiated and non-radiated patients or between patients treated with and without isoniazid, and externally, with population mortality and cancer morbidity rates.

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3.2319,

MORTALITY AMONG WORKERS IN THE METAL POLISHING, BUFFING, AND PLATING INDUSTRY

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Workers in the metal polishing, buffing, and plating industry are exposed to a number of potentially hazardous substances (metal dusts, cyanide solutions, solvents and degreasers). To evaluate the mortality experience of this group and to provide clues concerning the carcinogenicity of certain occupational

exposures, the distribution of causes of death among 3,000 past members of the Metal Polishers, Buffers, Platers, and Helpers International Union will be compared with the distribution in the general population.
Description provided by IARC and DKFZ with ICRDB/NCI support.
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3.2320,
BLADDER CANCER, LEUKEMIA AND LYMPHOMA AMONG NEW YORK AND WISCONSIN DAIRY FARMERS - A DEATH CERTIFICATE STUDY

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A few studies have suggested that dairy farmers have elevated mortality from bladder cancer, leukemia, and lymphoma. To evaluate this lead, 300 deaths from each neoplasm in heavy dairying counties in New York and Wisconsin were individually matched to one control (dying of some other disease) of the same age, race, sex, year of death and county of residence. Type of farming operation for case and control farmers will be determined using records from the State Cooperative Extension Service. The proportions of death certificates listing farmer as the usual occupation and the type of farming operation will be compared in the cases and controls.
Description provided by IARC and DKFZ with ICRDB/NCI support.
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3.2321,
CAUSES OF DEATH AMONG TOBACCO WORKERS

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The objective of the study is to determine whether workers employed in tobacco processing plants experience unusual cancer mortality patterns that may suggest exposure to carcinogenic agents. The study group consists of approximately 3,000 deaths among members of the Tobacco Workers Union reported in the union journal since 1957. The tobacco workers will be compared with the experience of the general population.
Description provided by IARC and DKFZ with ICRDB/NCI support.
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3.2322,
IMMUNOLOGICAL AND MOLECULAR HYBRIDIZATION STUDIES OF NASOPHARYNGEAL CARCINOMA

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EBV is considered a major factor in NPC and the aim is to further assess the role of EBV in terms of etiology, diagnosis/prognosis and other environmental and genetic factors. West Germany and the U.S.A. are low NPC incidence areas. In U.S.A., NPC cases occur in Chinese, whites, blacks and Alaska Eskimos. In Algeria NPC ranks as the number four cancer in males. There are also two age peaks in this population. Since young age NPC has been observed in the black population in some southern states of the USA, Algerian NPC provides an excellent comparison. Examination of approximately 14 cases of German NPC with more than 30 cases from Algeria suggests that antibodies to EBV antigens are much higher in Algerian cases. Data also show that antibodies to EBV, though higher in American than in West German NPC, are not statistically significant. Geometrical mean titers (GMT) of serum antibody to several EBV antigens from 86 cases of NPC from intermediate (Algeria, Tunisia, Malaysia) and from low incidence areas (West Germany and U.S.A.) suggest that VCA-IgA, VCA-IgG and EA-IgG were higher among patients from intermediate risk countires. The only statistically significant difference was for antibody VCA-IgG. Sera tested from 42 NPC patients showed a positive correlation between VCA-IgA and EA-IgA antibodies. NPC biopsies from patients in Algeria were found to contain EBV nuclear antigens, and GMTs of VCA-IgA antibodies from Algerian NPC male patients were higher (36.47) than female (14.69), however only 60 percent of the males were positive to this antigen compared to 82 percent of the females. The correlation between prognosis and high antibody dependent cell cytotoxicity levels was significant. In the series of Algerian patients, most patients were of similar age to those reported in other northern African countries.
Description provided by IARC and DKFZ with ICRDB/NCI support.
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3.2323,
EPIDEMIOLOGY OF ACUTE CHILDHOOD LEUKEMIA

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Malignant diseases are the second leading cause of death in U.S. children, with leukemia accounting for about 50% of all childhood cancer deaths. Although a number of factors have been implicated in the etiology of childhood leukemia, including ionizing radiation and chemical agents, the etiology of most childhood leukemias remains unexplained. This case-control study aims to assess environmental influences in childhood leukemia, including factors which may act in utero or in early life. The study population consists of children identified in three metropolitan areas in the U.S. (Baltimore, Philadelphia, and Washington, D.C.). Three groups of about 50 children were individually matched by age, sex, race and hospital of diagnosis: children with acute leukemia, children with other malignancies, and children without malignancies. Interviews have been conducted among parents of these children, and data are now being analyzed.
Description provided by IARC and DKFZ with ICRDB/NCI support.
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3.2324,
ENVIRONMENTAL EPIDEMIOLOGY OF PANCREATIC CANCER

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Cancer of the pancreas is the fourth leading cause of death due to cancer in the United States, exceeded by cancer of the lung, colon and rectum, and prostate. This case-control study is designed to investigate environmental factors that may be associated with pancreatic cancer. Cases with pancreatic cancer and two groups of controls -neighborhood controls and hospitalized patients without cancer - and their families will be interviewed. Patients with a diagnosis of pancreatic cancer will be ascertained concurrently from the onset of the study for a period of three years. Cases will be identified from: review of hospital records, pathology records, survey of surgeons and internists, and review of death certificates. Wherever possible, the original slides of biopsy or surgical excision as well as pathology and/or autopsy reports will be obtained and reviewed for verification of diagnosis by a consultant pathologist who will not have the clinical data available to him prior to review of the slides. Patients will be interviewed as soon as is practical after diagnosis, generally during their post-operative convalescence. The spouse or closest relative will also be interviewed. A similar approach will be used for ascertaining information about controls. Data to be obtained in the interviews include: (1) demographic characteristics; (2) past medical history; (3) use of alcohol or tobacco; (4) detailed life-time occupational history; (5) chemical and radiation exposures; and (6) family history of pancreatitis, other digestive diseases, diabetes, or cancer.
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3.2325,
RISK OF SECONDARY AMENORRHOEA WITH OR WITHOUT PITUITARY ADENOMA IN RELATION TO ORAL CONTRACEPTIVE EXPOSURE

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The objective of this study is to determine whether women with prolactin-secreting pituitary adenoma and/or secondary amenorrhoea or galactorrhoea have significantly greater frequency or duration of past use of oral contraceptives than controls. The study is a collaborative one, involving Johns Hopkins Hospital, the University of Southern California and the University of California at San Francisco. Study subjects will consist of three case groups and controls. Case groups will consist of women with pituitary adenomas, women without pituitary adenomas who have secondary amenorrhoea and/or galactorrhoea and normal prolactin levels, and women who have no definitive evidence of pituitary adenoma but who have secondary amenorrhoea and/or galactorrhoea and elevated prolactin levels. Neighborhood controls will be selected, and each control will be matched by age and race to a particular case. Data will be obtained from clinical records which will be abstracted for cases only and from interviews which will be conducted with all study subjects. Questions asked during the interview will deal with demographic data, medical, medication, pregnancy, contraceptive, and menstrual histories, possible carcinogenic exposures, and familial medical history.
Description provided by IARC and DKFZ with ICRDB/NCI support.
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.2326,
LUNG CANCER IN LOUISIANA

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Mortality due to cancer of the lung is high in southern Louisiana. Approximately 800 deaths due to cancer of the lung were reported during the seven year (1971-1977) period in ten target parishes (counties). Histopathology has been collected and is being evaluated on almost all deceased persons. Surviving relatives of each person designated as having died of lung cancer are being interviewed concerning the occupation and familial relationships of the deceased. The data on the subjects will be compared with data on controls matched for age, sex, race, and place of residence. Because previous studies have shown a possible relationship between ancestry and cancer, possible familial relationships will be computer analyzed.
Description provided by IARC and DKFZ with ICRDB/NCI support.
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.2327,
MORTALITY AMONG RUBBER WORKERS

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As part of an on-going study of morbidity and mortality among rubber workers, a cohort of approximately 40,000 employees at one manufacturing plant in Akron, Ohio, is being followed. In this study, the mortality experience according to employees' departments of employment will be examined. The years worked in specific departments, the ages when employed, and the periods of employment in relation to subsequent mortality will be studied. Mortality rates will be compared internally among departments and externally with population mortality rates.
Description provided by IARC and DKFZ with ICRDB/NCI support.
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.2328,
BREAST CANCER DETECTION DEMONSTRATION PROJECT

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Approximately 10,000 women from the age group 35 to 74 are being screened annually. On entry into the study, physical examination, mammography and thermography are used to evaluate the screenees annually. This project is one of 27 similiar projects

throughout the United States, sponsored by the American Cancer society and the National Cancer Institute.
Description provided by IARC and DKFZ with ICRDB/NCI support.
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.2329,
AMERICAN CANCER SOCIETY'S PROSPECTIVE EPIDEMIOLOGICAL STUDY
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Large scale prospective studies can provide data that serve as excellent sources for clues to cancer causation in humans. Analyses of mortality from cancer and other diseases from these studies can demonstrate the association of various etiological factors with mortality from different causes. Detailed questionnaires were collected from more than one million men and women representing all population segments by American Cancer Society volunteers who successfully traced almost 99% of the subjects. Copies of death certificates for the deaths were obtained from state health departments whenever a death was reported. Although follow-up ceased in 1972, a small subgroup (approximately 1.5% of the survivors in 1972) is still being traced in 1960. This subgroup is comprised on long-lived subjects (males born prior to 1888; females, 1886). The object of this study is to elucidate those factors associated with cancer prevention.
Description provided by IARC and DKFZ with ICRDB/NCI support.
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.2330,
RISK OF BREAST CANCER IN WOMEN WITH BENIGN BREAST LESIONS USING ORAL CONTRACEPTIVES
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At least one investigator has found a higher risk of breast cancer in women using oral contraceptives who have a history of benign breast lesions. Arrangements have been made with Dr. Takuma Nemoto to administer a simple two-page questionnaire to women with breast cancer at the Roswell Park Memorial Institute. Age-matched controls are selected from the Dermatology and Thoracic service at the Roswell Park Memorial Institute. It is anticipated that approximately 300 breast cancer patients can be surveyed per year at the Institute. The questionnaire administered contains questions dealing with the major hypotheses of breast cancer etiology, including parity, age at first pregnancy, lactation, and the like, as well as questions dealing with use of the various oral contraceptives and a history of past benign breast lesions. Information pertaining to use of the pill and history of past benign breast disease is corroborated through medical records. To data, 224 case and 130 control questionnaires are complete.
Description provided by IARC and DKFZ with ICRDB/NCI support.
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.2331,
CANCER OF THE PENIS
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The objective of this study is to examine the presence or absence of antibodies to herpes virus type 2 in cases of cancer of the penis throughout New York State as compared to neighborhood controls in the same area. Names of cases are obtained as they are reported to the New York State Tumor Registry. Cases and controls are interviewed and have 15 ml of blood drawn for examination. The interview questionnaire includes socio-economic status, number of sexual partners, and use of contraceptives. The study has recently commenced and it is anticipated that data collection will continue for three to four years.
Description provided by IARC and DKFZ with ICRDB/NCI support.
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.2332,
EPIDEMIOLOGY OF ORAL CANCER
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A case-control study of the various nutritional and dietary factors common to patients with cancer of the oral cavity is in progress. Data on oral hygiene, use of dental prostheses, smoking, and alcohol consumption are also being obtained. Both self-administered questionnaires and interviews are used. For interim results see J. Nat. Cancer Inst. 59 (6): 1611-18, 1977.
Description provided by IARC and DKFZ with ICRDB/NCI support.
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.2333,
COMPARATIVE STUDY OF BLADDER CANCER IN THE U.S. AND EGYPT WITH EMPHASIS ON THE ROLE OF SCHISTOSOMIASIS IN CAUSATION OF BLADDER CANCER IN EGYPT
G.M. Sayed, University of Nebraska, Medical Center, School of Medicine, Dept. of Epidemiology, *42nd & Dewey Aves., Omaha, Nebraska* 68105
Cancer of the urinary bladder is one of the few malignant neoplasms in which the role of environmental factors has been determined. At least four of every five cancers in man have their origin in the environment. Bilharziasis is an endemic parasitic disease in Egypt, and affects 40% of all the country's farmers in their third decade of life. Bladder cancer constitutes 28% of all malignant tumors in Egypt. Data were collected from the Ministry of Health in Cairo, Egypt, The Egyptian National Cancer Institute, Cairo, the Department of Urology in Egyptian General and University Hospitals, the Department of Endemic Disease Control, State Health Department and Preventive Medicine and Biostatistics Departments in three Colleges of Medicine, Cairo, Egypt. The incidence of this form of cancer in the western hemisphere and in industries is compared with that in Egypt. Also, case-control studies for Egypt and the U.S. are compared. Histopathological patterns in both sectors will be studied in an effort to find an area of commonality between the types of environmental, social and cultural factors and the patterns of bladder cancer.
Description provided by IARC and DKFZ with ICRDB/NCI support.
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3.2334,
HISTOLOGICAL FINDINGS IN BRONCHIAL EPITHELIUM IN RECENT AUTOPSIES
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During the past two decades tar and nicotine content of American cigarettes have been greatly reduced. Although lung cancer death rates have continued to rise, evidence from recent epidemiological studies shows that mortality rates have now started to decrease. If reduction of tar and nicotine reduces the risk of lung cancer, then the degree of histological changes in the tracheobronchial tree of men who were autopsied in recent years would be less than in men who died 15 or more years ago. A total of 182 cases collected between 1955-1960 were matched with 182 cases who died between 1970-1977. Cases were matched on age and smoking habits. These records were supplemented by 29 additional 1955-1960 cases and 52 cases from 1970-1977. 55 slides were prepared for each case, a total of 20,424 slides. After the cases were selected, the slides were placed in random order and identified only by a serial number. The findings on number of cell rows, percent with atypical nuclei, carcinoma in-situ and early invasive cancer were recorded on code sheets and later key punched and combined by cases for analysis. Results were published in the N.Engl.J.Med. 300, 381-386, 1979. In both periods the histological changes increased with the amount of cigarettes smoked. Sections with advanced histological changes (carcinoma in-situ) occurred far more frequently in smokers who died in 1955-1960. Since all of these subjects smoked cigarettes higher in tar and nicotine up to the time of death than those smokers who died in 1970-1977, the differences in findings can be attributed to the changes in tar and nicotine content of the cigarette smoked. The study continues.
Description provided by IARC and DKFZ with ICRDB/NCI support.
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.2335,
HISTOLOGICAL CLASSIFICATION OF LUNG CANCER IN PERSONS EXPOSED TO ASBESTOS
O. Auerbach, U.S. Veterans Admin., Dept. of Medicine & Surgery, Medical Center, Senior Medical Investigators Laboratory, *Tremont Ave. & S. Centre St., East Orange, New Jersey* 07019
Studies of uranium miners who died of lung cancer have shown a different pattern of histological types from that in non-miners who die of lung cancer. Although there have been some studies of histological type of lung cancer in asbestos workers, these have been on a small series and not classified by the WHO classification of tumor type. Tissue specimens of lung cancer cases (autopsy and surgical specimens) on all subjects diagnosed with lung cancer in a 13 year period are being collected. Asbestos-exposed and non asbestos-exposed persons will be included in this study. Smoking, occupational and residence histories will be obtained from families of the decreased.
Description provided by IARC and DKFZ with ICRDB/NCI support.
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3.2336,
CANCER IN PARENTS OF CONGENITALLY DEFECTIVE CHILDREN
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This record linkage study aims to determine the cancer incidence in parents of children who were born with anencephaly or spina bifida. Information on 1,400 cases and 1,400 controls is currently being gathered.
Description provided by IARC and DKFZ with ICRDB/NCI support.
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.2337,
RELATIONSHIP BETWEEN CANCER MORTALITY AND ENVIRONMENTAL FACTORS
P.W. Preuss, State Dept. of Environmental Protection, *P.O. Box 1390, Trenton, New Jersey* 08625
The proposed project will correlate the geographical patterns of cancer mortality with environmental and industrial data in the following manner: (1) Statewide environmental and industrial data will be collected for as far back in time as the sources permit. (2) A list of approximately 600 environmental and industrial variables will be identified to be correlates to the cancer mortality data. (3) These variables will be correlated to the cancer mortality data. The mathematical techniques will include bivariate correlation and factor analysis. Bivariate correlation is a statistical tool for measuring the relationship between two variables. Factor analysis provides a measure of the extent to which groups of different variables correlated. Through the use of these techniques, both individual factors and groups of factors which correlated with cancer mortality will be identified. (4) From these results of the correlation of the 600 variables, a list of those 20 to 40 which correlate most strongly with cancer mortality will be generated. (5) Intensive data searches will be conducted in order to reconstruct a 30 year period of population exposure to the 20 to 40 selected variables. (6) Annual exposure rates will then be correlated to annual mortality data to determine if relationships exist between exposure and mortality. In performing these correlations the 20-30 year latency period for cancer will be considered. (7) A final report will be prepared explaining all findings and recommending future courses of action.
Description provided by IARC and DKFZ with ICRDB/NCI support.
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.2338,
NATIONAL ENDOMETRIAL PROGRAM
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The objective is to determine the prevalence and incidence of endometrial carcinoma and precancer-

ous states in 3,200 asymptomatic women, age 45 and above. A comparison of various systems of cytological states will also be made. By 1 October 1979, the first 1,000 patients were screened and 8 endometrial carcinomas diagnosed.

Description provided by IARC and DKFZ with ICRDB/NCI support.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.2339,

FAMILIAL STUDIES OF CANCER

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A retrospective study of cancer incidence among family members. associations between different forms of cancer and other characteristics of cancer lineages is being conducted. The study group consists of more than 6,000 families of post-partum women who participated in studies of viral-like particles in human milk from 1971-1977. Extensive family histories were obtained from these women in the effort to establish a relationship of the presence of viral-like particles to a family history of cancer. These data have been a valuable resource for epidemiological investigation and are central to several studies.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.2340,

INTERCENSAL ESTIMATES OF POPULATION DISTRIBUTION BY AGE, SEX, AND RACE AND TREND ANALYSES OF CANCER INCIDENCE AND MORTALITY

M.J. Brennan, Michigan Cancer Foundation, *110 E. Warren Ave., Detroit, Michigan* 48201

This study has two primary objectives. One is to determine the most accurate and practical methods of making annual intercensal estimates of the population distribution by age, sex, and race. Techniques of estimation and of modeling are being reviewed in order to determine the most reliable procedure. The second objective is to utilize the population estimates as the basis for analyzing trends in incidence and mortality rates among various demographic groups from 1969 through 1977.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.2341,

INVESTIGATION OF HIGH PANCREATIC CANCER RATE IN WESTERN NEBRASKA

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Seventeen cases of pancreatic cancer were diagnosed in less than one year in the newly staffed Western Nebraska General Hospital of Scottsbluff, Nebraska. The unit serves a population of approximately 60,000 inhabitants. The number of cases constitutes an incidence four times greater than expected. This situation prompted the setting up of a survey to (1) confirm the high occurrence of pancreatic cases, (2) study places of birth and residence of cases for the purpose of establishing incidence rates, (3) establish a retrospective case-control study to look for common environmental or cultural factors prevalent among the cases which might be associated with the occurrence of pancreatic cancer in the area, (4) determine any possible risk factors such as occupational exposure to known carcinogens or any factor suspected to be associated with the cases. There will be at least two controls for each case. Eleven Western Nebraska counties, Scottsbluff, Sioux, Dawes, Sheridan, Box, Banner, Morril, Garden, Kimball, Cheyenne and Deuel, with a population of 95,000, are included in the study.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.2342,

MORTALITY EXPERIENCE OF STYRENE WORKERS

J.A. Zack, Monsanto Co., Dept. of Medicine & Environmental Health, *800 N. Linbergh Blvd., St. Louis, Missouri* 63141

Employees from several plant locations who have been exposed to styrene are being identified for study. The cohort will be traced prospectively and their mortality experience will be evaluated using the standardized mortality method. Particular attention will be given to deaths from malignant neoplasms and from neoplasms of lymphatic and hematopoietic tissue.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.2343,

MORTALITY EXPERIENCE OF ACRYLONITRILE-EXPOSED WORKERS

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This is a mortality study of workers exposed to acrylonitrile through its manufacture and use. Approximately 400 wage employees from two plants have been identified for study. The mortality experience of these workers will be analyzed by the standardized mortality method, with particular attention given to malignant neoplasms of the lung and colon.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.2344,

THE NURSES HEALTH STUDY

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The risks of various possible carcinogenic exposure in women have not been well described. This prospective cohort study aims to evaluate cancer morbidity and mortality for a number of exposures including oral contraceptive use, cigarette smoking, use of a variety of dietary nutrients, and hair dyes. Information has been obtained by mail by questionnaire for 121,964 married, female registered nurses, residing in one of 11 larger US states, and listed in the directory of the American Nurses' Association in 1972. Biannual follow-up mailings are being performed in 1978 and 1980 to determine the incidence rates of various cancers in relation to the exposures under investigation. Particular emphasis is placed on risk factors for the development of breast cancer. The information base for 1980 will be expanded to include detailed assessment to provide baseline data for follow-up investigation of outcome for 1982.

Description provided by IARC and DKFZ with ICRDB/NCI support.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.2345,

OCCUPATIONAL, ENVIRONMENTAL, AND PERSONAL-HABIT-RELATED DISEASES IN THE GREATER WORCESTER AREA

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There is increasing evidence that much cancer results from occupational exposures. This case-control interview study aims to identify occupational and other factors related to the development of leukemia and cancers of the lung, urinary bladder, kidney, and larynx. Approximately 300 cancer patients who meet the study criteria are being identified from the cancer registries of the five major hospitals in Worcester, Massachusetts. These criteria include a tissue diagnosis of one of the malignancies under study at one of these hospitals in 1976 or 1977 in patients aged 21 years or older who live in Worcester or one of the immediately adjacent towns. After consent is obtained, these patients are interviewed (or their next of kin, if they are deceased) concerning their occupational, residential, and smoking histories; non-occupational exposures to possibly hazardous substances; family history of cancer; long-term use of medications; and ingestion of coffee and alcohol. An equal number of control subjects are being interviewed. The control subjects are patients at the same hospitals in the same years without a history of any malignancy who have been matched to cancer patients in the study by sex and five year age-group and who live in the same residential area. While the total number of cancer patients and control subjects is relatively small, it is hoped that this study may yield clues for investigation by more specific cohort studies of workers of the same occupation, in the same industry, or with the same exposure.

Description provided by IARC and DKFZ with ICRDB/NCI support.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.2346,

HERPESVIRUS HOMINIS TYPE 2 ANTIBODIES IN RELATION TO THE DEVELOPMENT OF CERVICAL NEOPLASIA

L. Johnson, New England Regional Primate Research Center, *1 Pine Hill Dr., Southborough, Massachusetts* 01772

An assay of herpesvirus hominis type 2 hemagglutinating antibodies is being made in sera of patients, before the onset of disease, during stages of cervical neoplasia and after treatment and compared with sera of controls who did not develop cancer. This prospective study is possible because sera were collected at the Boston Hospital for Women from pregnant and postpartum women during the years 1959-1965 in the Collaborative Study of Cerebral Palsy. These same women had Papanicolaou smears taken during the same time period in a study of the histogenesis of cervical neoplasia. A sample group of the women was re-examined for cervical neoplasia and serum was collected during the years 1974-1977.

Description provided by IARC and DKFZ with ICRDB/NCI support.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.2347,

EVALUATION OF PERIODIC BREAST CANCER SCREENING WITH MAMMOGRAPHY AND CLINICAL EXAMINATION

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This is a randomized trial designed to test whether periodic screening with clinical and mammographic examinations results in a long-term reduction in breast cancer mortality. Linked to this primary objective are several issues of major importance in assessing benefits to be derived from breast cancer screening, e.g., the relative value of the two screening modalities, ages of women to be screened, periodicity of screening, identification of parameters related to development of the disease, and determinations of underlying cause of death. Approximately 62,000 women, aged 40-64 at the time of entry to the study and allocated to either a study or a control group, are under surveillance. Study women were offered screening examinations; of the 65 percent who accepted an initial examination, a large majority had at least one of the three additional screenings at annual intervals. Control women continued to receive their regular medical care. Screening ended in mid-1970, and follow-up on the entire study and control populations for breast cancer cases and death ascertainment continues. The survival status of all known breast cases through December of 1977 has been established, and no one is lost to follow-up. New data support earlier results on screening benefits. At ten years of follow-up from entry, 30 percent differential exists between the total study (screenees and refusers) and control group in breast cancer mortality. The impact of the screening program continues to be confined to women 50 years of age and over with no benefit at ages 40-49. Eight-year case fatality rates show similar relationships. The differential between control and study cases is due almost entirely to the low rates among cases detected through screening, with cases detected through mammography alone showing a rate that is exceptionally low. At this point in the study there appears to be strong support for periodic screening at ages of 50 years and over with the two modalities.

Description provided by IARC and DKFZ with ICRDB/NCI support.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.2348,

MORTALITY OF WORKERS EXPOSED TO POLYCHLORINATED BIPHENYLS IN MANUFACTURE OF TRANSFORMERS AND CAPACITORS

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The entire workforce employed 1952-1957 in the largest U.S. facility manufacturing capacitors and transformers has been identified with assistance of the plant's union and management. The plant's operation goes back to 1947 and much information is available concerning polychlorinated biphenyl (PBC) exposure, including the types of PBC used over the years. Estimates are also available concerning the intensity of exposure in the various work positions. Age-, year-, and sex-specific deaths will be calculated for this large cohort, on the basis of both state and local death rate data, as well as data of the U.S. National Office of Vital Statistics. The entire cohort is being traced and the observed deaths will be compared with those estimated. While the duration from onset of exposure is shorter than optimal (being only 25 years in some cases), the information to be obtained will at least give data concerning the short-term mortality experience of a group heavily exposed to this halogenated hydrocarbon.

Description provided by IARC and DKFZ with ICRDB/NCI support.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.2349,

MORTALITY AMONG AMOSITE ASBESTOS FACTORY WORKERS IN RELATION TO SMOKING HABITS, 1961-1977

I.J. Selikoff, City University of New York, Mount Sinai School of Medicine, School of Medicine, Dept. of Community Medicine, *1 Gustave L. Levy Pl., New York, New York* 10029

The mortality experience of workers in an amosite asbestos products factory is being reviewed prospectively from 1 July 1961, according to individually ascertained smoking habits. Deaths to 31 December 1977 have been recorded and causes of death, including cancer by specific site, asbestosis and other non-infectious lung disease, ascertained. Calculations include expected and observed deaths for those with a history of cigarette smoking and those who have smoked pipe and/or cigar only. Expected deaths are calculated according to age, year and sex specific death rates for the State of New Jersey, first by cause and then separately calculated in smoking specific categories, utilizing death rates over much of the period in question for similar men in a prospective study, by smoking category, of the American Cancer Society. During the period 1 July 1961-31 December 1977, 311 deaths occurred, including 62 from lung cancer. Observation of the cohort survivors continues.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.2350,

MORTALITY EXPERIENCE OF SHIP REPAIR WORKERS

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Although it is unlikely that there will be wide use of asbestos in new ship construction in the United States in the future, asbestos already in place in many U.S. and foreign ships promises to pose a hazard as these vessels are submitted for repair, maintenance, modernization and renovation. A cohort of all workers is being established in a major eastern U.S. shipyard which has been engaged entirely in ship repair and maintenance since the late 1930s, including all men and women so employed at some time between 1954 and 1964, for at least five years. The status of these individuals will be ascertained as of January 1, 1979. Cohort members will be categorized by trade and for those who have died, causes of death ascertained. A large proportion of the survivors in 1979 will be clinically examined for stigmata of asbestos-associated disease.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.2351,

METABOLIC EPIDEMIOLOGY OF COLON CANCER AND BREAST CANCER

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The primary objective of this investigation is to study the epidemiology of colon cancer cases and controls in a high-risk population (Finland) and a medium-risk population (US), paying special attention to the effect of diet on fecal constituents, and to study the constituents in breast fluid from those population groups. It is planned to continue collecting samples from populations at different risks for col n and breast cancer and analyze them for fecal constituents, hormones, mutagens, and/or other components. Results will be correlated epidemiologically to determine dietary or other associations with population differences.

Description provided by IARC and DKFZ with ICRDB/NCI support.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.2352,

METABOLIC EPIDEMIOLOGY OF COLON CANCER - STUDIES IN LOW RISK FINNISH POPULATION

B.S. Reddy, American Health Foundation Inc., Division of Nutrition, *Hammond House Rd., Valhalla, New York* 10595

Colon cancer incidence data from the Nordic countries show a gradient from rural areas in Northern Finland, increasing from Northern to southern Sweden, with highest incidence being reached in Copenhagen, Denmark. Studies thus far completed indicate that excess dietary fat exerts an effect by altering endogenously produced metabolites such as bile acids which appear to have a promoting effect in colon cancer incidence and that dietary fiber has a protective effect in colon carcinogenesis. Although the total dietary fat intake in rural Kuopio, Finland is similar to countries with a high rate of colon cancer, the crucial difference in dietary intake between Kuopio and USA may relate to dietary fiber. The overall objective of this study is to acquire significant information in the high and low risk populations for development of colon cancer on the role played by dietary components on the etiology of this disease. In order to achieve this objective, feces of healthy controls and patients with colon cancer in Kuopio and Helsinki, Finland, and New York Metropolitan area will be analyzed for bile acids, beta-glucuronidase, 7-alpha-dehydroxylase and mutagens. Dietary intake of fiber and fecal bulk will also be determined in these populations.

Description provided by IARC and DKFZ with ICRDB/NCI support.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.2353,

ROLE OF DIETARY FACTORS IN CANCER OF THE INTESTINAL TRACT

E.L. Wynder, American Health Foundation Inc., Dept. of Epidemiology, *320 E. 43rd St., New York, New York* 10017

The primary objective is to study the epidemiology of gastrointestinal cancers in a high-risk country for gastric cancer (Yugoslavia) and in a low-risk country (United States). A case-control study will be used to determine whether a diet high in cereals and starches and low in fresh vegetables may be linked to gastric cancer. The study will be conducted in three geographical regions: two areas in Yugoslavia, where a strong intra-country gradient exists, i.e., Panonia (high-risk) and Karst (medium-risk), and New York City. It is also intended to determine whether a diet high in fat and low in fiber may be linked to cancer of the colon, as determined by dietary history in a case-control study. The study is to be conducted in the same three geographical areas. The data will be examined to discover whether any epidemiological differences exist between diffuse and intestinal types of gastric cancer. The association between beer consumption and cancer of the rectum will be tested. Data for this case-control epidemiological study are collected by trained research interviewers and more than 500 cases and 600 controls have been interviewed in the American phase of the study. Data collection will begin in Yugoslavia in late 1979.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.2354,

METABOLIC EPIDEMIOLOGY OF COLON CANCER

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The distribution of cancer of the colon, particularly its infrequency in Japan, its increase among Japanese immigrants to the United States and the high rate of this disease among North Americans and most Western Europeans, strongly indicates that a dietary factor, mainly high fat and animal protein, is of etiological significance. Preliminary studies in metabolic epidemiology have shown that the dietary composition and intestinal microflora play a significant role in the composition of intraluminal compounds such as cholesterol metabolites and bile acids which can act as co-carcinogens for the colon. The overall objective of the proposed research is to delineate the relationship among dietary components, intraluminal compounds, intestinal microflora and colon cancer in man, and to develop a biochemical and/or a bacterial indicator for colon cancer. In order to elucidate the etiological role of bacterially modified intraluminal compounds on the incidence of colon cancer, feces of high risk and low risk populations, patients with colon cancer, polyps, familial polyposis and ulcerative colitis will be analyzed for cholesterol metabolites, bile acids, tryptophan metabolites, microflora and bacterial beta-glucuronidase and 7-alpha-dehydroxylase activities. From these studies, we wish to develop a biochemical and/or a bacterial indicator which distinguishes low and high risk populations for large bowel cancer.

Description provided by IARC and DKFZ with ICRDB/NCI support.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.2355,

DATA BANK FOR STUDY OF THE EPIDEMIOLOGY OF CHILDHOOD CANCER

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The major objective of this study is to learn more about the epidemiology of childhood cancers. A questionnaire will be administered to the parents of all childhood cancer patients seen at the Duke Medical Center and to matched hospital controls with information banked for later case-control studies. The epidemiologic data collected will be used to study the descriptive epidemiology of various childhood tumors (singly and in various groupings) as well as associations with potential antenatal, childhood, familial, and environmental etiologic exposures. Information modules on nutrition and radiographic findings are to be added in the near future.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.2356,

ASSESSMENT OF PAST DIET IN CANCER EPIDEMIOLOGY

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The need for a reliable method of estimating dietary consumption in the past has become critical in case-control epidemiologic studies on the relationship of diet to cancer. The research objective of this study is to estimate the reliability and validity of estimates of past dietary intake which are derived from present diet histories or from retrospective diet histories. A population on which a current diet history was obtained in 1963 is located in Evans County, Georgia. This population is being reinterviewed for their recollections of their diet in 1963, and their current diet in 1977. The validity of the retrospective diet history will be assessed by comparing it to the diet history obtained in 1963. The degree of dietary change in this population in 14 years will be assessed by comparing the 1977 current diet history to the 1963 history. Comparisons will be made of average consumption of specific food items. Correlation coefficients of individual consumptions as reported on the respective surveys will also be calculated. This study will establish quantitative estimates of the validity and reliability of obtaining dietary history, retrospectively. Should these estimates prove low, waste of resources on unreliable studies will be avoided. Should they prove high, studies will not fail to be undertaken because of negative criticism of these methods.

Description provided by IARC and DKFZ with ICRDB/NCI support.
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3.2357,

PILOT STUDIES OF ENVIRONMENTAL FACTORS AND CANCER MORTALITY

G.S. Wilkinson, U.S. Environmental Protection Agency, Office of Research & Development, Health Effects Research Lab., Population Studies Div., *Research Triangle Park, North Carolina* 27709

These studies are concerned with investigating potential relationships between environmental factors such as presence of asbestos mines or proximity of nuclear and fossil-fueled power plants and mortality from cancer within the United States. Mortality rates for various types of cancer in areas having asbestos mines or power plants are being compared with mortality rates in areas without such sources of potential pollution.

Description provided by IARC and DKFZ with ICRDB/NCI support.
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.2358,

PILOT STUDY OF AMBIENT AIR POLLUTION AND SURVIVAL OF CANCER

G.S. Wilkinson, U.S. Environmental Protection Agency, Office of Research & Development, Health Effects Research Lab., Population Studies Div., *Research Triangle Park, North Carolina* 27709

This study is concerned with analyzing potential relationships between reported levels of air pollution in the ambient air and length of survival for diagnosed cancer patients. Categorical indicators of pollution levels will be derived from data available from the National Aerometric Data Bank. Survival times for patients having histologically confirmed cases of cancer who have been accessioned into the Lakes Area Regional Tumor Registry will be analyzed by life table and other appropriate methods. This investigation will permit preliminary statements about the effect that various concentrations of ambient air pollutants may have upon the length of survival of patients having a serious chronic disease - cancer.

Description provided by IARC and DKFZ with ICRDB/NCI support.
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.2359,

STUDY OF WORKERS IN A SODERBERG ALUMINUM SMELTER

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Several recent studies have suggested that workers in aluminum smelting are subject to an excess risk of lung cancer and some types of leukemia and lymphoma. The indications are that pot room workers are most subject to the risk. This study of 2,700 workers is a follow-up of previous reports with the purpose of trying to relate specific work assignments in this plant with possible excess cancer risk in an occupational mortality study. Death certificates are being obtained and will be compared by work classification within each department of the production facility. This study is part of a tri-partite research project involving industry, labor unions, and government.

Description provided by IARC and DKFZ with ICRDB/NCI support.
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3.2360,

MORTALITY STUDY OF NICKEL COMPOUND MANUFACTURING

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Using about 2,000 employee work history records, employees involved in the manufacture of nickel salts and nickel catalysts will be compared to other workers in the same company with respect to causes of death. number of studies in the nickel smelting industry and with nickel carbonyl have shown increases in nasal and respiratory carcinoma. Studies of other persons involved in various uses of nickel have been few. Death certificates are being obtained for all former employees of this U.S. company who have worked at least one year and these will be subjected to a life table and proportionate mortality analysis.

Description provided by IARC and DKFZ with ICRDB/NCI support.
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.2361,

MORTALITY EXPERIENCE AMONG A COHORT OF CADMIUM SMELTER WORKERS

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Animal and human studies have shown increased risks of malignant and non-malignant disease from exposure to cadmium. Specifically NIOSH cohort mortality studies have shown increased risks of prostatic and respiratory cancer among a cohort of cadmium smelter workers having been exposed for two years or more in the smelter. Employment records to identify all workers in the facility are coded and follow-up has been initiated to determine vital status of the remaining approximately 1,300 individuals who have ever worked in the smelter. Pathological and medical histories still remain to be collected concerning those deaths which have been identified so far.

Description provided by IARC and DKFZ with ICRDB/NCI support.
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3.2362,

MORBIDITY AND MORTALITY PATTERNS AMONG OCCUPATIONALLY EXPOSED ASBESTOS WORKERS (ABBREV)

R.A. Lemen, U.S. Dept. of Health & Human Services, Public Health Service, Center for Disease Control, National Inst. for Occupational Safety & Health, *4676 Columbia Pkwy., Cincinnati, Ohio* 45226

Considerable controversy has arisen concerning the validity of true exposure to chrysotile asbestos and its relative importance in the etiology of mesothelioma. Animal experimental evidence is contradictory. One study indicates that Canadian and Rhodesian chrysotile asbestos is the least carcinogenic fiber for mesothelioma, while another study has shown no fiber difference. This investigation will evaluate the risk of mesothelioma from exposure to chrysotile asbestos. It will also evaluate the usefulness of cross-sectional medical data perimeters as indicators of future asbestos-associated disease, e.g., lung cancer, mesotheliomas, gastrointestinal cancer, etc. A prospective analysis of tobacco usage (smoking of cigarettes, pipes, cigars and tobacco chewing) obtained through cross-sectional medical studies will be evaluated in those workers known to have died as a result of lung cancer, mesothelioma and gastrointestinal cancer.

Description provided by IARC and DKFZ with ICRDB/NCI support.
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3.2363,

LONG-TERM COMPLICATIONS OF ALKYLATING AGENT IMMUNOSUPPRESSION IN RHEUMATIC DISEASES

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The study aims to examine the risks of leukemia, lymphoma and solid tumours following immunosuppression due to the use of alkylating agents in the treatment of rheumatic diseases, and to determine if any increased risk of cancer is dose-related or time-related. Over 1,000 rheumatology patients who received alkylating agent immunosuppressive therapy in the mid-1960s are being followed.

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3.2364,

EPIDEMIOLOGY OF CANCER OF THE PENIS

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Cancer of the penis will be studied in relation to recurrent antecedent surgery and other local irritative factors such as trauma of various sorts, exposure to various synthetic materials and previous infection. Any regional occurrence of cancer will be compared to that of cancer of the penis and the incidence of cancer of the penis will be surveyed for the past year to see if there has been an increasing or decreasing incidence or whether its occurrence is static. Local regional factors, such as industrial toxins, fumes, organic chemical usage and the like will be studied also to see if any relationship between these substances and cancer of the penis can be found.

Description provided by IARC and DKFZ with ICRDB/NCI support.
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3.2365,

LONG-TERM STUDY OF MINERS EXPOSED TO RADON-222

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Eight 5-year cohorts of underground miners born 1880-1919, who are still living or have died in Malmberget, Sweden, have been followed up to 1976. Exposure doses are calculated from radon-daughter measurements in air and water and from radioactivity in water springs in the mines measured in 1914. Attention has been paid to the different depths of the mine over the years and ventilation in different places of work. substantial number of lung cancer cases have occurred in miners who never smoked or were ex-smokers. A survey of smoking prevalence in active and retired miners has been done to permit assessment of the role of smoking in relation to radon-daughter exposures in the genesis of bronchial cancer. Follow-up of all 1,441 miners is now complete and the data are being analysed.

Description provided by IARC and DKFZ with ICRDB/NCI support.
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3.2366,

ANALYSIS OF MORTALITY PATTERNS IN ALUMINUM REDUCTION PLANTS

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A review of the literature on the health effects of worker exposures in the reduction of aluminum indicates that there may be an excessive incidence of respiratory cancers among workers exposed to high levels of coal pitch volatiles. Furthermore, there may be an excessive incidence of other cancers and of chronic obstructive respiratory disease. The largest study to date was a historical prospective study sponsored by the Aluminum Association. In that study, 23,033 men employed for five years or more during the period 1941-1973 at one of fifteen aluminum reduction plants in the United States were followed up through 1973. The present study will use these records as a data base. The objectives of the new study are as follows: (1) to verify the accuracy of the initial data collection, (2) to obtain job histories and include these in the analysis, (3) to obtain estimates of exposure levels, and (4) to extend the follow-up period through 1977. Mortality patterns of groups of workers with varying levels of exposure and of general populations will be compared.

Description provided by IARC and DKFZ with ICRDB/NCI support.
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3.2367,

DYSPLASIA OF GASTRIC MUCOSA

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The objectives of this project are two-fold: (1) Establishment of criteria for grading of gastric dysplasia, and (2) Study of prevalence of gastric dysplasia in different countries. It has long been recognized that certain conditions in the stomach are pre-cancerous. Among them are pernicious anemia, chronic atrophic gastritis, intestinal metaplasia, adenoma, and chronic ulcer. The common anatomical basis for increased cancer incidence in patients with these conditions is dysplasia of the epithelial cells. Study of prevalence of dysplasia is, therefore, important. In spite of this recognition, however, there is the need to establish uniform criteria for making the diagnosis. For this reason the International Study Group on Gastric Cancer has directed members of its pathology panel

to establish the criteria. This assignment is in the process of being carried out. Once the criteria are established, they will be used by the group to determine prevalence rate of different grades of gastric dysplasia and to correlate the information with prevalence rates of gastric cancer.

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3.2368,

EPIDEMIOLOGY OF CHILDHOOD CANCER

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This general study will attempt systematic gathering of data from all children with malignant disease admitted to a large children's research hospital. The overall objectives are to characterize better the features of children with cancer and their families and to search for clues to etiology. Techniques to be used include the following: retrospective review of medical records; questionnaire/interview of families at diagnosis when possible; follow-up interviews and examinations for late effects, up-dates of initial information and progeny of long-term survivors; case-control studies where feasible. Over 300 newly diagnosed patients with cancer are admitted each year, mostly from the immediately surrounding, largely rural area. Areas to be systematically covered for all families include: socio-economic/occupational history, exposure to known carcinogens/pathogens (including ionizing radiation), previous diseases, other environmental factors and host factors (familial cancer, congenital abnormalities, etc.). An initial case-control study of children with colorectal cancer, using neighborhood controls, has begun.

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3.2369,

EPIDEMIOLOGY OF PRIMARY LIVER CANCER IN SELECTED COUNTIES OF TEXAS

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Several counties in Texas have been identified as having high rates of primary liver cancer (PLC), approximately three times as great as that reported for the total U.S. Three of these 'high rate' counties are associated with heavy chemical and petrochemical industry concentrations. In 1977 a retrospective study of all liver cancer deaths occurring in Brazoria County, Texas, during the interval 1960-75 was conducted to determine if the proportion of chemical workers is higher among persons dying from primary liver cancer than among persons dying from non-malignant diseases. Occupational histories were obtained from participating industries for all cancer deaths and controls. Clinical and histopathologic review of all deaths due to PLC and other liver-related diseases is being conducted. The study is currently being extended to the two larger counties, Orange and Jefferson, which also have a heavy concentration of chemical and petrochemical plants. Additional studies are anticipated in Texas counties having high rates of PLC which are nonindustrialized but where exposure to hepatitis B, insecticides or aflatoxin B may be involved.

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3.2370,

INCIDENCE, MORBIDITY AND NATURAL HISTORY OF CANCER IN THREE ETHNIC GROUPS IN TEXAS (ABBREV)

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The objective is to study incidence and natural history of and differences in various types of cancer by ethnic group (white except Spanish surnamed; non-white and Spanish surnamed individuals) and geographical area at the community level hospital and specialized cancer hospital. Metastases for a 30-year period (35,000 patients with 100,000 metastatic sites) will be analyzed, as well as multiple primary cancer. Age-adjusted incidence rates (1944-1966) have been computed for six regions in Texas for three ethnic groups.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.2371,

IMPACT OF CANCER ON TEXAS - AN EPIDEMIOLOGICAL ANALYSIS

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In the first phase of the analysis, descriptive epidemiological studies are being based on cancer mortality (1969-76) as reported to the State on death certificates and county population data from the 1970 census. Age-adjusted rates for each county and Health Services Areas have been calculated. Total cancer mortality and the mortality from ten major cancer sites have been detailed in a publication 'Impact of Cancer on Texas'. Future analyses will include geographical and ethnic patterns, as well as in-depth studies of populations with apparent high and low risks of developing cancer. New mortality data will be incorporated in the computerized data base as they become available.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.2372,

RELATIONSHIP OF FECAL NEUTRAL STEROIDS TO LARGE BOWEL CANCER RISK

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The objectives of this study are to analyze excretion patterns of long chain fatty acids and neutral steroids in populations at known risk for colon cancer, to analyze for fecal mutagens in these populations, and to determine if patterns of excretion of fecal neutral steroids or long chain fatty acids correlate with fecal mutagen production. Degradation of cholesterol in the colons of populations at low risk and high risk for colon cancer will be measured and concentrations of oleic acid and neutral steroids in the feces of populations at different risk levels will be compared. Fecal samples from South Africa, Scandinavia and the United States will also be extracted with ether and the extracts tested for mutagenicity using the Salmonella mutagenicity test of Ames. To date it has been noted that excretion of mutagens was higher in a population at high risk for colon cancer than in two populations of low risk (Ehrich et al, Mutat. Res. 64. 231-240, 1979). At present it also appears that low fiber diet or genetic predisposition to colon cancer (patients with familial polyposis) did not result in an increased frequency of excretion of fecal mutagens.

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3.2373,

EPIDEMIOLOGY OF GASTRIC LYMPHOMA IN RELATION TO SUPERFICIAL PLASMA CELL GASTRITIS

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The aim of the study is to see if perifoveolar superficial plasma cell gastritis is a persistent and common finding in primary gastric lymphoma and if this is any way related to pseudolymphoma of the stomach or can be used to differentiate the pseudolymphomas continuing into lymphoma from those which do not progress to a frank lymphoma.

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3.2374,

REGISTRY FOR CARCINOMA IN SITU OF THE VULVA

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The registry operates under the auspices of the International Society for Study of Vulvar Disease. In accordance with the new nomenclature, this includes cases of squamous cell carcinoma in situ (formerly Bowen's disease, erythroplasia of Queyrat and carcinoma simplex) as well as cases of vulvar Paget's disease. The purpose of the Registry is to accumulate epidemiological and histological data in order to define the biological characteristics of the disease, determine its frequency and identify the high risk patient. Histological slides and completed registry forms are kept in a central file and the data are compiled at regular intervals. Over 100 cases have been collected since the Registry opened. Physicians desiring to register cases or obtain additional information are asked to contact Dr. Peter J. Lynch, Professor or Dermatology, University of Arizona Medical Center, Tucson, AZ 85724, or Dr. Raymond H. Kaufmann, Professor and Chairman, Baylor College of Medicine, Texas Medical Center, Houston, TX 77025.

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3.2375,

CANCER INCIDENCE IN RELATION TO ASBESTOS IN DRINKING WATER IN THE PUGET SOUND REGION

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A high level of asbestos, occurring naturally, has been found in drinking water in Seattle, Everett, and other nearby areas. Cancer incidence and mortality rates for areas with different water supplies will be calculated. Control factors will include age, sex, race, and socio-economic status. Sites of interest are respiratory tract, gastro-intestinal tract, mouth and esophagus, pancreas, and urinary tract. Other control sites will be examined throughout the analysis. We are also starting a case-control study with interviews conducted in the high exposure area.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.2376,

EPIDEMIOLOGICAL STUDIES OF CANCER

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The Environmental Epidemiology Branch of the National Cancer Institute of the United States conducts and coordinates a variety of studies in cancer epidemiology. Some of these are outlined below. (1) Following a county-by-county mapping of cancer mortality, several correlation and analytical studies are underway to help identify the environmental determinants of cancer in high-risk communities. (2) A program of occupational studies searches for cancer hazards associated with various industries, for example, petrochemicals, pharmaceuticals, printing, leather, dry-cleaning, automobile, pest control and metal smelters. (3) The carcinogenic effects of drugs are evaluated by studies of cancer risk following use of exogenous estrogens, alkylating agents, and immunosuppressive therapy. (4) Evaluation of radiation-induced cancer involves surveys of women receiving repeated chest fluoroscopy for tuberculosis, survivors of the atomic bomb, and recipients of radioactive iodine for diagnostic or therapeutic reasons. (5) Mechanisms of host susceptibility to cancer are clarified by the identification of high-risk disorders (e.g. primary and acquired defects of immunity) and by multi-disciplinary studies of cancer-prone families. (6) Studies are carried out to evaluate the effects of pollutants in the general environment, for example, halogenated hydrocarbons in drinking water. (7) Studies of cancer in domestic animals are conducted in hopes of identifying animal counterparts to human neoplasia. (8) Emphasis is given to multi-disciplinary collaboration with experimentalists to elucidate risk factors (e.g. nutritional, hormonal, viral, genetic) that require laboratory measures.

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3.2377,
EPIDEMIOLOGY OF SMOKING-RELATED DISEASES

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Although it has been well established that there is an association between smoking and certain diseases, not all smokers develop a tobacco-related disease. Variables such as length of cigarette smoked, depth of inhalation, tar output, carbon monoxide content, etc., along with demographic, occupational and other characteristics modify the exposure and risk for a cohort at a given lifetime exposure to cigarettes. The objectives of this case-control study are to identify individuals or groups at risk of tobacco-related diseases, to evaluate environmental, biological and smoking pattern characteristics of persons at high risk, and to analyze the relative effects of cigarette modification. Hospitalized patients who meet study criteria are interviewed by trained research interviewers in selected hospitals in New York, Philadelphia, Birmingham, Pittsburgh, Chicago and San Francisco. Cases are persons with a histologically confirmed diagnosis of cancer of the lung, bladder, pancreas, esophagus or oral cavity, or a first myocardial infarction; patients without a tobacco-related disease serve as controls. Two controls for each case, one from the hospital population and one from the residential area of the case, are matched by race, sex and age. Approximately 1,250 cases and 2,500 controls are interviewed each year.

Description provided by IARC and DKFZ with ICRDB/NCI support.
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3.2378,
CANCER MORTALITY IN RELATIONSHIP TO PHENOXY HERBICIDE USE IN WASHINGTON STATE

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Phenoxyacetic acid herbicides have been widely used in western Washington State as weed control agents for 30 to 35 years. The objective of this study is to determine if there is an association between phenoxy herbicide use in 13 counties of western Washington State and the rate of mortality of various cancers among persons residing in those countries according to area of exposure. Death rates for various cancers and total cancer incidence will be compared by area of residence with estimates of quantity and location of phenoxy herbicide use. Complete information on quantities, times and use patterns of 2,4-D, 2,4,5-T and Silvex from 1945 to 1965 for the area are provided by the Washington Forest Protection Association. Annual age- and sex-adjusted incidence and mortality rates for total cancer and for specific cancers of interest are obtained according to county of residence through the Cancer Surveillance System (CSS) at the Fred Hutchinson Cancer Research Center in Seattle, which contains detailed information on 45,000 cases of cancer occurring between 1974 and the present in the study area. Incidence rates obtained for the CSS registry are being compared with those from the nationwide SEER program to standardize the annual incidence of cancers in study area countries relative to nationwide rates. Standardized cancer mortality rates will be further adjusted for population density, percentage of urbanization and other factors, to determine if altered mortality rates prevail in relationship to herbicide use following adjustments.

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3.2379,
EPIDEMIOLOGY OF MYELOMA AND CHRONIC LYMPHOCYTIC LEUKEMIA

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This case-control study aims to identify and evaluate risk factors for multiple myeloma and chronic lymphocytic leukemia. Cases will be identified through population-based cancer registries in the states of Washington and Utah, and in Detroit and Atlanta, over a three-year period. Control subjects will be selected from the general populations in which the cancer cases occurred, using probability sampling methods such as area sampling and random digit dialing. Cases and controls will be interviewed with particular attention to variables related to chronic antigenic stimulations, e.g. past illnessses, allergies, drugs, etc. Detailed residence and occupational information will also be obtained in an attempt to generate new etiological hypotheses.

Description provided by IARC and DKFZ with ICRDB/NCI support.
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.2380,
EPIDEMIOLOGICAL STUDY OF WORKERS IN PETROLEUM REFINERIES AND PETROCHEMICAL PLANTS

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An NCI study examined the cause-specific mortality experience of workers who were active members of Oil, Chemical and Atomic Workers International Union resident in Texas at the time of death. Proportional mortality ratios (PMRs) for stomach and brain cancers, and for leukemia and multiple myeloma were elevated among white males who worked in petroleum refineries and petrochemical plants and were Union members for at least 10 years. In particular, increased relative frequencies of stomach and brain cancer deaths were found among white male members who were employed at a specific refinery (plant A). In addition, PMRs were elevated for lung cancer among non-whites and stomach cancer in both racial groups employed at another refinery in the same area (plant B). Observed numbers of deaths from leukemia and cancers of the kidney and skin were very small but greater than expected among white males at plant B. A third refinery was found to have excess lung and brain cancers. A case-control study will be done to examine excess deaths from certain cancers in greater detail. Detailed work histories will be obtained for each case and control to determine length of employment in these plants, specific job(s) held, work location(s) within the plants, and any other employment or exposure information that is available. This may be followed by a more definitive cohort study.

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3.2381,
THE AMERICAN FAMILY LIFE STUDIES

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The American Family Life Assurance Company (AFL), a national cancer insurance company, has made its records available for epidemiological research. It currently has 2.7 million policies in force, approximately two thirds of which are family policies. Pathological reports to confirm diagnoses of cancer and detailed descriptions of treatment received are required for receipt of benefits or reimbursement. All this information is microfilmed. A series of studies will be based on these records. The first will be the determination of age- and sex-specific cancer incidence rates in the insured population to serve as the reference rates in the other studies. The second group of studies will be on the occurrence of cancer in spouse-pairs to assess the role of shared environment in the etiology of several cancers, such as Hodgkin's disease, colon, and genital and reproductive tract cancers. The third group of studies will investigate the risk of second primary cancers in relation to different types of therapy. Dose-response relationships will be evaluated for those therapies found to increase the risk of second primary cancers. Other studies will include examination of sibling aggregation in childhood cancer, re-evaluation of the 'cancer family' hypothesis and cancer incidence rates in specific occupational groups.

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3.2382,
CANCER MORTALITY AMONG PETROLEUM AND CHEMICAL WORKERS

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The objective of this study is to determine whether persons employed in the petroleum and chemical industries experience unusual patterns of cancer mortality indicative of exposure to hazards in the work environment. The study groups consist of deaths among members of labor union that represents a large segment of the petroleum and chemical industries in the USA. Approximately 18,000 deaths among active union members were reported to the central office of the union by the individual local branches between 1947 and 1977. The study period is being extended beyond 1977 as new deaths are reported. A proportionate mortality analysis will be performed to compare the relative frequencies of deaths from specific forms of cancer among union members with the experience of the general population. Occupational information for each subject includes data of entry into union and specific industrial category of the plant in which he worked. The investigation is intended to identify high-risk areas within the petroleum and chemical industries that warrant further examination by more refined epidemiological methods.

Description provided by IARC and DKFZ with ICRDB/NCI support.
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.2383,
WORLD HEALTH ORGANIZATION'S COLLABORATIVE STUDY OF NEOPLASIA AND STEROID CONTRACEPTIVES

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The objective of this hospital-based, multi-centered case-control study is to ascertain whether there is a relationship, particularly in developing countries, between the use of steroid contraceptives (oral and long-acting injectables) and neoplasms of the breast, cervix, corpus uteri, gallbladder (including also extrahepatic biliary tree), liver and ovary. Standardized techniques to estimate relative risk will be utilized. Approximately two hospital controls will be studied for each case. All (cases and controls) will be interviewed to ascertain prior use of steroid contraceptives and information on other factors related to contraception and the neoplasms under study. Except for suspected liver tumors, all cases will be diagnosed histologically by local collaborating pathologists and reviewed by reference pathologists. The review results and pathology data will be checked, key-entered onto computer tape and edited at the co-ordinating center. It is anticipated that the initial phase of this study will run for five years. This will hopefully provide sufficient cases to: (1) Allow comparisons of results from different collaborating centers for the more common neoplasms; (2) provide information on the rarer neoplasms or histological sub-types by pooling the results from different collaborating centers. In addition, it is tentatively planned to continue this study beyond five years to provide a mechanism for monitoring steroid contraceptives for carcinogenic effects that may become apparent in the future.

Description provided by IARC and DKFZ with ICRDB/NCI support.
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3.2384,
EPIDEMIOLOGY OF LUNG CANCER

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Lung cancer incidence is increasing dramatically worldwide in both men and women. Etiological factors in diagnosed cases of lung cancer including cigarette smoking, sex and environmental exposures will be investigated in a case-characteristics study. All cases of lung cancer seen in previous studies at a large multi-specialty medical clinic in Boston (Lahey Clinic) from 1956-1972 (Med. Clin. North America, 59, March 1975) were analyzed. Findings are now being updated to 1980 to cover a twenty four year period. A list of all patients with diagnosed lung cancer, giving their sex and age, is obtained from the Lahey Clinic Tumor Registry. Approximately

2,000 patients will be analyzed. There is an increased proportion of women among the total number of patients diagnosed with lung cancer. Further analysis, including scrutiny of the medical record to find smoking and environmental history, and review of pathology slides by the pathologist to confirm cell type of the tumor and Kreyberg classification is made for all women with lung cancer. Preliminary results show that the biggest rise in lung cancer in women is among smokers who have Kreyberg Group 1 (smoking-related) tumors.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.2385,

EPIDEMIOLOGY OF LEUKEMIA AND LYMPHOMA IN RELATION TO ALTITUDE

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This investigation has been carried out for the past 15 years and is on-going. Two populations of 110,000-115,000 each are being surveyed for their total leukemia, lymphoma, and myeloma incidence and mortality rates, in 6 counties in Central Nebraska (elevation 600 meters) and in counties in Southwestern Wyoming (elevation 1,800 meters). A two-fold difference in Hodgkin's lymphomas and chronic lymphocytic leukemia have been demonstrated over a decade (lower at higher altitude) without any differences in histiocytic lymphoma or acute or chronic myelogenous leukemia rates. The populations are very similar in race, economic level and occupational exposure to radiation (very low).

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.2386,

EPIDEMIOLOGICAL STUDY OF WORKERS EXPOSED TO BENZENE

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This is a retrospective cohort study of 2,000 workers exposed to benzene at some time between 1910 and 1976. Follow-up of terminated employees will be undertaken and mortality experience of the entire cohort will be compared with expectation based on the entire du Pont Company workforce, and on the US population. Particular attention will be given to cancer, especially leukemia.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.2387,

EPIDEMIOLOGICAL AND THEORETICAL TOXICOLOGY STUDIES ON CHRONIC ARSENIC POISONING INCLUDING ARSENIC-INDUCED CANCERS

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The aims of this project are as follows: (1) to describe dose-response curves for males, females and both sexes combined; (2) to collect data on mean arsenic dose (mg/kg body wt/day) and mean age for males, females and both sexes combined; (3) to collect data on combined as well as dose (mg/worker/day) for male laborers doing hard work; (4) to analyze mean dose (mg/kg body wt/day), mean age, and age-specific prevalence rate per 100,000 population for chronic arsenic poisoning for males, females and both sexes combined; (5) to analyze mean age, prevalence rate and mean dose (mg/person/day); (6) to analyze the sex as a categorical variable; (7) to estimate ingested doses (based on arsenic concentrations in drinking water and foods) in patients with arsenic-induced cancers (skin carcinomata and malignant hemangio-endothelioma of liver); and (8) to apply the compartment theory to the toxokinetics of arsenic. Data on mean doses, mean ages, and sex distribution from 290 normal subjects and 30 laborers have been collected from Antofagasta Commune, Northern Chile. Data processing and statistical analyses are being carried out.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.2388,

ENVIRONMENTAL CARCINOGENS AND HUMAN CANCER

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This project is part of a US Environmental Protection Agency program investigating the relationship between environmental carcinogens and risk of cancer in the general population. Much of the work to this point has concerned problem definition, methodology and data base development. The program is now focussing on geographical areas that can serve as community laboratories for research on environmental levels of specific carcinogens and their association with cancer risk. An area centered in southeastern Ohio has been selected for this purpose after screening over 3,000 US counties for coincidence of high cancer mortality and probable exposure. Preliminary investigations to establish the utility of the study area have been completed. The potential for long-term carcinogen exposure has been confirmed through emission source inventory and analysis of available monitoring data. Intra-area mortality analysis has shown significant differences in respiratory cancer associated with proximity to major emission sources. Results from a small case-control study suggest that the increased risk in these source sectors may be related to long-term residence and smoking, but it does not appear to be due to smoking alone or to occupational exposure. Based on this preliminary work the Agency is proceding with monitoring of carcinogen levels in air, water, soil, flora and fauna, and planning further epidemiological studies.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.2389,

ENDOGENOUS FACTORS IN BREAST CANCER

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A major analysis of data on 785 women with pathologically confirmed breast cancer has been published (Cancer, 41, 2341-2354, 1978). History of maternal breast cancer was a significant risk factor, while no significant differences were observed between cases and controls for birthplace, marital status, husband's occupation, religion, or education, or with age at menarche, age at menopause, duration of menses, history of nursing, or parity. A statistically significant increase in relative risk was found among pre- and perimenopausal (but not postmenopausal) women who bore their first child at a later age. No significant differences were found between cases and controls for weight, height, or weight/height, or reported use of any estrogenic drugs, or for any endocrine-related diseases (except for a slight excess of benign breast disease among cases). Studies by us and others have shown that no known endogenous factor can account for differences in breast cancer rates between high and low risk areas of the world. Therefore, exogenous factors must be emphasized, particularly in relation to the influence of nutrition. A comparative study of the epidemiology of breast cancer in the US and Japan was concluded in collaboration with Dr. T. Hirayama (Prev. Med. 6, 567-594, 1977). This study suggests that all American women must, as a practical matter, be considered to be at high risk, and that diet must be considered a causative factor. Because diet is known to affect hormone physiology and breast cancer is a hormone-dependent disease, it is conceivable that nutritional factors may have a significant effect upon breast cancer risk. A metabolic epidemiological investigation is being conducted in Japan, Finland and the US, nations where breast cancer rates and dietary habits are very different. Comparative analysis of serum and breast fluid hormone values from healthy women and breast cancer patients will be performed.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.2390,

DO SOME GENETIC CONSTITUTIONS PREDISPOSE TO CANCER

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The serum protease inhibitor alpha 1-antitrypsin (AAT) functions as a phase reactant neutralizer of proteolytic enzymes released from tissues during inflammatory processes. It is also part of the regulatory mechanism of the hemostatic and fibrinolytic systems. Individual serum levels and type are genetically determined by a pair of codominant alleles. An association between a deficiency of AAT and hepatocarcinoma has been suggested based on case reports in the literature. The risk of developing hepatocarcinoma is being evaluated by studying families in which deficiency alleles of AAT are segregating. These are the protease inhibitor (Pi) types I, S, Z and null. Families are identified in many ways: through propositi with neonatal liver disease, chronic pulmonary disease, coeliac disease or serendipity. Detailed family histories are obtained; hospital records and death certificates are obtained where possible. By Pi typing all living members, the Pi types of deceased individuals may often be deduced. It is planned to study a minimum of 100 families. The population under study will be analyzed for an increase in hepatocarcinoma in proven or probable carriers of Pi deficiency genes. Pi normal (MM) individuals in the same families will serve as controls. The two groups will be compared to US mortality statistics. The data will also be analyzed for frequency of many other neoplasms. In addition to defining the frequency of hepatocarcinoma in this population, other factors which may influence the development of malignancy in Pi deficient individuals will be sought.

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3.2391,

DIAGNOSTIC CRITERIA AND TECHNIQUES FOR DETECTION OF ASYMPTOMATIC ORAL CARCINOMA - IDENTIFICATION OF HIGH-RISK GROUPS

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It appears that erythroplastic portions of asymptomatic oral squamous cell carcinoma stain positive with toluidine blue. Very few false positives are found if toluidine blue is used in conjunction with previously defined clinical criteria (erythroplasia). Suspicious oral lesions found during routine oral examinations are referred to the investigator. Lesions which persist for 10-14 days are described, photographed, and a demographic questionnaire is completed by a trained interviewer. A clinical diagnosis is made and the lesion is stained using toluidine blue. Results are recorded. A biopsy renders final pathological diagnosis. Demographic data are being evaluated to delineate what percentage of these patients with oral squamous cell carcinoma drink or smoke heavily, have developed or have had other primaries of the upper aerodigestive tract, including the mouth. It should be noted that these are for the most part independent squamous lesions. Additionally, recurrence and survival rate for patients with early asymptomatic lesions is being studied. A control group is also being studied. All admissions to the hospital have a scheduled appointment for oral examination in the Dental Clinic. Patients scheduled each day (over 40 years of age) are interviewed and questioned. The only bias in selection is that patients who are too ill to attend the clinic are not taken or that patients are inadvertently missed for interview. Since the patients with early erythroplastic oral cancer are those who are examined in the same way, the controls are in the same population.

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3.2392,

DETERMINANTS OF CANCER AND CARDIOVASCULAR DISEASE MORTALITY IN ASBESTOS MINING COUNTRIES OF CALIFORNIA

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The purpose is to evaluate the association of mortality from respiratory tract cancer, mesothelioma, and cardiovascular disease with length of residence in the proximity of natural asbestos formations and processing activities after controlling for the effects of cigarette smoking, occupation, and genetic susceptibility. The study design will define the geographical bounds and causes of death to be investigated. A questionnaire will be used to obtain information from surviving family members. A comprehensive in-

ventory and characterization of stationary, mobile, anthropogenic and natural sources of asbestos will be made in all case and control areas for the time periods of interest. Air and water exposure maps covering the study areas will be constructed and used to correlate personal histories with degree of exposure.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.2393,

MORBIDITY AND MORTALITY AMONG TACONITE ORE MINERS

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Considerable controversy has surrounded the mining and processing of taconite ore, which contains approximately six per cent iron, and is a major source of the iron used in steel made in the United States. Associated with it is fibrous silica of the grunerite-cummingtonite series. In order to determine if long-term exposure to taconite dust contributed to increased morbidity or mortality among workers, a historical cohort study was initiated in 1976. 5,750 white males having worked for at least one year are being followed. Comparisons with state and national rates for mortality as well as quantification of individual exposure are being carried out.

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3.2394,

MORBIDITY AND INDUSTRIAL HYGIENE STUDY OF FIBROUS MINERAL WORKERS

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Exposure to asbestos has long been recognized as being associated with pulmonary pathology, and because of this industry has begun utilizing material other than asbestos. These substitute materials, however, are similar to asbestos in morphology and chemical/physical properties. While a great deal of health research exists about asbestos, insufficient evidence exists on the possible pernicious effect of the substitute materials on the respiratory system. Exposure to these substitute materials will be studied, concentrating particularly on talc but examining other fibrous minerals as well. Representative samples of those exposed to these materials in production or secondary use will be studied through the use of questionnaire, x-ray and measurement of respiratory function. The results will be co-ordinated with industrial hygiene surveys at the places studied. Industrial hygiene examinations of all talc facilities have been completed. All raw data has been received and is awaiting analysis and reports. Preparations have begun for industrial hygiene examinations of the attapulgite clay industry.

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3.2395,

MORTALITY, MEDICAL, AND INDUSTRIAL HYGIENE STUDY OF WORKERS EXPOSED TO NITROSAMINES

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Dimethylnitrosamine is denoted a carcinogen by the Occupational Safety and Health Administration and appropriate precautions are taken in the few areas where it is used or manufactured. New analytical techniques have shown that dimethylnitrosamine and other nitroso compounds may form under appropriate conditions in the ambient atmosphere or even in vivo if sufficient concentrations of precursors (secondary amines, amides, etc.) and nitrates, nitrites or other nitrogenous compounds exist. 28 plants have been investigated during 40 industrial hygiene surveys for possible nitrosamine contamination. The industries visited were the automobile, azo dye, fish and fish meal, rubber, leather and small machine shops. To date N-nitrosodiethanolamine, N-nitrosodimethylamine, N-nitrosomorpholine and N-nitorosodiphenylamine have been found in the air of several plants. N-nitrosodimethylamine, a regulated carcinogen, was found as high as 50 ug/cbm in the leather industry: N-nitrosomorpholine was in the rubber industry at 27 ug/cbm. Efforts were made to determine the nitrosating agent, source of contamination, the extent of human exposure and methods of controlling the exposure to nitrosamines in the rubber and leather industries.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.2396,

MORTALITY, MEDICAL, AND INDUSTRIAL HYGIENE STUDY OF GOLDMINERS EXPOSED TO ASBESTIFORM MINERALS

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The NIOSH-recommended standard in 1972 for asbestos exposures of 2.0 fibers longer than 5 um per cubic centimeter of air (fibers greater than 5 um/ccm) was made with the recognition that health data for exposure to low fiber levels and definitive information on the biological response to different size fibers were not available. NIOSH in 1976 recommended a standard of 0.1 fibers greater than 5 um/ccm. In 1976 NIOSH reported on a mortality study of a mining population exposed to amosite asbestos (cummingtonite - grunerite) concentrations below 2.0 fibers greater than 5 um/ccm and with most fibers being shorter than 5 um in length, that demonstrated significantly increased mortality due to both malignant and non-malignant respiratory disease. The purpose of this project is to complete an expanded retrospective mortality study.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.2397,

PRIMARY SALIVARY GLAND NEOPLASMS IN ROCHESTER, MINNESOTA

J.E. Bouquot, West Virginia University, School of Medicine, Dept. of Oral Pathology, *Medical Ctr. Dr., Morgantown, West Virginia* 26506

An association between irradiation of the head and neck and subsequent development of benign and malignant salivery gland neoplasms has been noted in the literature. Most of these neoplasms have been benign. This study will provide such data for the Rochester population as well as detailed clinical information on the few neoplasms that are malignant.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.2398,

IMMUNODIAGNOSTIC MEASURES IN CERVICAL CANCER

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The objective of this study is to systematically assess the reliability and validity of the AG-4 Serological Test in predicting the subsequent course of cervical cancer. This tumor-specific antigen has been shown to be present in most of the patients with invasive cervical cancer or with recurrent cervical cancer, to be virtually absent in controls without cervical disease and to be present in a minority of patients with pre-neoplastic cervical disease. Patients in various stages of cervical neoplasia are being followed prsopectively in order to measure their blood levels of AG-4 before, during and after invasion.

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3.2399,

INCIDENCE OF CARCINOMA OF THE ORAL CAVITY, PHARYNX, LARYNX, NASAL SINUS AND PARANASAL SINUSES IN ROCHESTER, MINNESOTA, 1935-1974

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This is a descriptive study of the incidence of cancer of the oral cavity, pharynx, larynx, nasal and paranasal sinuses in Rochester during a 40-year period.

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3.2400,

HEALTH EFFECTS FROM INGESTION OF ASBESTOS FIBERS IN A MUNICIPAL WATER SUPPLY

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The study established baseline incidence of cancer of all sites in the resident population of Duluth, Minnesota, (1970 population 100,078) during the period 1969-1971 and will continue to monitor incidence through 1981 or longer. The purpose of the study is to determine the health effect, if any, on the baasis of the investigation of asbestos (amphibole) fibers present in the city water supply during approximately 15 years. Data are collected in the same manner as during the Third National Cancer Survey and compared with the Minneapolis St. Paul component of the Survey and the Surveillance, Epidemiology and End Results Program of the U.S. National Cancer Institute. Additional information will be obtained on cancer cases of selected sites and matched controls. Incidence data for gastrointestinal sites and lung will be published in Environmental Research.

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3.2401,

EXCESS GALLBLADDER CANCER IN THE HISPANIC POPULATION OF NEW MEXICO

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Historical records indicate that the Hispanic population of the State of New Mexico is 'Mestizo', with both American Indian and Caucasian ancestry. Population genetic studies reveal that the American Indian component is greater than 40 per cent. Evidence now exists that gallbladder cancer is characteristically an American Indian or Mongoloid disease. Both American Indian and Japanese women display unusually high incidences. The diversity of their cultures, diets, and environments suggests that gallbladder cancer has a strong heritable component. The genetic similarity between American Indians and Hispanics further suggests that the disease occurs in Hispanics as a result of their American Indian admixture. A population-genetic study of a Rio Arriba County Hispanic village has shown strong marital isolation, high inbreeding, and many individuals who are homozygous for a number of HLA antigens. Two familial cases of gallbladder cancer, the first reported in the literature, have been found, one involving mother-daughter-cousin and the other involving two sisters. Additional familial cases in Rio Arriba County are now being sought to establish the pattern of inheritance of the factor, or factors, predisposing its population to gallbladder cancer.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.2402,

ETIOLOGY OF CHILDHOOD BRAIN TUMORS

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The purpose of this case-control study is to identify risk factors for the most common subtypes of the three most common site-specific brain tumors (cerebellar gliomas, medulloblastomas and supratentorial gliomas). Cases consist of all children with these types of brain tumors identified within the catchment areas of the eight participating SEER (Surveillance, Evaluation and End Results) Registries between 1/1/78 and 12/31/81. Three controls will be obtained for each case through Random Digit Dialing and will be matched for age (3 years), sex and race. Parents of cases and controls are asked by questionnaire to

provide information on the numerous exposures that might influence the risk of brain tumors in children. The null hypothesis to be tested is that each variable has the same distribution among cases and controls.
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.2403,

THE AGE INCREMENT IN BREAST CANCER

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Examination of age-specific incidence rates as recorded in the United States, United Kingdom and other western countries, reveals some interesting regular patterns which are peculiar to specific age groups. The possible significance of these patterns is being examined.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.2404,

TREND IN LUNG CANCER MORTALITY RATES IN PHILADELPHIA, PA, USA

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The number of lung cancer deaths in Philadelphia has increased from 517 in 1955 to 1,025 in 1977 although the total population has fallen from 2.2 million to 1.9 million. Rates adjusted to the 1960 census have been calculated for white and non-white males and for white females. The number of cases in non-white females is too small to provide stable rates. The trend for males of both race groups since 1955 has shown a strong tendency to plateau in recent years while the trend in white females has continued upward steadily. The decrease in the rate of increase in males seems to be much more marked in Philadelphia than in US males. Observation continues.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.2405,

RELATIONSHIP BETWEEN HUMAN PAPOVAVIRUSES AND TUMORS OF THE NERVOUS SYSTEM (ABBREV)

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Human papoviruses, particularly JC virus, can transform hamster and rat cells in vitro and can induce tumors in vivo when injected in hamsters and monkeys. The JC virus induces mainly tumors of the nervous system, and has been clearly shown to be the etiological agent of progressive multifocal leucoencephalopathy (PML), a demyelinating disease. The main objective of the project is to establish an association between the above mentioned viruses and malignancies of the nervous system by extensive sero-epidemiological studies. The immunovirological antibody profile against early and late antigens determined by papovaviruses is established in sera of cancer patients with tumors of the nervous system from USA, Europe, and North Africa. Two sex- and age-matched (2-5 years) healthy controls, living in the same areas and in similar socio-economic conditions, are used for each patient. A second control group will consist of serum samples from age-and sex-matched patients with a cancer of different origin and location but similar therapy.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.2406,

NORTH-EAST FLORIDA LUNG CANCER STUDY

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This study proposes to gather retrospective data concerning asbestos exposure on all new lung cancer cases in four north-east Florida counties. The study will consider occupational histories as well as smoking. The study will also locate geographically all cases and two matched controls to ascertain any possible clustering patterns associated with major air pollution sources in the area. Case verification has been performed by an independent pathology review and analysis is anticipated concerning morphological types of lung cancer and specific risk factors. The study is also identifying mesothelioma and asbestosis cases for the same time period (1978-79) and geographical area.

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3.2407,

LUNG CANCER IN A COHORT OF WELDERS

J.J. Beaumont, U.S. Dept. of Health & Human Services, Public Health Service, Center for Disease Control, National Inst. for Occupational Safety & Health, Division of Surveillance Hazard Evaluation & Field Studies, *4676 Columbia Pkwy., Cincinnati, Ohio* 45226

Welders constitute approximately one per cent of the United States male workforce, and on a daily basis they are exposed to a variety of metal oxides, gases, and other substances evolved from the welding process. To assess their lung cancer mortality, a cohort of 3,247 welders with at least three years experience was established from the records of a metal trades union representing workers in shipyards, metal fabrication ships, and field construction. Comparison has been made with death statistics and preliminary results indicate an excess lung cancer rate of 31 per cent, which increases to 69 per cent when only those person-years after 20 years latency are considered.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.2408,

MORTALITY, MEDICAL AND INDUSTRIAL HYGIENE STUDIES OF PRINTING TRADES

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Johns Hopkins University is investigating the extent and nature of health effects occurring in populations engaged in the application of surface coatings. A carefully selected cross-section of industrial settings (wood furniture, railroads, aircraft, automobile, etc.), and of paint and coating systems (each with its own peculiar hazard potential) and application techniques, will be evaluated. The project consists of three closely interrelated phases: epidemiological studies, cross-sectional medical studies, and industrial hygiene studies. Preliminary surveys were completed in a total of 48 plants or construction sites in 1979 and an undetermined number of these will now be selected for in-depth studies.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.2409,

PHOTOCHEMOTHERAPY FOLLOW-UP STUDY

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This prospective cohort study is assessing the risk and efficacy of oral methoxsalen photochemotherapy, introduced in 1974 for the treatment of psoriasis, and now widely used for this common skin disease. On the basis of basic science and animal experiments, there is concern about its potential long-term toxicity, especially cutaneous carcinogenesis and cataract formation. Treatment requirements, extent of control of the patient's disease, and the incidence of adverse events, especially skin cancers and cataracts in this population, are being documented. This is a 16 center cooperative follow-up study. Data are collected on patients prior to entry and at annual intervals. Each of the 1,380 patients in the cohort is invited to be examined by a dermatologist and interviewed. The cohort will be followed for an average of six years from first treatment to the proposed end of the study. Historical controls are used. In addition, since side effects are expected to be dose-related, the incidence of adverse events in photochemotherapy will be compared.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.2410,

PRELIMINARY STUDY ON THE EPIDEMIOLOGY OF MENINGIOMAS

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The objective is to identify risk factors for meningioma with special emphasis on the use of hair-dyes. The possible etiological factors of trauma, irradiation, infection, sex hormones and drugs, hereditary factors and other environmental exposures will also be assessed. A retrospective case-control method by means of mailed questionnaires is used, cases being meningioma patients diagnosed at the University of Kansas Medical Center. For each female case, three control patients without cancer, matched for race and year of birth, are selected from the name-roster at the Breast Cancer Detection Center of the University of Kansas Medical Center. Preliminary analyses from the collected questionnaires of 41 female cases with meningioma and 86 controls show that meningioma cases reported themselves exposed to hair-dyes less frequently than the controls. However, meningioma cases exhibit a significantly higher body weight and body mass index (RMT) at age 40 than the controls. In addition, more cases than controls come from large families and suffer from thyroid diseases. The epidemiological findings as well as the well known clinical evidence of a female preponderance in meningiomas seem to suggest that hormonal factors may play an important role in the pathogenesis. Further exploration of the association with hormonal imbalance or obesity is planned.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.2411,

PILOT STUDY ON THE NATURAL HISTORY OF BLADDER PAPILLOMAS

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A major dilemma in urological practice today is the inability of physicians to predict which benign appearing bladder papillomata will eventually invade and which will not. An epidemiological study has been undertaken to investigate this problem. A sample of Baltimore area urologists are participating in an investigation of all their patients recently diagnosed as having bladder papillomas or early stage carcinomas. The biopsy and other tissue specimens are being analyzed in detail by Dr. Joseph C. Eggleston. Their urological and medical records are being reviewed and all patients are being interviewed with respect to known and potential bladder carcinogen exposure. It is hoped that this study will it possible to correlate the histological characteristics and exposure histories of the bladder tumor patients with their subsequent clinical course. At this time, 22 or 9.1% of 243 papilloma patients have been found to develop bladder carcinoma after precursor papillomas. These appear more likely to be smokers, and to have histories of certain environmental exposures than do other papilloma cases. The papillary lesions associated with subsequent malignant transformation are not readily distinguished from others. The data are now being analyzed with respect to: (1) the incidence and prevalence of bladder papillomas in the Baltimore area; (2) the incidence or probability of developing bladder and other cancer according to host and lesion characteristics; (3) the survival experience of papilloma patients, and (4) the multivariate predictor, based on host factors and papillary lesion characteristics, for events following papillomas.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.2.12,

LEUKEMIA AND NEOPLASMS OF LUNG AND OTHER ORGANS IN A GENERAL POPULATION LIVING IN AN AREA CONTAMINATED WITH LOW LEVELS OF PLUTONIUM

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A population of 595,226 people live in an area contaminated by a nuclear weapons plant with low levels of plutonium and other transuranic nucleides since 1953. There is evidence that plutonium and other transuranic nucleides are potent carcinogens. A retrospective cohort study will evaluate cancer morbidity and mortality patterns in this population. Data will be controlled for age-distribution, sex, race, ethnic group and possible confounding factors such as air pollution, urbanization, income, occupation, education and immigration will be considered. Cancer incidence data from the Third National Cancer Survey of the National Cancer Inst. for the periods 1969 to 1971 in the Denver Standard Metropolitan Statistical Area will be studied. Cancer death rates for exposed populations will be compared to unexposed populations for the period 1970-1980. An estimated six million persons/year of exposure will be available for study. The source of the data will be death certificates from the Division of Vital Statistics of the Colorado Department of Health and cancer incidence data from the National Cancer Institute, the Colorado Cancer Registry, and the Colorado Regional Cancer Center. The control group is the general population (423,860) residing in the Denver Standard Metropolitan Statistical Area outside the area known to be contaminated with plutonium and other transuranic nuclides. This population has been shown to have virtually the same age-adjusted annual cancer incidence rate as the state of Colorado.

Description provided by IARC and DKFZ with ICRDB/NCI support.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.2.13,

MALIGNANT MELANOMA AND ENVIRONMENTAL EXPOSURE

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This is a non-concurrent, prospective study of environmental exposure to petroleum residues (from conbustion) and the risk of malignant melanomas. Industrial workers considered to be at high risk (e.g., flight line workers, toll booth operators) will be studied in contrast to workers exposed to sunlight (e.g., telephone company employees) or to petroleum residues only (e.g., auto mechanics). Communities in proximity to sources of exposure (e.g., airports, highways) will also be studied, in contrast to communities not so exposed, for melanoma rates. An anticipated 800 persons will be included from industry with an additional study population being the communities studied from institution records only.

Description provided by IARC and DKFZ with ICRDB/NCI support.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.2.14,

RETROSPECTIVE COMPARISON (BY COUNTY) OF CANCER MORTALITY AND PESTICIDE USAGE, IN FLORIDA, 1950-1977

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This study is a population-based comparison of cancer mortality (by sex, by race, by county, by site) and pesticide usage (by type, by crop, by application factors). Regression analysis of the data sets will allow consideration of general patterns, as well as site-specific, product-specific correlations. Rank correlation studies will enhance the detection of trends between sub-variables. All studies will be performed by county groupings over the twenty-eight year interval.

Description provided by IARC and DKFZ with ICRDB/NCI support.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.2.15,

INVESTIGATION OF PENTACHLOROPHENOL AND CANCER RISK

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This study began as an investigation of citizen-reported clustering of cancer, associated with possible pentachlorophenol (PCP) exposure. Suggestive findings from this field study prompted a larger, non-current, prospective study of occupational exposure to PCP to quantify any associated cancer risk. An anticipated 1,000 persons will be included in the study, and a control group will be selected form a non-related industry.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.2.16,

STEROID-RELATED TUMORS OF THE LIVER

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Clinical data and pathological material are being collected on young women with both benign and primary malignant tumors of the liver. To date about 250 such cases have been examined, the vast majority being related to oral contraceptives or to long-term estrogen use. A number have occurred in late pregnancy or the early post-partum period. In addition to epidemiological data, drug usage, etc., alpha-1-antitrypsin (which seems to be a marker for these tumors), hepatitis antigens and estrogen receptors are being investigeted. Since histological material is available on all cases, the tumor types are well controlled and considerable material will soon be available for further epidemiological studies.

Description provided by IARC and DKFZ with ICRDB/NCI support.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.2.17,

MORTALITY AND INDUSTRIAL HYGIENE STUDY OF WORKERS EXPOSED TO STYRENE

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Recent research indicates that workers exposed to styrene may experience chronic health problems: (1) There have been studies which show a definite increase of death due to leukaemia among styrene-butadiene rubber workers; (2) Styrene has been shown to be mutagenic after liver microsomal activation; (3) Styrene oxide, which is a metabolite of styrene, has been shown to be mutagenic by the Ames test. hepatoxicity and carcinogenicity have been attributed to chronic exposure to styrene metabolites based on animal experiments. a retrospective mortality and industrial hygiene study of workers exposed to styrene is thus being conducted to further evaluate the potential medical effects of styrene. Preliminary industrial hygiene and record assessment evaluations have been conducted at 15 boat manufacturing facilities, both in and outside the state of Washington, in order to judge the feasibility of their inclusion in the epidemiological study. Two in the State of Washington were identified as appropriate for the mortality study, and five others were chosen for industrial hygiene monitoring alone. A total of seven industrial hygiene surveys were carried out. Demographic files have been coded and are being verified for the retrospective mortality study. Vital status follow-up has begun for all individuals who have worked at the two facilities which are part of the epidemiological study.

Description provided by IARC and DKFZ with ICRDB/NCI support.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.2.18,

RELATIONSHIP BETWEEN HERPES VIRUSES AND CERTAIN HUMAN MALIGNANCIES

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There is increasing evidence that herpes viruses play a role in the induction of some human cancers (e.g., EBV and Burkitt's lymphoma; nasopharyngeal carcinoma; HSV-2 and cervical cancer; CMV and Kaposi's sarcoma). The main objectives of the project are: (1) To establish an association between the above-mentioned viruses and malignancies by seroepidemiological studies in high and low risk populations; (2) to analyze whether susceptibility to skin cancer can be shown by immunogenetic studies (HLA and MLC) in a high risk population, Tunisian xeroderma pigmentosum patients; (3) field studies in high incidence areas of Kaposi's sarcoma to detect time-space clusters; (4) retrospective analyses of Kaposi's sarcoma patients to determine if Kaposi's sarcoma is more often associated with a second primary cancer than other cancers. Seroepidemiological studies establish the antibody profile against early and late antigens for herpes viruses in cancer patients and controls. Kaposi's sarcoma cases derive from Uganda, Cameroon, Tunisia, France, USA and Italy; skin cancer from xeroderma pigmentosum patients in Tunisia; penile carcinoma from Uganda. Two sex-matched and age-matched (plus or minus 2-5 years) healthy subjects, living in the same areas and in similar socioeconomic conditions, will be used as controls. A second control group will consist of serum samples from age- and sex-matched patients with a cancer of different origin and location but similar therapy.

Description provided by IARC and DKFZ with ICRDB/NCI support.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.2.19,

RARE SITES CANCER STUDY

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The objective is the collection, in five metropolitan areas of the United States, of epidemiological data on persons diagnosed as having one of a number of relatively rare cancers. The sites include the vagina, vulva, penis, testis, scrotum, male breast, renal pelvis, adrenal gland, gall bladder, liver, pancreatic islet cell and nasopharynx. All cases diagnosed over the period of study together with an equal number of controls matched by age, sex and race were interviewed in the hospital. The questionnaire included a very detailed investigation of sexual, genital, marital and hormonal factors as well as a large number of environmental agents of possible importance in the pathogenesis of these rare neoplasms. A total of 1,812 rare cancer patients and controls have been identified and interviewed.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.2.20,

MORTALITY AMONG U.S. COAST GUARD MARINE INSPECTORS

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The Coast Guard is involved in the internal inspection of merchant vessels in the United States. During this work, marine inspectors are exposed to a variety of substances (e.g., benzene, trichloroethylene, vinyl chloride, carbon tetrachloride, fuels, pesticides, and others) carried by these vessels. Many of these substances are known or suspected human carcinogens. A cohort follow-up study of approximately 7,000 officers in the marine inspection service between 1942 and 1970 is underway. Cause-specific mortality rates will be compared with rates among other Coast Guard officers (of comparable age, length of service, race, and sex) who were not marine inspectors. Stratification by geographical location of station and length of service will be used to identify hazardous substances, exposure gradients, and latent periods.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.2421,

RADIONUCLEIDE LEVELS IN MILK AND PREGNANCY OUTCOMES IN WISCONSIN (1963-75)

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About 845,000 pregnancy outcomes are being examined over a 13-year period in Wisconsin to see whether there is any indication of an association with changes in levels of strontium 90, cesium 137 or iodin 131 in milk. Monitoring of radionucleides is done by the State of Wisconsin and published separately for each of six milkshed regions. Wisconsin State Health Statistics for the six milkshed regions are being used to establish maternal/child health trends in the six regions. Two health indicators are examined: (1) death rate for infants with birth weight under 2,500 grams; and (2) percent unsuccessful pregnancies, defined as a pregnancy of 20 or more weeks gestation terminating in offspring death prior to one year. Environmental factors such as the paper and pulp industry, chemical manufacturing plants, fossil fuel generators and occurrence of German measles are also being examined as possible causal agents or co-causal agents of maternal/child health changes observed.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.2422,

CHOLECYSTECTOMY AND SUBSEQUENT COLON CANCER RISK

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The cohort of over 800 patients who have been identified as having undergone cholecystectomy for cholelithiasis and/or cholecystitis in Rochester from 1950-1970 will be followed for the later occurrence of colon cancer. Age-specific rates for colon cancer for Rochester will be applied to the person-years of follow-up for the cohort to determine if any increase in cancer is apparent to test the hypothesis that these diseases may have a common origin.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.2423,

PROSTATE CANCER IN ROCHESTER, MINNESOTA

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This is a descriptive study of the incidence and prevalence of and mortality from prostate cancer in Rochester, Minnesota. The diagnostic index of the Mayo Clinic will be used to identify the cases. Data to be abstracted will include age, mode of diagnosis, and associated genito-urinary disease, as well as incidence and prevalence.

Description provided by IARC and DKFZ with ICRDB/NCI support.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.2424,

ENVIRONMENTAL RISK FACTORS FOR NASOPHARYNGEAL CARCINOMA IN MALAYSIA

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The study aims to clarify evidence for an association between poorer socio-economic environments and nasopharyngeal carcinoma (NPC), and test the hypotheses that inhaled carcinogens in certain occupational settings and exposure to Cantonese salted fish are high risk factors for this cancer. The individual environments of 100 Chinese and 25 non-Chinese patients with NPC will be compared in order to identify particular patient-environment interactions that may play a part in the etiology of NPC. Relative risk will be computed using 125 controls sampled from the general population. The time and space dimensions of self-specific environments for family members will be established using daily activity patterns spread over one week. Structured and non-structured interviewing techniques will be employed. Field work will be carried out during the first year of the 24 month study in the State of Selangor, Malaysia, and data processing and analysis during the second year in Hawaii.

Description provided by IARC and DKFZ with ICRDB/NCI support.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.2425,

CANCER MORBIDITY AND MORTALITY IN PREVIOUSLY ANTICOAGULATED PATIENTS

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The speculation that anticoagulant therapy may alter the incidence or mortality of cancer prompted this investigation. A cohort of 376 patients who were residents of Rochester, Minnesota, who had their initial myocardial infarction diagnosed between 1945 and 1969, and who received anticoagulant therapy for at least six weeks, were followed to determine in their cancer morbidity or mortality differed from that expected. The expected number of incidence cases of new malignancies will be derived from the age- and sex-specific Connecticut Tumor Registry rates and the Olmsted County experience, and the number of deaths from Minnesota mortality rates.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.2426,

PRIMARY INTRACRANIAL NEOPLASMS IN ROCHESTER, MINNESOTA, 1935-1978

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This study is expected to provide data on the incidence of intracranial neoplasms in the population of Olmsted County from 1935 through 1977. The incidence rates will be described by histological type, age, sex and time period. In addition of symptomatic tumors discovered during a patient's lifetime, the age- and sex-specific prevalence rates of brain tumors found at autopsy will be determined. In addition to providing incidence rates of brain tumors, this study will address the implications of cases diagnosed incidentally at autopsy.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.2427,

PATTERNS OF OTHER NEOPLASIA IN PATIENTS WITH ENDOMETRIAL CARCINOMA

J.F. Annegers, Mayo Clinic, Dept. of Medical Statistics & Epidemiology, *200 1st St. S.W., Rochester, Minnesota* 55901

The 1,191 patients who had their initial treatment for endometrial carcinoma at the Mayo Clinic between 1953 and 1972 are being followed to determine their experience of subsequent malignancies. Approximately 12,000 person-years of post-endometrial carcinoma observation are expected. Numbers of subsequent malignancies will be compared with expected numbers derived from both the incidence rates of the Connecticut Tumor Registry and the incidence rates from our Olmsted County studies. The relative risks of other sites, particularly breast, will be evaluated by the duration from diagnosis of endometrial carcinoma. Patients will also be evaluated by specific risk factors present at the time of diagnosis of the endometrial carcinoma, specifically parity and obesity. These data will make it possible to evaluate whether or not an increased risk of breast cancer may be due to the endometrial carcinoma per se or due to the association of both breast and endometrial carcinomas to common risk factors.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.2428,

INVESTIGATION OF CANCER CLUSTER

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The object of the project is to identify possible environmental determinants of case aggregation as a 'lead' to further etiological studies. This is a research project designed to respond to reports of cancer clustering. The study protocol describes the steps which will be followed from the intial report to the final conclusion of the specific investigation. Reports involving environmental associations only are accepted. Familial reports are excluded due to complexity. The use of non-case data is included as a means of specifying the case exclusive traits, although there is not a control group strategy.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.2429,

COLORECTAL CANCER AMONG CALIFORNIAN MORMONS

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Based on analysis of church records, religiously active Mormon males in California and Utah compared with US white males have a standardized mortality ratio of 60% for colon cancer, 40% for rectum cancer, and 55% for colorectal cancer. Active Mormons abstain from tobacco, alcohol, and caffeine by church proscription. However, the specific reasons for their low colorectal cancer rates are unknown. A prospective epidemiological study using a questionnaire survey to obtain data on demography, lifestyle, diet, occupation, and medical history relevant to colorectal cancer etiology will be carried out on about 20,000 active Californian Mormons, who will subsequently be followed for mortality over a four-year period. Church-based mortality rates covering the years 1960-67 and 1976-79 will also be ascertained for all 350,000 California Mormons to supplement the existing rates 1968-75. In addition to intra-Mormon comparisons, the active Mormons as a whole will be compared with other Californian, US, and international populations, already studied with respect to colorectal cancer. A correlation analysis of extensive dietary and lifestyle data from the 1971-73 US Health and Nutrition Examination Survey with US and Californian colorectal cancer mortality rates will be made by country of birth and state of residence. Several etiological variables of interest, including beef, fat, fiber, and beer consumption, will be examined for consistency with international correlations and previous epidemiological findings. Special emphasis will focus on Spanish-Americans born in Mexico, who have colorectal cancer death rates as low as those of active Mormons.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.2430,

CASE-CONTROL STUDY AND OPHTHALMOLOGY SURVEY

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In response to an employee request, NIOSH began an investigation into an alleged cancer hazard at a chemical plant in Belle, West Virginia. Subsequently, NIOSH received the report of an epidemiological study by that company that demonstrated an excess risk of cancer of the eye, kidney and lung among employees at the plant. In order to thoroughly investigate the causes of this excess cancer risk, NIOSH proposed to conduct an ophthalmological survey of a cross-section of workers at the plant and a case-control study of the eye and kidney cancer cases. The ophthalmological survey was conducted from 13 March 1978 to 21 April 1978. A total of 1,153 persons was examined. One additional case of ocular melanoma was discovered in a pensioned employee. A follow-up of persons discovered in the course of the survey to have pigmented lesions of the optic fundus is planned for 1980. The work histories of all the eye and kidney cancer cases identified at the plant will be compared to the work histories of a group of matched controls to determine if the cancer cases worked more frequently than the controls in any specific job areas.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.2431,

USE OF PARITY SURVIVORSHIP ANALYSIS IN THE SEARCH FOR OCCUPATIONAL CARCINOGENS

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Many occupational carcinogens are also teratogens, and exposure to these substances during pregnancy will result in increased rates of spontaneous abortion. This increase will in turn augment the time required to progress from one parity to the next. Simulation is being used to determine if the increase in time between births is sufficiently large to be detected in view of the effects and variation of other variables such as lactation, post-partum amenorrhoea, fecundity, and contraceptive behavior. The time delay between parities is estimated using life table techniques to follow women from date of delivery of one parity to the next parity. As many women never progress to the next parity, the mean time, median time, or 'life expectancy' at the initial parity cannot be calculated. Instead, a 'life expectancy' is calculated for a five-year period following the initial parity. This value represents the average number of months out of a possible 60 months during which women remain at their initial parity. Finally, the power of analyzing this time estimate is compared to the power of analysis of more traditional measures of fetal loss.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.2432,

LATE FOLLOW-UP OF CURED WILMS' TUMOR PATIENTS

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The objectives of this portion of the National Wilms' Tumor Study are (1) to study the delayed adverse affects of therapy including impaired function of various organs, and oncogenesis, and (2) to seek clues as to etiology by looking for patterns of familial disease in parents and siblings with a view towards identifying possible genetic and environmental factors. At present approximately 300 long term survivors are seen regularly in follow-up, and this number will increase by about 110 children annually for the next three years.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.2433,

INDUSTRIAL HYGIENE AND MORTALITY STUDY OF CRUSHED STONE WORKERS

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As a result of finding asbestos fibers in crushed rock being quarried in Maryland, negotiations were started and are continuing with the National Crushed Stone Association for NIOSH to do a national mortality study of workers in this industry. Emphasis will be placed on causes of death related to cancer and pulmonary diseases, comparison being made with the U.S. national average for white males, and with white females for each of the states in which a quarry is visited. If large numbers of black workers are found the control populations are adjusted accordingly. As an integral part of this study, the Environmental Investigations Branch will examine and characterize the four basic types of rock being quarried. Preliminary surveys have been carried out in several quarries and data have been collected from five quarries. Arrangements have been made to collect data in three additional quarries.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.2434,

DETERMINANTS OF LIVER CANCER IN A LOW RISK COUNTRY

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This case-control study will relate to 100 cases and 300 hospital-based controls identified at several centers in the USA. The major risk factors to be evaluated are cigarette smoking, alcohol ingestion and hepatitis-B carrier state. Data will be gathered using an at-home interview.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.2435,

MORTALITY AMONG JEWELRY MANUFACTURERS

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Workers in the jewelry manufacturing industry may be exposed to solvents, acids, waxes, talc, and metal fumes and dusts. To evaluate the mortality experience of persons exposed to such substances (some of which are known carcinogens), a cohort follow-up study of 15,000 members of the Jewelry, Diamond, and Watchcase Workers Union has been initiated. Cause-specific mortality rates will be compared to expected rates based on the local and general US populations. Stratification of the cohort by date of entry into the Union, job title, and duration of membership will provide an indication of exposure gradients and latent periods.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.2436,

CARCINOGENESIS DUE TO RADIATION THERAPY

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A study has been initiated of approximately 900 patients with cancers at various sites treated with radiation therapy to determine the incidence of induced neoplasms. The control group will consist of patients with the same primary site and stage treated with surgery.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.2437,

MORTALITY AMONG CLINICAL LABORATORY TECHNOLOGISTS IN THE STATE OF CALIFORNIA

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Medical technologists are routinely exposed to chemicals used in the preparation, fixation and staining of biological materials. Although chemicals such as chromium, benzidine, toluene, formaldehyde and chloroform, which are used in some of these processes, have been shown to be carcinogenic in animals, the cancer experience of this occupational group has not been well investigated. A unique data resource suitable for such an epidemiological study is available from the State of California which has been licensing medical technologists annually for approximately 40 years. It is proposed to observe the long-term mortality experience of a cohort of medical technologists and compare it to that of one or more suitable control groups. Life table analysis will be used to compare observed numbers of deaths from specific causes among medical laboratory technologists to 'expected' numbers of deaths derived from the experience of the control group(s). Adjustments will be made for differences in age, sex, race, and time of death of the cohort and the control group(s). Observed and expected numbers for each cause of death will be compared statistically to determine whether or not differences are due to change alone.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.2438,

PROSPECTIVE STUDY OF CANCER EPIDEMIOLOGY

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Most epidemiological knowledge of cancer has been generated by retrospective inquiry, and it is likely that the data generated are reliable. To provide additional tests a prospective design on a large population has been devised. The study will be concerned especially with cancer of the larynx, lung, breast, corpus, colon and prostate. Various facets of diet, including the relationship with ingestion of meats, fats, cruciferous vegetables, fiber, vitamins A, C, and E, coffee and alcohol will be examined. Data on a few other known risk factors, e.g. tobacco, will be obtained to examine interaction between them and dietary parameters, e.g. the association of vitamin A with a reduction in risk among heavy and light smokers. The study population consists of individuals aged forty and older within a group of approximately 187,000 nurses, and 51,000 physicians licensed in New York State in 1979. Their names, ages and addresses will be on file. The New York State Tumor Registry gathers data on a variety of parameters and enters them for each individual on computer tape. The computer tapes of the nurse and physician population who have participated in the inquiry will be matched with those of the Tumor Registry to obtain individuals with like names, dates of births, ages, and addresses to follow the cancer status of the study subjects. Data are collected by mailed questionnaire containing easily filled out, pre-coded questions on height and weight, smoking, amount and type of cigarettes smoked, alcohol ingested, and a very abbreviated diet questionnaire obtaining frequency of ingesting the major cruciferous vegetables, sources of vitamins A, C, and E, meats, and fats, fiber, and vitamin pills. The questionnaire will be mailed by December 1979.

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3.2439,

HUMAN GENETICS EPIDEMIOLOGY ANALYSIS

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There is a need to examine both the environmental and genetic variables in the epidemiology of cancer and ultimately to examine the interaction of the two kinds of aetiological factors. Although a number of pedigree studies have been done, relatively little has been done to study genetic factors in cancer in large series of cases and controls. Analyses have been initiated to examine the heritability of cancer at various sites as studied in large series. Current studies are designed to obtain data on name, age and address of case and controls or, if dead, the last addresses of their parents, siblings, and offspring. Armed with these data, a clerk selects matches from the computer printouts of the Tumor Registry in Albany. When a relative is found to be a case, interviewers are assigned to interview the other relatives of that case to identify and other kin with cancer of the site under study. Dr. William Duggleby, a human geneticist, conducted a preliminary analysis on a series of melanoma cases and controls hospitalized at Roswell Park Memorial Institute. Controls are matched on age (plus or minus 5 years) and sex and have neoplasms probably unrelated to melanoma. They are selected from thoracic, breast, gastrointestinal, genitourinary and medical services. This examination of 214 cases and 1,134 relatives and 193 controls and 1,043 relatives indicated and 8- to 12-fold increase in risk for persons with melanoma in their first degree relatives. Interviews of kin with cancer suggested a possible polygenic mode of inheritance. A paper on this is being prepared. It is planned to analyze in a similar fashion series of cases and controls for sites including testis, mouth, oesophagus, stomach, colon, rectum, lung and bladder.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.2440,

POPULATION-BASED CASE-CONTROL STUDY OF RESPIRATORY CANCER AND EMPLOYMENT HISTORY

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The objective of this study is to assess the effectiveness of a retrospective population-based study as a tool for the surveillance of occupational cancer. Detailed information on occupational and smoking histories and other relevant variables will be obtained for all respiratory cancer cases generated in one year by a geographically defined population of approximately one million. Past incidence trends indicate that this should amount to some 600-700 cases. Questionnaires will be administered to cases as soon as possible after diagnosis. One control, matched for sex, race, 10-year age group, and area of residence, will be selected for each case.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.2441,

RE-ANALYSIS OF THE TRISTATE LEUKEMIA SURVEY DATA WITH SPECIAL REFERENCE TO THE LEUKEMOGENIC POTENTIAL OF DIAGNOSTIC X-RAYS

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The data under study consist of 1,414 adult leukemia cases and 1,370 controls matched for age and sex. Earlier analyses of the data suggest considerable uncertainty as to the exact nature of this association. Analyses to date suggest that there is a precipitous increase in risk of myelogenous leukemia in males exposed to 40 or more X-ray films within a 10-year period. This apparent association is being investigated to determine its exact nature. Among the hypotheses being examined is that the excess leukemia risk is a result of preleukemic conditions which elevate the probability of being X-rayed (i.e. leukemia causes X-rays) versus the possibility that ill health results in X-rays being taken which cause leukemia. To this end the disease histories of leukemia cases and controls are being compared, as are the temporal aspects of their X-ray exposure histories. A complete re-analysis of the entire data set is also being carried out, which it is hoped will contribute significantly to the understanding of low level, low linear energy transfer, radiation risks.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.2442,

SURVEILLANCE OF HEALTH EFFECTS OF POTENTIALLY LESS HAZARDOUS CIGARETTES

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This is a prospective epidemiological study designed to investigate the health effects of smoking, with particular interest in the recently introduced smoking products which have reduced yields of selected toxic constituents. Hypotheses are to be tested regarding significant differences between health effects of the older and newer smoking products. A self-administered questionnaire is being completed by all Kaiser health plan subjects who are given a multiphasic health checkup (MHC) at the KFRI Oakland-San Francisco facilities during the two-year period March 1979-February 1981. It is expected that approximately 50,000 subjects will be involved annually. The questionnaire contains detailed questions on smoking habits, as well as more general questions on occupation, demographic/socio-economic characteristics, and dietary practices. Questionnaire responses, in conjunction with mortality and morbidity data (hospitalization, physician visits, days of incapacitation) and MHC data, are to be analyzed for relationship between smoking habits and adverse health effects. This study is planned initially to cover a three-year period (two years of data collection, one year for follow-up and analysis). However, the ground-work is being established for a long-term follow-up if this becomes desirable at some future date.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.2443,

THE EFFECTS OF LOW LEVEL GAMMA AND ALPHA RADIATION ON PERIPHERAL BLOOD LYMPHOCYTE CYTOGENETICS AND SPUTUM CYTOLOGY

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The aim is to study the effects of low level gamma and alpha radiation (radon and radon progeny) upon lymphocyte cytogenetics and sputum cytology among 150 long-term residents of Grand Junction, Colorado, compared to 150 long-term residents of Greeley, Colorado. Construction of homes, schools, etc. in Grand Junction from 1957 until 1966, using uranium mill tailings, exposed many persons to radiation signficantly above background level. Greeley is a control city where mill tailings are not used in construction.

Description provided by IARC and DKFZ with ICRDB/NCI support.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.2444,

CERVICAL CANCER IN YUGOSLAVIA

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Evidence has accumulated suggesting that prior infection with genital herpesviruses may increase risk of developing cervical cancer. This hypothesis was tested by a case-control study in Yugoslavia. (A companion study involving comparisons between 104 carcinoma in situ patients and controls is nearing completion.) An equal number of controls matching the cases in age and nationality were selected. The women were questioned intensively on their sexual, marital and pregnancy histories. In addition, illnesses and hospitalizations were reviewed and a complete gynecological examination including colposcopy was conducted, with two aliquots of blood taken for virological studies. The presence of antibodies to genital herpesviruses was then determined by means of a microneutralization procedure. Analysis continues.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.2445,

FIBROCYSTIC BREAST DISEASE - EPIDEMIOLOGY AND HISTOLOGY

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This case-control study will examine the relationship beween use of oral contraceptives as well as other possible risk factors and fibrocystic breast disease, a suspected precancerous lesion, catagorized histopathologically according to extent of epithelial atypia and according to the classification system of Haagensen. Cases will be women who have had fibrocystic breast disease diagnosed from biopsy at four large Connecticut hospitals over a 22-month period. Controls will comprise women admitted as inpatients or outpatients to certain surgical services of these same hospitals. Information on oral contraceptive use, demographic characteristics, and other variables of interest will be obtained from cases and controls by means of structured questionnaire administered by trained interviewers, supplemented by queries at physicians. Previous use of oral contraceptives and exposure to other factors of interest will be compared among groups classified histopathologically as well as between each of the case groups and the controls.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.2446,

BREAST CANCER IN YOUNG WOMEN - REPRODUCTIVE RISK FACTORS INFLUENCING INCIDENCE AND PROGNOSIS

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This is a case-control, record linkage study of 318 women 25-44 years of age diagnosed with breast cancer from 1970-1976 and of 630 matched controls. Information on their reproductive histories is being obtained by linking their case records in the cancer registry with the birth certificates of their children born in New York State. Controls were selected from the birth records and matched to the cases by date of birth of first child and age of mother and county of residence at birth of their first child. Reproductive factors influencing the incidence of breast cancer in young women and prognosis are being studied. A paper entitled 'Sex of first child as a prognostic factor for breast cancer in young women' is in press.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.2447,

CASE-CONTROL STUDY OF LUNG CANCER AND DIETARY VITAMIN A IN HAWAII

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Over a period of 3 years, 500 lung cancer patients and 1,000 age and sex-matched neighborhood controls will be interviewed. Men and women of Caucasian, Japanese, Chinese, Filipino and Hawaiian/part-Hawaiian ethnic groups will be included. Trained interviewers will administer a questionnaire in the homes of cases and controls. The questionnaire will include both frequency and quantitative information on approximately 75 dietary items as well as smoking and occupational histories. The dietary items have been chosen to account for at least 85 percent of vitamin A intake for each ethnic group based on previously collected 3-day diet records. The object of the study will be to test the hypothesis of a negative relationship between lung cancer risk and dietary vitamin A.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.2448,

ANACONDA SMELTER STUDY

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In 1969 a study of 8,047 men working at a copper smelter was published by the National Cancer Inst. (NCI). An excess of respiratory cancer related to occupational exposures to arsenic trioxide was demonstrated. There was also some indication that exposures to sulphur dioxide were related to the excess respiratory cancer mortality. The University of Michigan will study a random sample of 1,800 men originally invetigated by NCI. The arsenic exposure, work histories and vital status of these men will be updated to 1977. In addition, information on smoking habits will be obtained retrospectively. Standardized mortality ratios will be calculated based on exposures to arsenic, sulphur dioxide, and cigarette smoking.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.2449,

MORTALITY AND INDUSTRIAL HYGIENE STUDY OF PHOSPHATE WORKERS

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NIOSH is conducting an epidemiological study of mortality patterns among phosphate (fertilizer) production workers. Interest in the chronic health effects associated with this industry developed because of three observed cases of lung cancer in phosphate production workers, all reported to be non-smokers. The hypothesis of an association between lung cancer and phosphate exposure seems to be supported by studies by other Federal agencies and the Florida State Department of Health, which have suggested an increased rate of lung cancer among the county populations surrounding the phosphate plants. This study involves: (1) industrial hygiene evaluations at a number of phosphate mining and phosphate fertilizer plants, (2) a retrospective cohort

study of phosphate fertilizer workers' mortality patterns, and (3) a case-control study on the same population in the cohort study to determine if the risk of lung cancer is associated with employment in specific job categories. The facility chosen for study currently employs over 500 people, and has employed approximately 4,000 people since the start up of plant operations in 1951. The overall industrial hygiene report will be finalized in 1980. At that time it will be determined if any additional industrial hygiene monitoring is needed. Follow-up will continue for cohort study members until the vital status of approximately 95 percent has beed determined. When this is accomplished, analyses can be done for the retrospective study and cases and controls can be chosen for the subsequent epidemiological study.

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3.2450,

IMMUNE REGULATION AND GENETICS OF DISSEMINATED NEUROFIBROMATOSIS AND ITS MALIGNANT CONVERSION

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The incidence of neurofibromatosis and the factors leading to malignant conversion within those affected remain obscure. This prospective study aims to assess the genetic and immunological patterns associated with conversion to malignancy and any environmental factors which may contribute to it. Approximately 300 families from the eastern portion of the U.S. will be studied. Personal records of birth, work history, mortality, location, occupational exposures, and specific genetic factors (HLA types), fibroblast conversion, and immunological factors (immune complexes) associated with malignant transformation will be included in the analyses. The control group will be family members without neurofibromatosis. A National Neurofibromatosis Foundation has been started and ultimately may be used to contribute families.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.2451,

MORTALITY AND INDUSTRIAL HYGIENE STUDY OF WORKERS EXPOSED TO TETRAETHYL LEAD

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Preliminary epidemiological investigation of employees of one company involved in the production of tetraethyl lead (TEL) has revealed three cases of multiple myeloma, two living and one deceased. These cases represent approximately a 30-fold excess over expectation. More comprehensive case ascertainment is proposed to locate other deaths and living diagnosed cases in the same workforce. This will be accomplished by expanding an on-going retrospective cohort mortality study conducted by the company and mailing questionnaires to former and current employees. Dependent on the results of more extensive case finding, it is proposed to screen the population for asymptomatic multiple myeloma. The cost of laboratory tests might range from 40 to 70 dollars per person. The industrial hygiene portion of this project will include both preliminary and in-depth characterization of the work environment in the TEL production areas: personal and area monitoring for TEL, the reactants in the production process, and other additives used in the blending operations.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.2452,

MORTALITY AND INDUSTRIAL HYGIENE STUDY OF WORKERS EXPOSED TO DYES

M. Haring, U.S. Dept. of Health & Human Services, Public Health Service, Center for Disease Control, National Inst. for Occupational Safety & Health, Division of Surveillance Hazard Evaluation & Field Studies, *4676 Columbia Pkwy., Cincinnati, Ohio* 45226

In response to concern about the carcinogenicity of chemical components of oxidative and 'coal tar' hair dyes, the possibility of investigating the mortality experience of cosmetologists has been reviewed; an extensive review of records from state licensing bureaus and national cosmetologist organizations found the available data inadequate to conduct a comprehensive epidemiological or industrial hygiene study of cosmetologists as an occupational group. Another occupational group exposed to oxidative dyes includes animal fur dyers, who have been using phenylenediamine (used as an intermediate in hair dyes) in their dyeing processes since the turn of the century. Therefore, the Industry-wide Studies Branch has undertaken jointly with the National Cancer Inst. a retrospective cohort mortality study of fur dyers in the New York City area. The records of the Joint Board of the Fur, Leather and Machinists Workers' Union (FLM) have been chosen as the principal data source. Due to the restricted nature of the records, the study was limited to retirees (pensioners) on whom the most complete documentation was kept. Follow-up for the cohort is continuing, mainly through the Social Security Administration. A second union, local 3 of the Fur Floor Workers' Union, has been contacted for possible inclusion in the study. This is an excellent data source for a mortality study of all workers including active, terminated and retirees. Their data on retirees could be used to supplement those of the FLM due to the similarities in ethnic background, geographical location of the shops and jobs performed.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.2453,

MORTALITY STUDY IN A LARGE CHEMICAL PLANT

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This is a historical-prospective study of the long-term health effects of employment in a large chemical producing plant. The objective is to determine the cause-specific mortality experience of workers exposed to a myriad of chemicals, for periods up to 50 years after first exposure and relate this to duration and type of exposure. Expected numbers of deaths will be computed based on the white male general populations of the US, the State of Massachusetts, and the counties from which the workforce is largely drawn. A cohort has been developed of 2,490 wage earners who worked one or more years between 1 January 1949 and 31 December 1966. The vital statistics of this cohort will be determined as of 31 December 1976.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.2454,

POPULATION-BASED STUDY OF LOWER URINARY TRACT TUMORS

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The aim is to gain further knowledge of the etiology and epidemiology of bladder tumors (BT) and, more especially, of other lower urinary tract tumors (LUTT) in the State of Connecticut. In particular, the importance of the well documented risk factors for BT in Connecticut and whether passive smoking, common skin exposures, or analgesic abuse are also risk factors, the level of risk, and whether the etiology of LUTT is the same as that of BT will be studied. As part of a national study, data on a large number of suspected risk factors for bladder cancer have been collected by home interview on all new cases of lower urinary tract tumor diagnosed during 1978 in Connecticut residents aged 21-84 at diagnosis and on a random sample of the Connecticut population of the same sex-age distribution as BT cases. Interviews including information on smoking, occupational and industrial exposures, artificial sweetener and coffee consumption, hair dye use, quality of drinking water, passive smoking, and skin exposures to a variety of industrial and household materials have been completed on 415 BT cases, 26 cases of LUTT, and 881 controls. During the next two years additional cases of LUTT diagnosed in Connecticut will be ascertained using the statewide reporting system which supports the Connecticut Tumor Registry (CTR) to identify cases and the CTR to provide tumor data, giving a total of about 100-110 patients. Cases will be interviewed using the same questionnaire with additional questions on use of analgesics. In addition, a sample of the controls and BT cases and all non-bladder lower urinary tract tumor cases already interviewed will be interviewed again about their use of analgesics.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.2455,

ENDOMETRIAL CARCINOMA - COMPARISON OF OLMSTED COUNTY AND MAYO CLINIC REFERRAL PATIENTS

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The 1,191 patients who had their initial treatment for endometrial carcinoma at the Mayo Clinic between 1952 and 1972 have been identified. In addition, 12 patients who were residents of Olmsted County, but had their initial treatment elsewhere have also been identified. The purpose of this study is to compare the characteristics of the patients by residence. Residence classifications are: Olmsted County, Minnesota; the remainder of the eight counties in Southeast Minnesota; the remainder of the 100-mile radius from Rochester; other Minnesota/Iowa/Wisconsin residents; other US residents; and, finally, foreign residents. The effect of residence status will be determined on the following variables: age; stage and grade; other prior malignancies, particularly breast cancer; prior diabetes; parity; obesity; prior exogenous estrogen use; and survival (to be corrected by stage and grade). The purpose of this investigation is to determine to what extent referral patterns alter the characteristics of endometrial carcinoma patients seen at the Mayo Clinic as compared to those characteristics in the total ascertainment system for Olmsted County, Minnesota.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.2456,

CHANGES IN LUNG CANCER INCIDENCE ASSOCIATED WITH SOCIO-ECONOMIC, DEMOGRAPHIC, AND SMOKING FACTORS AMONG CUBAN IMMIGRANTS (ABBREV)

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This is a case-control study of the effects that changes in socio-economic, demographic, and smoking factors have on the incidence of lung cancer among Cuban immigrants to the United States who now reside in the Miami/Dade County area of Florida. A detailed questionnaire is administered to lung cancer patients in several hospitals in the Miami/Dade County area, and to two matched controls: one a patient hospitalized for other than a tobacco-related illness; the other a non-hospitalized subject living in the same residential neighborhood as the case. The questionnaire contains detailed questions on smoking habits and more general questions on occupation, education, alcohol consumption, dietary and related factors. Data from this study will be compared to data obtained from a companion study being conducted in the Havana, Cuba metropolitan area by the IARC under sponsorship of the National Cancer Institute's Smoking and Health Program. The comparison is intended to identify factors associated with reported changes in lung cancer incidence among the population under study.

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3.2457,

MULTIPLE MYELOMA IN OLMSTED COUNTY, 1965-1977

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All diagnosed cases of multiple myeloma in Olmsted County residents between 1965-1977 have been identified through the Rochester Program Project resource. Incidence rates were calculated and compared to previously reported rates. Additional epidemiological features of the disease are being studied.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.2458,

LOW DOSE RADIATION AND LEUKEMIA

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All diagnosed cases of leukemia in Olmsted County residents between 1955 and 1974 (a total of 138 cases) have been identified. Each has been appropriately matched with two controls. Cases and controls are being compared with regard to their exposures to radiation for therapeutic, diagnostic, and other reasons. The effect of a life-long experience of low-level radiation (less than 300 rads to the bone marrow) on the development of leukemia is being investigated.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.2459,

INCIDENCE OF MALIGNANT LYMPHOMA IN OLMSTED COUNTY, MINNESOTA, 1970-1977

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This is an update of a previous study of malignant lymphoma in Olmsted County to examine possible changes in the incidence of lymphoma by sex, age, type of lymphoma and other variables.

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3.2460,

INFLUENCE OF OCCUPATIONAL AND ENVIRONMENTAL ASBESTOS EXPOSURE ON MESOTHELIOMA INCIDENCE IN CONNECTICUT

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It has been reported, using Connecticut Tumor Registry (CTR) data, that the incidence of mesothelioma in Connecticut has exhibited a sizeable increase since 1935. A positive correlation with the State's total asbestos consumption and the results of an air monitoring program for asbestos concentrations in Connecticut have served to justify a more stringent ambient air standard for the State. The present study has been designed to re-examine the CTR identified cases with respect to: (1) quality of diagnosis, and (2) direct and indirect domestic and occupational asbestos exposure. Medical, demographic, and occupational data have been collected for 229 cases of malignant mesothelioma, 38 cases of non-mesothelioma pleural tumors, their respective spouses, and approximately 700 decedents from the Division of Health Statistics of the Connecticut Department of Health. Sources of information include the records of the CTR, death certificates, city directories, as well as computer linkage programs with the files of the Connecticut Motor Vehicle Department and with the files of Connecticut decedents. An asbestos product listing with its associated employer and industrial codes has been developed to indicate possible occupational asbestos exposure. A slide review is underway in order to examine the quality of diagnosis.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.2461,

INDUSTRIAL INCIDENCE OF BRAIN TUMORS

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In response to an alleged excess of brain tumors among employees at a plant in Texas an investigation was launched in November 1978. Preliminary data from the company, local unions, and local physicians and surgeons show ten cases where death certificates indicated brain tumor as cause of death. One additional living employee was found to have a brain tumor. The cell types were predominantly glioma or glioblastoma multiforme, with one 'meningioma, angioblastic (sarcoma).' The work force at the plant presently numbers 2,500. Between 7,500 and 10,000 workers worked in the plant from 1941 (when the plant began operation) to the present. The present aim is to seek further cases, confirm cases by pathological review of tissues, to carry out a proportional mortality study (as a check of methodology which may be useful elsewhere), a case-control study of brain tumor deaths and a cohort mortality study. Coding of company records is being completed and the case-control study will begin soon.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.2462,

RELATIONSHIP OF PESTICIDE USE AND CANCER MORTALITY IN RURAL CALIFORNIA

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The purpose of this descriptive epidemiological study is to assess the relationship between pesticide use in rural California counties and excess cancer mortality. Twenty years of Californian cancer mortality data will be analyzed with extant information on pesticide application, including amount, type, frequency of application, acreage of application, crop, etc. Mortality data from 1960-1977 have been obtained from the State Department of Health Services, Vital Statistics Unit. Analysis will focus on standardized mortality ratios for all causes or for specific site causes.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.2463,

FDA/NCI STUDY OF THE ROLE OF SACCHARIN IN BLADDER CANCER OF THE GENERAL POPULATION

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Following reports suggesting that two artificial sweeteners initiate or promote bladder cancer in animals, cyclamates were banned in the U.S. in 1969, and saccharin was removed from the list of substances 'generally regarded as safe' in 1972. Howe et al. (1977) reported the first positive association between bladder cancer in humans and artificial sweeteners. At present there is not enough evidence to confirm the hypothesis that use of artificial sweeteners increases the risk of bladder cancer in human beings. The study is a collaborative effort of the National Cancer Inst. and nine other areas, and the data pooled consist of information on almost 3,000 newly diagnosed bladder cancer patients over a twelve-month period. All patients between the ages of 21 and 84 years were included in the study, and were interviewed in their homes by specially trained interviewers who also interviewed two age- and sex-matched controls for each case. The number of controls interviewed is approximately 6,000. All the data have been submitted to the National Cancer Inst. for analysis. Samples were used which were large enough to detect even a modest elevation of risk. In addition, the study is based upon a population composed of diverse subgroups, which may distinguish between initiation and promotion of cancer.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.2464,

REPRODUCTION IN CANCER PATIENTS

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Fertility and reproductive history in cancer patients, especially in long-term survivors of childhood cancer, and in men and women who reproduced during cancer therapy are being documented to study possible mutagenicity and teratogenicity of cancer treatments, and to discover hereditary patterns of cancer. Current phases include (1) interviews of 2,500 adults who survived cancer in childhood and up to 5,000 sibs as controls; (2) recall of U.S. National Cancer Inst. patients for detailed examinations of offspring; and, (3) case collection through correspondence with physicians in co-operative clinical trial groups.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.2465,

XEROMAMMOGRAPHY RESEARCH RESOURCE AND THE EVALUATION OF PARENCHYMAL PATTERN AS BREAST CANCER RISK INDICATION

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The study has two major purposes: (1) to develop a mammography research resource for studies of the epidemiology of breast cancer; (2) to use the resource to evaluate the association of breast cancer risk with breast parenchymal pattern and to determine the relationship of pattern to other breast cancer risk indicators and to those of benign breast disease. The study now involves seven participating hospitals where 10,000 examinations are done each year.

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3.2466,

TWO-STAGE MODEL FOR CARCINOGENESIS

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It is well known that cancers of specific sites have characteristic age-specific incidence curves. It is believed that this is a reflection on the population level of fundamental biological processes underlying carcinogenesis, and has led to the search for pathogenetic models which could explain this fact. A model which views carcinogenesis as the end result of two discrete and specific events at the cellular level has been proposed. The incidence curves generated by the model describe the qualitative features of the age-specific incidence of both childhood and adult cancers. The model provides a natural framework for the understanding of human cancers that occur in both hereditary and non-hereditary forms, and for the interpretation of data from animal experiments. In the present study a test of this model against epidemiological data will be undertaken. A preliminary analysis shows that the model fits the age-specific incidence curve of breast cancer in females extremely well (tested against data from Connecticut, Denmark, Iceland, Finland, and Osaka). In addition, it provides natural interpretations of the various epidemiological features of the disease. The model will be tested against the data for breast cancer in females, bronchogenic carcinoma of the large bowel and malignant melanoma.

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3.2467,

AGE-EFFECTS AND TEMPORAL TRENDS IN CANCER

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Multifactorial analysis of cancer incidence and mortality data can shed light on the dynamics of temporal evolution of the disease, and permits the extraction of statistically adjusted age-specific incidence curves that are free of the distorting effects of tem-

poral trends thus increasing the precision with which pathogenetic models for carcinogenesis can be tested against incidence data. In the present study a multifactorial analysis of incidence and mortality data for cancer of the bronchus, bladder, pancreas and the large bowel, and malignant melanoma will be made. Data will be obtained from various populations, and analyzed to study the relative importance of early and late environments on the temporal trends in these cancers. Good data on cigarette smoking are available in the U.K. and U.S.A. This information will be incorporated into the analyses to study the association between cigarette smoking and carcinomas of the lung, bladder, and pancreas in these countries. It will then be possible to adjust for the effects of cigarette smoking in these diseases in order to study more subtle trends. The statistically adjusted age-specific incidence curves will be used to test a two-stage model for carcinogenesis in a separate study.

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3.2468,

CASE-CONTROL STUDY OF LUNG CANCER MORTALITY AMONG FOUNDRY WORKERS

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The study is a matched triple (2 controls per case) case-control design. There are 113 cases of lung cancer (ICDA 162.1, 8th Revision) and 226 controls, classified as dying from causes other than cancer, making a total study population of 339 subjects. This population is restricted to white males, and matching of cases and controls was based on dates of birth and death. Employment histories are now being sought for these individuals to determine the type of foundry worked in (e.g., iron, steel, brass), specific job titles and employment dates. The general objective is to attempt to identify associations between the lung cancer deaths and a particular foundry type and job title. Since the variables measured do not represent specific exposures to chemical agents, it is the purpose of this study only to suggest possible high risk lung cancer situations in the foundry which might then require further investigation to delineate the substances responsible.

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3.2469,

PROPORTIONATE MORTALITY AMONG ARTISTS

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The mortality experience of approximately 2,500 artists taken from obituary listings between 1940 and 1969 will be analyzed using the proportionate mortality method with the U.S. general population as the standard for comparison. The study population is composed of a wide variety of artists (painters, sculptors, craftsmen, etc.) the largest percentage of which are painters. Exposures included various solvents, dyes, metallic pigments, dusts, resins, acids, and alkalis.

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3.2470,

CASE-CONTROL STUDY OF BREAST CANCER

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This is a case-control study of the 303 incident cases of breast cancer diagnosed among Olmsted County, Minnesota, women in the ten year period 1965-1974. For each case, a control woman of the same age and race was selected from among all Mayo Clinic registrations for local residents. The control pool consists primarily of outpatients and represents a very large population in this age range. Data on traditional breast cancer risk factors will be collected, but the emphasis of this study is estimation of the odds-ratios associated with the use of various therapeutic hormones, including conjugated estrogens.

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3.2471,

COHORT STUDY OF COLO-RECTAL POLYPS AND SUBSEQUENT CANCER

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In order to examine the theory that polyps are premalignant tumors the incidence of colo-rectal polyps in Rochester will be determined using the population-based epidemiological data resource of the Rochester Program Project, from which all residents with a colo-rectal polyp diagnosed in the period 1960-1969 can be identified. The incidence of new polyps and the development of cancer of the colon and rectum will be determined in approximately 500 patients with diminutive polyps and some 250 patients with a larger number of polyps. Age-specific rates of colorectal cancer for the Rochester population will be applied to the person-years of follow-up to determine if there is an increase in cancer in this group of individuals.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.2472,

PROSPECTIVE STUDY OF PERSONALITY AND RISK OF CANCER

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The Western Electric Health Study began as a prospective epidemiological investigation of coronary heart disease in 1958 with the examination of 2,107 male employees aged 40-55 years. The Minnesota Multiphasic Personality Inventory (MMPI) was included in the 1958 examination, the Cattell 16 Personality Factor Questionnaire in the 1959 examination, a social factors questionnaire in 1960, and the MMPI again in 1962. Questionnaires from participants or next-of-kin and death certificates will be used in 1978-1979 to identify possible incident cases of cancer; medical and hospital records will be reviewed for information about diagnosis, treatment, and course of the disease. A total of 246 incident cases are expected. Two separate hypotheses will be investigated: (1) that psychological depression, as measured by the D scale in the 1958 MMPI, is associated with increased 20-year risk of cancer, and (2) that characteristic use of denial and repression as assessed by Welsh's Factor R in the 1958 MMPI, is similarly related to increased risk of cancer. In addition, item analysis and discriminant analysis will be used to search for other aspects of personality that may be related to cancer occurrence. Factors such as age, smoking habits, consumption of alcohol, and educational attainment will be taken into account. Analyses will be conducted for all cases of cancer together and, where numbers are adequate, for site-specific categories. The results of this study will help to establish whether previous findings concerning the association of psychological factors and cancer were artifacts of the retrospective method or whether these previous findings, in fact, represent premorbid psychological characteristics of persons who develop cancer.

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3.2473,

CANCER RISK AFTER IRRADIATION AND/OR CHEMOTHERAPY

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The primary objective is to determine whether Hodgkin's disease patients are at increased risk of developing multiple primaries following varying doses and/or ordered sequences of radiation therapy and chemotherapy (given singly or in combined regimes). Histopathological classification of Hodgkin's disease and the extent of disease at first treatment will be studied in relation to the patterns of second primary cancer occurrence by organ site and histopathology. Quantitative estimation of radiation exposure will consider the total dose of radiation delivered, the energy used, the volume of tissue irradiated and the fractionation pattern of the treatment. Multiple entry and exit life tables will be used to characterize temporal patterns of exposure to different treatments, either alone or in combination. Patients will be withdrawn as transfers (not losses) from one treatment classification to another according to interval following first treatment. Internal historical cohorts of patients having received different doses and combinations of therapy will be identified and followed longitudinally to contrast their subsequent multiple primary cancer experience. Risk of new primary cancer among 1,500 Hodgkin's disease patients who have been intensively treated with potentially carcinogenic drugs, such as alkylating agents and steroid hormones, should identify carcinogenic doses or treatment combinations.

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3.2474,

CASE-CONTROL STUDY OF IMMUNOBLASTIC LYMPHADENOPATHY AND HISTIOCYTIC LYMPHOMA

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Lukes and Collins have suggested a new clasification of non-Hodgkin lymphomas based on morphology and function of the cell type involved, thus providing a meaningful basis for epidemiological study of lymphomas. Recently a distinctive pathological lesion denoted lymphoid tissue-immunoblastic lymphadenopathy (IBL) or angioblastic lymphadenopathy (ABL) has been identified. Although not a malignant process, the clinical course is often rapidly progressive with death resulting from infection. In some patients a true malignancy ensues, an immunoblastic sarcoma, or histiocytic lymphoma by the Rappaport Classification. Follow-up of patients with IBL and/or histiocytic lymphomas questioning them about initial onset of symptoms, antecedent environmental exposures relative to occupation, medications, and residence may elucidate etiological agents involved, and a family history may provide answers to a genetic predisposition. Laboratory studies include immunoperoxidase labeling and immunoglobulin levels. Controls are matched for age, race, sex and socio-economic status. The study has been extended to include all non-Hodgkin lymphomas cases for 1979 and 1980.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.2475,

MORTALITY AND INDUSTRIAL HYGIENE STUDY OF SHIPYARD WORKERS EXPOSED TO RADIATION

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In a proportional mortality study conducted by Drs Najarian and Colton, a significant increase in deaths due to neoplasms of lymphatic and hematopoietic tissues was reported among shipyard nuclear propulsion workers. The results of their study indicated that exposure to radiation at levels previously thought to be safe may be unsafe. The NIOSH subsequently initiated a retrospective cohort mortality study. As part of the study, approximately 27,000 civilian employees have been identified as having worked at this naval shipyard since 1954. To date, more than 3,000 deaths have been identified among the study population. The vital status will be determined for the remaining identified study population and death certificates retreived and verified. Results of in-depth industrial hygiene and health physics surveys will be related to current and past occupational and chemical exposure to chemical and physical agents other than radiation. An exposure history will be compiled and assigned to appropriate job titles/locations.

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3.2476,

STUDY OF PARTICIPANTS AT NUCLEAR TESTS

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Approximately 30,000 members of the US military who were present at atmospheric tests of nuclear weapons conducted in the 1950's and 1960's will be followed to determine if leukemias and other cancers known to be induced by radiation are occurring in excess. Participants will be asked about illnesses requiring hospital admission and reproductive history.

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3.2477,

MORTALITY STUDY OF HIGH NICKEL ALLOY WORKERS

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There is evidence of increased incidence of respiratory cancers, including cancers of the nasal sinuses, among workers in the nickel refining industry. In order to determine whether any such relationship might exist among workers in the high nickel alloy (more than 20% Ni) industry, cause-specific mortality and especially site-specific cancer mortality among workers in eleven study plants across the USA will be investigated. The mortality experience of nickel-exposed workers in the study plants will be compared to the population of workers involved in all phases of operation in the study plants, and to the total United States mortality experience. The study is a historical prospective follow-up on a cohort of approximately 20,000 workers with at least one year of job experience during the period 1956-1960. The work will involve developing a coding system for classifying jobs to permit comparisons across plants with similar occupational groups and follow-up procedures for former workers to determine vital status for all individuals in the cohort.

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3.2478,

EPIDEMIOLOGY OF MALIGNANT MELANOMA

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A number of factors have been previously reported to be associated with high risk of malignant melanoma. These include age, sex, race, ethnic origin, complexion, ability to tan, hair color. eye color and sun exposure. A case-control study has been designed to determine the degree of association between the occurrence of malignant melanoma and possible risk factors, including some which have not received quantitative analysis previously. The total data base will consist of approximately 1,100 cases and a similar number of controls. Cases are being drawn from the tumor registry of the NYU Skin and Cancer Unit, whereas controls are randomly selected from the NYU Skin and Cancer Unit patients without melanoma or other neoplastic conditions. It is hoped that this study will lead to the identification of high risk groups at whom future monitoring for malignant melanoma could be directed. Significant positive associations found in the study, if corroborated by others, may also identify behavior patterns which, if modified, could result in a decreased incidence of the disease.

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3.2479,

LIPID LEVELS AND CHOLESTEROL METABOLISM IN RELATION TO HUMAN BREAST CANCER RISK

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The role of lipids is being explored to evaluate whether dietary or metabolic factors affect causal mechanisms for the development of breast cancer, systemically, or locally at the target organ. Controls are matched to cases by age, race and menopausal status. Data on past medical and family history, dietary habits, lipid levels and cholesterol metabolism in patients with breast cancer and in controls (patients and volunteers) are analyzed. Correlations between these parameters and epidemiological risk factors, or tumor characteristics are examined. Data on tissue emzymes, fat cell size and hormone receptors are examined for correlations with lipid levels. Results to date show that cholesterol differences were striking in low breast cancer risk ethnic groups. In hyperlipidemic women relative breast cancer risk was 11.0 (ratio of discordant pairs) significant using McNemar's test: 8.33, p smaller than 0.005. The combination of 'increased' weight and 'high' cholesterol appeared to be associated with rapid tumor growth. Among 348 cases, 167 (48%) had Stage I tumors while the rest had more advanced tumors. The corresponding figures for women in whom both weight and cholesterol values were above the group mean was 31/83 (37%) while for their counterparts it was 136/265 (51%). The differences between the groups were significant (chi square is 4.94, p smaller 0.05).

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3.2480,

HEALTH EFFECTS OF THE PETROCHEMICAL INDUSTRY

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The refining, transportation and secondary processing of petroleum generates certain compounds known to be carcinogenic or otherwise hazardous to human health. The objective of this project is to assess the long term health effect of the petrochemical industry on workers in the industry and on the surrounding community. The initial phase of the project is being performed in Contra Costa County, California, which has four large petroleum refineries and numerous chemical plants concentrated along its northern border. Among the studies being done is a correlational analysis of measures of petrochemical emissions and health outcomes such as cancer incidence. A case-control study of childhood cancer is being planned. This will explore the relationship between parental exposure to petrochemical and the development of cancer in children and young people between the ages of 0 and 24.

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3.2481,

MORTALITY, MEDICAL AND INDUSTRIAL HYGIENE STUDY OF WORKERS EXPOSED TO PCBS

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Polychlorinated biphenyls (PCBs) are a class of chlorinated aromatic hydrocarbons widespread in the environment, highly stable, and tending to bioconcentrate in the food chain. Current use is primarily limited to closed systems in the electrical industry as insulating material in capacitors and transformers. Reports of adverse health effects in humans and animals accidently exposed to PCBs, and the demonstration of carcinogenic effects in certain animals from certain PCBs necessitate evaluation of the toxicology of these compounds. In laboratory animals, structural function changes in the liver have been noted as well as hepatic tumor induction in certain species; in humans, the syndromes of chloracne, and Yusho neonatorum have been extensively documented, in addition to gastrointestinal, endocrinological, hematological, and embryotoxic effects. A determination of the health effects from exposure to PCBs is being assessed by (1) a retrospective mortality study of a cohort of occupationally exposed workers; (2) a cross-sectional medical survey of a cohort of currently employed workers; (3) a detailed industrial hygiene survey. The mortality study is well under way; follow-up is near completion on the two study cohorts exposed to PCBs. The medical surveys have been completed and data analysis is in progress. The industrial hygiene surveys on all plants included in the mortality study and medical study have been completed.

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3.2482,

CASE-CONTROL SURVEILLANCE OF DRUG USE

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The Drug Epidemiology Unit is engaged in obtaining comprehensive life-time histories of drug use, among patients with a wide range of cancers, as well as from hospital controls. A present, special emphasis is being given to female cancers in relation to the use of female hormone supplements or contraceptives. The large, multi-purpose data file that is being accumulated will be available for use both as a source of hypothesis generation and hypothesis testing.

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3.2483,

CANCER AND DRINKING WATER QUALITY IN NORTH CAROLINA

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In this study 3,000 cancer cases and an equal number of frequency matched non-cancer controls were compared on several aspects of drinking water quality. Sites examined were colon, rectum and bladder; matching criteria were age, race, sex and geophysical region. Data sources were state mortality, and state and regional water supply statistics. The water systems were characterized on the basis of source, type of chlorination, and presence of upstream pollution (previous use) for the 1960 time period. Urban residence, occupation and socio-economic status are also being controlled in the analysis. Preliminary results show small and significant odds ratios for all three sites (especially bladder and rectum) for treatment, source, and previous use.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.2484,

MORTALITY, MEDICAL AND INDUSTRIAL HYGIENE STUDY OF WORKERS EXPOSED TO TOLUENE

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Recently toluene has received much attention for its potential long term health effect due to occupational exposure. The Toxic Substance Control Act has listed toluene for further study, and the Chemical Industry Inst. for Toxicology has listed it as a first priority for study. Toluene is a chemical of major use in U.S. industry today. In 1970, it was estimated that 694 million gallons of toluene were produced and approximately 100,000 workers were potentially exposed. In addition, it is expected that toluene will be substituted for benzene in many industrial processes. Investigators have noted the acute toxic properties of toluene which include effects on the nervous system, liver, blood cells and chromosome changes. Of specific interest, exposed workers have exhibited depressed erythrocytes, macrocytosis, hepatomegaly, and chromosome breaks and aberrations. Chromosome changes have also been noted in exposed rats. The current federal standard is 200 ppm as an 8-hour TWA with an acceptable ceiling level of 300 ppm and acceptable maximum peaks above the ceiling of 550 ppm are allowed for 10 minute durations. However, controlled exposure of human subjects to 200 ppm for 8 hours produced mild fatigue, weakness, confusion, lacrimation, and paraesthesias. Since chronic exposures may cause damaging effects, NIOSH has recommened a limit of 100 ppm (TWA) with a ceiling of 200 ppm for a 10 minute sampling period. This project will involve a retrospective cohort mortality analysis of an occupational population to determine whether or not there are any long term chronic health effects from toluene exposure. The first phase will be a feasibility study to determine extent of exposure, to characterize the work environment, and to assess the feasibility of conducting the mortality protion of the study. A plan for a cross-sectional medical study is also being proposed.

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3.2485,
MORTALITY AND INDUSTRIAL HYGIENE STUDY OF LEATHER INDUSTRY WORKERS

F. Stern, U.S. Dept. of Health & Human Services, Public Health Service, Center for Disease Control, National Inst. for Occupational Safety & Health, Division of Surveillance Hazard Evaluation & Field Studies, *4676 Columbia Pkwy., Cincinnati, Ohio* 45226

Several case-control studies have indicated that individuals employed in the leather industry may experience an excess risk of developing bladder cancer. In an attempt to gain further insight into the relationship between bladder cancer and the leather and leather products industry, mortality rates for bladder cancer were examined in those U.S. counties where the leather industry comprises at least 5% of the total employment of the county. Twenty-four counties in six states met these criteria. A definite pattern of increased bladder cancer was found in the 'leather counties' in New England and New York State; however, no unusual risks were found in the 'leather counties' of Pennsylvaina and Tennessee. It should be noted that the leather industry in Pennsylvania and Tennessee consisted mostly of small-scale operations of the shoemaker-repairer trade, whereas the leather industry in New York and England was mainly leather tanneries. Leathermakers are potentially exposed to chromates, benzidine-based azo dyes and numerous other suspect carcinogens. In addition, NIOSH has recently detected environmental levels of dimethylnitrosamine which has been demonstrated to be an extremely potent carcinogen in numerous animal studies, in a leather tannery. A cohort mortality/industrial hygiene study will be conducted to further evaluate these excess risk data. The first phase will be a feasibility study to determine extent of exposure, to characterize the work environment and to assess the feasibility of conducting the mortality portion of the study.

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3.2486,
GENETIC EPIDEMIOLOGY OF BREAST CANCER IN FAMILIES

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The objective of the study is to determine the genetic, cultural, and environmental factors that cause breast cancer in cluster in some families. Large, extended families with high incidence of breast cancer are investigated using tools from genetic analysis and epidemiology. The existence of possible susceptibility alleles, greatly increasing cancer risk in women of the high-risk genotypes, is tested by searching for clinically innocuous marker genes that may 'track' the inheritance of the susceptibility gene within a specific family. The existence of gene linked to GPT (probably on chromosome 10), which increases susceptibility to breast and ovarian cancer in some families, has been suggested by these studies. Investigation of other genetic mechanisms of inheritance of susceptibility to breast cancer is in progress. In addition, the interaction of genetic and environmental risk factors influencing breast cancer risk among female relatives in high-risk families is being studied using epidemiological techniques. The prevalence of genetically-influenced breast cancer among American Caucasian women is being estimated.

Description provided by IARC and DKFZ with ICRDB/NCI support.
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3.2487,
RETROSPECTIVE COHORT MORTALITY STUDY OF MINERS EXPOSED TO AMPHIBOLE MINERAL

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Cummingtonite-grunerite is an amphibole mineral present in the ore of an underground gold mine. Because non-chrysotile forms of asbestos are amphibols, two previous epidemiological studies of the mortality experience of workers in this mine have been published, but are in substantial disagreement about the risk of lung cancer in these miners. The study cohort comprises all men who worked at least a year full-time underground between 1940 and 1975 in the mine and consists of over 3,000 individuals. Vital status has been ascertained from information in the work histories supplemented by further information from mine personnel, the Social Security Administration, state motor vehicle records, state welfare records, and U.S. Government sources. Comparison of risk of death from specific causes will be accomplished by analysis through a modified life table program based on the mortality experience of the comparable U.S. population, coded cause of death information from the death certificates, and demographic information from the mine records.

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3.2488,
EPIDEMIOLOGICAL STUDY OF OVARIAN CANCER

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This case-control study of ovarian cancer involves 400 patients with the disease and 400 controls selected from the general population. The pathology for each case will be reviewed and classified according to specific histological type by a recognized expert in ovarian cancer pathology. Personal home interviews will be conducted to assess a variety of epidemiological factors including general medical and family history, occupation, tobacco and alcohol habits, pregnancies, breast feeding, contraceptive experience, and drug use, including intra-uterine exposure to drugs for the younger subjects. The total number of ovulatory cycles as well as the longest series of consecutive ovulatory cycles uninterrupted by pregnancy, lactation, or oral contraceptive use will be estimated and their correlation with ovarian cancer risk determined. Also of major interest are the relative risks associated with oral contraceptive and hormones for the menopause. A doubled risk of cancer associated with several of the risk factors under study will be detectable in sub-groups of ovarian cancer of 75 patients or more. The goal is to identify risk factors that may be modified to reduce disease occurrence and may be of clinical use in defining women at risk to achieve better control of the course of the disease.

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3.2489,
VALUE OF SELECTED BIOMARKERS IN DEVELOPING A RISK INDEX OF ASBESTOS-RELATED DISEASE IN SHIPYARD WORKERS

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The major objective is to evaluate the utility of epidemiological host factors and selected laboratory immunochemical markers in constructing an index for surveillance of malignant disease associated with environmental exposures particularly to asbestos in shipyard workers. Epidemiological data indicate that the latter are at a higher risk for several malignancies (lung, gastro-intestinal tract, other cancers and mesothelioma) than expected in the general population. The applicability of an index constructed from epidemiological risk factors (e.g. smoking, environmental exposure, age, occupational history) and immunochemical markers (e.g., CEA, mitogen activation to PHA, %T lymphocytes) will be tested in an experimental and a comparison group from the shipyard population. The experimental group will consist of shipyard workers known to have had a significant exposure to asbestos (defined as an exposure that has produced positive findings consistant with asbestosis or chest x-ray or pulmonary function tests). The comparison group (matched for age, smoking, ethnicity and amount of manual labor) will be selected from workers who do not have a history of asbestos exposure and who do not have any evidence of pulmonary or pleural disease. The epidemiological factors will be used as classification variables or will be corrected where appropriate. Each of the immunochemical tests will also be tested individually for their value in discrimination power between exposed and non-exposed subjects. The value of the results of this study will mainly be as a surveillance tool of workers exposed to asbestos: (1) to identify those at high risk (primary prevention) and/or (2) to be used for early diagnosis of asbestos related malignancies (secondary prevention).

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3.2490,
MORTALITY STUDY OF U.S. COAST GUARD SHIPYARD WORKERS

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The U.S. Coast Guard is involved in the building and repair of its ships, as well as the manufacturing and painting of buoys which are used worldwide. Over the past 40 years, a major portion of the ship repair work, some shipbuilding and some of the buoy manufacturing has taken place at the Curtis Bay shipyard in Maryland. During this period, the shipyard workers were exposed to asbestos, metals including zinc chromate and lead, tributyl tin oxide and various solvents that are known or suspected human carcinogens. The purpose of this cohort follow-up study is to evaluate the mortality experience of this group of approximately 5,000 shipyard workers in light of their occupational exposures. Cause-specific mortality rates will be compared to expected rates from the local area or the general U.S. population.

Description provided by IARC and DKFZ with ICRDB/NCI support.
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3.2491,
CANCER MORTALITY AND OCCUPATIONAL RISK

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Several cancer sites were associated with occupational risks in a case-control death certificate study. The next-of-kin of the cancer cases and their matched control will be contacted for more specific occupational, residential, dietary and cigarette smoking patterns. The cancer cases occurred in selected Louisiana parishes from 1960-1975. High risk occupational groups will be identified and prospective studies designed to further study the associations with cancer morbidity and mortality. To identify a 2 to 3 fold relative risk in relatively common occupational exposures 200 cases and another 200 controls will be studied for each cancer site/occupational exposure under consideration.

Description provided by IARC and DKFZ with ICRDB/NCI support.
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3.2492,
EPIDEMIOLOGICAL-ENVIRONMENTAL STUDY OF WOOD DUST

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Approximately 2,000 workers in different phases of the wood products industry will be examined for the acute and chronic effect of exposure. The examination will include before- and after-shift pulmonary function testing, with concurrent environmental measurements and questionnaire on symptoms. Non-exposed workers from the same plants as the exposed and workers from the same region but not in the wood industry will serve as controls. A mortality study will also be conducted using a cohort of workers from the same plants. The purpose is to determine the prevalence of symptoms and reduced pulmonary function in workers exposed to wood dust, estimate dose-response relationship between morbidity and exposure, and evaluate the mortality experience of workers exposed to wood dust using the SMR.

Description provided by IARC and DKFZ with ICRDB/NCI support.
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3.2493,

TEMPLATE-COMPUTER PROGRAM FOR COLLECTION, EDITING AND ANALYSIS OF CANCER PATIENT DATA

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The objective of this study is to develop a streamlined computerized approach to facilitate the collection, editing and analysis of data for clinical studies of cancer patients. This 'program that writes programs' needs only the list of data items in order to produce code sheets, an edit program, and an analysis program tailored for a particular study. This design eliminates the need for individual programming at each step of the study. The system is adaptable to a wide variety of studies and is particularly appropriate for consultant epidemiologists and biostatisticians who routinely work with a number of investigators. The system is complemented by programs which keep a patient data base, presently 150,000 records, current. These include generation of follow-up dates, production of follow-up letters and matching with extramural files in state health departments, such as patient deaths and retrospective studies. Methods to continually update files are being developed as are systems to provide automatic replies to the large number of enquiries sent to the tumor registry.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.2494,

REVIEW OF THE EFFECTS OF ARTIFICIAL SWEETENERS ON BLADDER CANCER

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Data from a nationwide study of artificial sweeteners and bladder cancer are being re-evaluated to learn whether any reasonable hypotheses of association raised in previous animal and human studies are supported by a recent National Cancer Institute study of 8,800 people. The following hypotheses will be considered: (1) artificial sweeteners are weak 'primary' carcinogens, which in humans act independently of the effects of sex, smoking and occupational exposures; (2) Artificial sweeteners are incomplete carcinogens, which produce human bladder cancer only in conjunction with certain other conditions or exposure; (3) Artificial sweeteners increase an individual's risk for bladder cancer by a constant multiplier, no matter what the individual's 'baseline' may be; (4) In addition, the risk of bladder cancer is monotonically related to the intensity and duration of artificial sweetener use. This analysis is intended to provide regulatory authorities and others with information on which to base their decisions regarding the safety of artificial sweetener use.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.2495,

EPIDEMIOLOGY OF LEUKEMIA IN RURAL IOWA

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Unlike most cancers, leukemias occur at elevated rates in rural and farm populations. Previous studies have been unsuccessful in identifying any specific risk factors for leukemia in rural areas or farming. Using incidence data from the Iowa State Health Registry, extensive preliminary ecological epidemiological studies have been completed which indicate that there are elevated leukemia rates in Iowa which are strongly associated with: (1) males, (2) rural residence, (3) proximity to high cattle population densities, and (4) proximity to dairy herds with cases of bovine lymphosarcoma. The elevated rates and the associations were primarily associated with acute lymphoid leukemia (ALL). This is a case-control study to verify the ecological relationships seen in the preliminary studies, and to investigate on an individual basis the role of various factors in the rural and agricultural environment that may contribute to the observed high leukemia rates. Approximately 200 cases of ALL (male and female) will be drawn from the Iowa State Health Registry, for the 87 most rural counties in the state. Two normal controls for each case will be selected from the same counties, and cases and controls will be matched for age, sex, and county of residence. Personal interviews will obtain data on: (1) environmental or occupational exposure to cattle, (2) environmental or occupational exposure to Bovine Leukemia Virus (BLV), (3) farm or non-farm occupation, (4) various exposures within farming such as agricultural chemicals and other livestock species. Dairy herds of cases and controls will be tested serologically to determine the extent of BLV infection. The data will be analyzed to discern a possible cause-effect relationship of exposure to cattle, BLV, and other factors in the rural/agricultural environment.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.2496,

THE AMERICAN FAMILY LIFE STUDIES

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The American Family Life Assurance Company, a national cancer insurance company, has made its records available for epidemiological research. It currently has 2.7 million policies in force, approximately two thirds of which are family policies. Pathological reports to confirm diagnoses of cancer and detailed descriptions of treatment received are required for receipt of benefits or reimbursement. All this information is microfilmed. A series of studies will be based on these records. The first will be the determination of age- and sex-specific cancer incidence rates in the insured population to serve as the reference rates in the other studies. The second group of studies will be on the occurrence of cancer in spouse-pairs to assess the role of shared environment in the etiology of several cancers, such as Hodgkin's disease, colon, and genital and reproductive tract cancers. The third group will be on the risk of second primary cancers in relation to different types of therapy. Dose-response relationships will be evaluated for those therapies found to increase the risk of second primary cancers. Other studies will include examination of sibling aggregation in childhood cancer, re-evaluation of the 'cancer-family' hypothesis and cancer incidence rates in specific occupational groups.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.2497,

NORTH-EAST FLORIDA LUNG CANCER STUDY

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This study proposes to gather retrospective data concerning asbestos exposure on all new lung cancer cases in four north-east Florida counties. The study will consider occupational histories as well as smoking. The study will also locate geographically all cases and two matched controls to ascertain any possible clustering patterns associated with major air pollution sources in the area. Case verification has been performed by an independent pathology review and analysis is anticipated concerning morphological types of lung cancer and specific risk factors. The study is also identifying mesothelioma and asbestosis cases for the same time period (1978-79 and geographical area.

Description provided by IARC and DKFZ with ICRDB/NCI support.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.2498,

GEOGRAPHICAL ANALYSIS AND CAUSAL INFERENCE

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The methodology of the geographical analysis of cancers have not been fully developed. Specifically, the implications of the geographical scale of epidemiological research has not been integrated into research results and cross-scale synthesis of results has not been pursued. This study of county-level mortality data (1950-1969) within and across states in the US aims at formalizing and exemplifying the inferences that can be made by studies at specific geographical scales and by the comparison of studies at different scales and populations. The analysis utilizes multivariate correlation and regression techniques, spatial autocorrelation analysis and spectral analysis.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.2499,

NATIONAL COLLABORATIVE CASE-CONTROL STUDY OF CARCINOMA OF THE LIVER

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The aim of this study is to evaluate a number of known and suspected risk factors of cancer of the liver. Of special interest are hepatitis-B carrier state, smoking, drugs and occupational exposure. It is estimated that there will be 100 cases and 200 hospital based controls.

Description provided by IARC and DKFZ with ICRDB/NCI support.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.2500,

METHODS OF SURVEYING CARCINOGEN-EXPOSED WORKERS FOR GENOTOXICITY AND MUTAGENS IN BODY FLUIDS

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Workers in cohorts of less than 100 are being monitored for parameters of genotoxicity (DNA adducts, DNA damage, etc.) and for levels of mutagens in body fluids (urine). Cohorts are chosen on the basis of their known exposure to a single or single class of known carcinogens, and followed for varying periods. Objectives are to identify methods that may be useful in epidemiological studies for carcinogen/teratogen risk. Cohorts may be expanded and followed for monitoring actual cancer experience at a future time.

Description provided by IARC and DKFZ with ICRDB/NCI support.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.2501,

FARMING AS AN OCCUPATIONAL RISK FOR CANCER

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Iowa death certificates from 1971-1978 were studied to determine if white male Iowa farmers had higher levels of cancer mortality than similar individuals in non-farming occupations. The study included 6,402 farmers and 13,809 non-farmers. The overall mortality from all cancers was significantly lower in farmers due to decreased mortality from smoking-related cancers (lung, mouth other than lip, esophagus and other respiratory). However, the following cancers were significantly elevated in mortality in Iowa farmers: lip, stomach, prostate, lymphoid tissue, leukemia, multiple myeloma.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.2502,

FARMING AS AN OCCUPATIONAL RISK FOR CANCER

L.F. Burmeister, University of Iowa, School of Medicine, Dept. of Preventive Medicine & Environmental Health, *Jessup Hall, Iowa City, Iowa* 52240 (02316)

Iowa death certificates from 1971-1978 were studied to determine if white male Iowa farmers had higher levels of cancer mortality than similar individuals in non-farming occupations. The study included 6,402 farmers and 13,809 non-farmers. The overall mortality from all cancers was significantly lower in farmers due to decreased mortality from smoking-related cancers (lung, mouth other than lip, esophagus and other respiratory). However, the following cancers were significantly elevated in mortality in Iowa farmers: lip, stomach, prostate, lymphoid tissue, leukemia, multiple myeloma.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.2503,

EPIDEMIOLOGY OF PRIMARY LIVER CANCER IN SELECTED TEXAS COUNTIES

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Several counties in Texas have been identified as having high rates of primary liver cancer (PLC), approximately three times as great as that reported for the total USA. Three of these counties are associated with heavy chemical and petrochemical industry concentrations. During 1977-1980, a retrospective study of all liver cancer deaths occurring in Brazoria, Jefferson and Orange Counties, Texas during the interval 1946 - 1976 was conducted to determine if the proportion of chemical and petrochemical workers is higher among persons dying from PLC than among persons dying from non-malignant diseases. Occupational histories were obtained from participating industries for liver, pancreas, kidney and selected other cancer deaths and controls. Clinical and histopathological review of all deaths due to PLC and other liver-related diseases was conducted. Initial findings indicate that the proportion of chemical workers dying from liver cancer was not greater than the proportion of employed controls. The clinical and histopathological review of reported liver cancer deaths indicate substantial misclassification of metastatic tumors. Of the 176 reported cases, 54 were confirmed PLC and 75 were found to be metastatic tumors. Analysis of the job classification of employed workers is continuing in 1981.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.2504,

EPIDEMIOLOGICAL AND INDUSTRIAL HYGIENE INVESTIGATION OF A URANIUM ENRICHMENT PLANT

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In recent years concern has increased over the possible adverse health effects from exposure to low-level radiation, including alpha radiation. However, few epidemiological studies have examined potential risks in terms of mortality among individuals with documented long-term exposures. The uranium enrichment plant located in Ohio enriches uranium from 0.7% U-235 to 98% U-235. Primary exposure to internal alpha radiation is from possible inhalation or ingestion of uranium hexafluoride (UF6). Over 7,000 workers have been employed at GAC since operation began in 1954. Extensive records are available to identify all active and inactive employees along with their employment history at the plant. Records on radiation exposures including monthly urinalysis results, in-vivo scanning, film badge readings and industrial hygiene measurements, are also available. These, while of limited value for assigning personal radiation dose estimates, can be used to divide the study population into categories of exposure. A retrospective cohort mortality study will be conducted by NIOSH to determine whether or not the worker population at the plant has experienced any increase in cause-specific mortality. This analysis will be done by sub-groups according to exposure and can be supplemented by more detailed analyses using a case-control approach. NIOSH will also conduct detailed industrial hygiene surveys on specific areas of the plant to characterize all relevant occupational exposures including radiation.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.2505,

LONG-TERM MORTALITY STUDY OF WORKERS IN THE FURNITURE MANUFACTURING INDUSTRY

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The manufacture of furniture may result in worker exposure to a variety of potentially hazardous substances including wood, metal, and plastic dusts; paints, lacquers, varnishes, and stains; solvents; formaldehyde; oils, and chromium, nickel, and cadmium fumes. To evaluate the cancer risks among workers in this industry a cohort of 10,000 to 15,000 furniture workers who were members of a Union 15 to 30 years ago will be assembled and traced to determine their present day vital status. Mortality patterns among the cohort will be compared to the experience of U.S. general population after appropriate adjustments for differences in age, race, and sex. Occupational exposures will be estimated using job titles, products manufactured, and any environmental measurements currently available. The data of first employment and years of employment will be used to establish the timing and duration of exposure.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.2506,

REPRODUCTIVE EFFECTS OF PATERNAL AND MATERNAL EXPOSURE TO RADIOACTIVE URANIUM WASTE ON THE NAVAJO RESERVATION

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The purpose is to investigate the role of (1) paternal occupational exposure to radiation in the mining and/or milling of uranium bearing ore, and/or (2) paternal and/or maternal environmental residential exposure to radiation from uranium mine waste or mill tailings in the etiology of birth anomalies, childhood cancer and leukemia in the Shiprock, New Mexico area. A case-control study will match nearest normal births to index cases, defined as all congenital anomalies, all stillbirths, all births with a head circumference measurement in the lowest 5% of all resident births as well as cancer cases. Exposure to various potential radiation sources will be ascertained by careful review of occupational, residential, and school attendance histories of parents of all cases and controls. This information will be corroborated by government records and reports. A computer program designed for case-control study of environmental exposure will be analyse the data. In the event of positive findings, the results will be used to assist in instigation or acceleration of remedial action so as to minimize future exposure. The size of the study population is 34,000. There are about 700 live births per year. All births between 1964 and 1979, about 10,000, will be included.

Description provided by IARC and DKFZ with ICRDB/NCI support.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.2507,

STATISTICS IN RISK CONTROL

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This is a broad study of the way in which environmental health hazards (especially toxic chemicals) are assessed and controlled. Of special interest in risk-benefit analysis and in institutional structure and functions relevant to risk control are: on-going epidemiological and statistical surveillance, criteria for taking action, legislative and regulatory decision-making, the roles of the courts, and resolution of disagreements among qualified scientists in this area.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.2508,

CLASSIFICATION AND ETIOLOGY OF CHILDHOOD BRAIN TUMORS

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In California, malignant tumors are the second leading cause of death among children under 15 years of age. Tumors of the brain and spinal cord are in second place among neoplasms. The aim is to reclassify selected brain tumors in children, to compare the new classification with survival and to develop some etiological factors associated with these new tumor sub-types. This five year national study will be carried out on a collaborative basis by eight SEER areas, including the Resource for Cancer Epidemiology, and Children's Hospital Medical Center, Boston. The specific aims are: (1) the evaluation of clustering among histological and clinical features of selected and clinical features and clusters, (2) to search for temporal and geographical differences in the occurrence of site-specific tumors, (3) to carry out a case-control epidemiological study of site-specific childhood brain tumors in an attempt to identify risk factors, (4) to create a computer-based program based on these data which might assist accurate prognosis. Interviews with the natural parents of each case will be arranged, appropriate comparison families selected and interviewed, medical data abstracted from hospital charts, tissue slides obtained from hospitals, and length of survival of each case monitored.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.2509,

HISTOLOGICAL TYPE OF LUNG CANCER AND SCAR LUNG CANCER IN ASBESTOS

O. Auerbach, U.S. Veterans Admin., Dept. of Medicine & Surgery, Medical Center, Senior Medical investigator's Lab, *Tremont Ave. & S. Centre St., East Orange, New Jersey* 07019 (01516)

It has been noted that the histological type (WHO) of lung cancer which develops under conditions of exposure to specific environmental (occupational) hazards appears to be related to the extent involved. Oat cell carcinoma (WHO type 2) has been the predominant type found among uranium workers and a high proportion of oat cell carcinomas were also reported in chloromethyl methyl ether workers. This suggests that there may be one histological type which is predominant among asbestos workers. A previous study on scar cancer has noted its peripheral location in the lung. Some investigators have noted that lung cancer in asbestos workers tends to arise more in the periphery of the lung than in the main bronchi. If this is true, then lung cancer in asbestos workers may be associated with scars to greater degree than lung cancer in workers not so exposed. To investigate both of these hypotheses sections have been collected from surgical and autopsy specimens from large number of men who were occupationally exposed to asbestos as factory workers or asbestos insulation workers. The distribution of the histological types of lung cancer found on these slides will be compared to lung cancer cases in which there has been no asbestos exposure. Smoking, occupational and residence histories will be obtained from families of the deceased.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.2510,

CHEMICAL EXPOSURE STUDIES IN FLORIDA COUNTIES WITH UNUSUALLY HIGH CANCER PREVALENCES

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Florida counties having higher than expected occurrences of selected types of cancer (and possible oter health effects) will be identified. Field epidemiological methods, including environmental sampling chemical exposure assessment, will be used to study human exposure to chemicals via drinking water contamination. Specific investigations have been proposed; the first to deal with trihalomethanes and melanoma and cancer of the brain, bladder and pancreas. Other studies proposed include exposures related to Agent Orange, pediatric cancer risks and

toxic waste disposal sites. The preliminary study group is expected to involve 100 cases and 100 age, race, sex and life-style matched controls.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.2511,

EPIDEMIOLOGICAL STUDY OF CANCERS OF THE LYMPHATIC AND HAEMATOPOIETIC SYSTEM, GENITO-URINARY SYSTEM, SKIN AND NERVOUS SYSTEM (TRUNCATED)

D.M. Winn, U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst., Environmental Epidemiology Branch, *9000 Rockville Pike, Bethesda, Maryland* 20205 (02402)

The purpose of this case-control study is to identify jobs within the U.S. Coast Guard (CG) which may be related to the occurrence of selected cancers among CG officers and enlisted persons. Cases include between 200 and 300 persons with confirmed cancers of the lymphatic and hematopoietic system, genito-urinary system, skin, and nervous system who applied for a disability retirement from the CG between 1954 and the present. Confirmation of the cancer will be from medical documentation submitted to the CG medical board supporting the individual's request for a disability pension. Controls will include CG workers with none of the cancers of interest who are matched on age, race, sex, and enlisted/officer status to the cases. Additionally, enlisted controls will be matched on year of entrance into the CG: officers will be matched on attained rank. Information will be obtained from personnel records regarding the dates and duties involved for each occupational title held by a study subject both prior to and during his years at the Coast Guard. Controls will be obtained from card files and registers enumerating all enlisted persons and officers. The analysis will be conducted separately for each cancer site grouping; within each series, cases and controls will be compared with respect to jobs held and duration of employment in these jobs.

Description provided by IARC and DKFZ with ICRDB/NCI support.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.2512,

HEALTH STUDY OF PLUTONIUM WORKERS

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Current and former plutonium workers from six major United States nuclear facilities are being followed in order to ascertain incidence and mortality from cancer and other disease. Systemic plutonium body burden data, obtained from urinalyses and information concerning confounding external radiation exposures will be employed to investigate the presence or absence of dose-response relationships. A study population of approximately 2,000 individuals will include all workers with estimated body burdens that exceed one nanocurie, exposed workers with smaller or undetectable burdens, and random samples of non-exposed individuals from the same installations.

Description provided by IARC and DKFZ with ICRDB/NCI support.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.2513,

EPIDEMIOLOGICAL METHODS - U.S. URANIUM MINERS

A.S. Whittemore, Stanford University, School of Medicine, Dept. of Family Community & Preventive Medicine, *300 Pasteur Dr., Stanford, California* 94305 (02354)

The objective of the study is to re-analyze, using newly developed statistical techniques, the relationship between cigarette smoking and occupational radon daughter exposure to bronchial carcinoma among approximately 4,000 U.S. uranium miners. To date, approximately 400 bronchial carcinomas have occurred in this cohort.

Description provided by IARC and DKFZ with ICRDB/NCI support.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.2514,

EPIDEMIOLOGICAL STUDIES OF URANIUM MINERS AND MILL WORKERS

R.J. Waxweiler, U.S. Dept. of Health & Human Services, Public Health Service, Center for Disease Control, National Inst. for Occupational Safety & Health, Division of Surveillance Hazard Evaluation & Field Studies, *4676 Columbia Pkwy., Cincinnati, Ohio* 45226 (00031)

Uranium miners have been found to have an excess of lung cancer and mill workers to have an excess of lymphomas. A much larger group of mill workers is now being studied by a retrospective cohort study to determine the magnitude of the lymphoma excess. Identification of the substance responsible is being attempted. Two groups of uranium miners are being studied; one of about 4,300, and a much larger one of about 15,000. These groups are being used to determine exposures - response curves, and the different factors which influence the shape of those curves, effects of exposure on the sex-ratio of offspring, the effect of age at first exposure on incidence and latent period, and the dose-rate effect.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.2515,

MORTALITY STUDY OF POTASH MINING WORKERS EXPOSED TO DIESEL FUMES

R.J. Waxweiler, U.S. Dept. of Health & Human Services, Public Health Service, Center for Disease Control, National Inst. for Occupational Safety & Health, Division of Surveillance Hazard Evaluation & Field Studies, *4676 Columbia Pkwy., Cincinnati, Ohio* 45226 (02443)

The long term effects of diesel exposures need to be thoroughly evaluated as diesel fuel will begin to take on more important role in this country's future energy policy. An occupation believed to have high levels of diesel exposures is underground mining. Although most mines would have many other confounding exposures (such as asbestos, radon daughters and arsenic), potash mines have presumably non-carcinogenic environments as determined by a previously conducted retrospective cohort mortality study of 2,743 underground and 1,143 surface potash miners (J. Occup. Med. 15: 486-9, 1973). Diesels were introduced in these mines in the early 1950s, thus by extending the epidemiological study from 1967 to include follow-up through 1978, a 25 year latency period could be evaluated for many of the miners. In-depth industrial hygiene surveys would characterize current worker exposure to diesel exhaust and evaluate existing engineering controls and work practices. The control technology section of NIOSH has an analogous project to evaluate diesel exposure underground in relation to such parameters as duty time, preventive maintenance, etc.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.2516,

ASBESTOS AND CANCER

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In previous studies in this Department it was not possible to show a correlation between coated asbestos fibers (bodies) and lung or gastrointestinal cancers in persons with very little asbestos burden. Methods have now been developed for analysis of uncoated asbestos and other fibers in the lung and it has been found that total asbestos burden is not related to asbestos bodies. The aim is to examine the role of asbestos in disease by quantifying the amount and type of asbestos in lungs obtained post mortem from patients with a history of exposure to it in order to establish a dose-response relationship for asbestos and pleural plaques, lung cancer and fibrosis (asbestosis). Disease will be documented by review of the patient's clinical history and laboratory tests, and relatives will be interviewed to obtain a history of exposure. Lungs will be examined macroscopically and microscopically for degree and extent of fibrosis and type of cancer. Length and width of fibers will be measured and identified by electron diffraction and microprobe analysis. Because other types of fibers are present in the lung and have been implicated in disease in the past and may play a role in addition to asbestos, all other fibres (with aspect ratio greater than 3) will be examined in the same way in these same patients.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.2517,

EPIDEMIOLOGICAL STUDY OF WORKERS IN PETROLEUM REFINERIES

T.L. Thomas, U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst., Occupational Studies Section, *9000 Rockville Pike, Bethesda, Maryland* 20205 (02476)

A proportionate mortality ratio study of workers who were active and retired members of the Oil, Chemical, and Atomic Workers International Union employed by three Texas oil refineries revealed increased relative frequencies of deaths from stomach cancer, brain tumors, and leukemia. Underlying cause of death was recorded as stomach cancer for 48 workers, malignant or unspecified brain tumor for 37 workers, and leukemia for 33 workers. Three controls were selected for each case from workers at the three refineries who died from other causes. Detailed work histories will be obtained for each case and control to determine length of employment in these plants, specific job(s) held, work location(s) within the plants, and any other employment or exposure information that is available. Work histories of the cases will be compared with those of the controls to determine whether cases with the same cancer clustered within a given work area(s) in the plants.

Description provided by IARC and DKFZ with ICRDB/NCI support.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.2518,

EPIDEMIOLOGICAL AND HLA STUDY OF CHRONIC LYMPHOCYTIC LEUKEMIA

M. Szklo, Johns Hopkins University, School of Hygiene & Public Health, Dept. of Epidemiology, *615 N. Wolfe St., Baltimore, Maryland* 21205 (02470)

The major objective of this research is to study the epidemiology of chronic lymphocytic leukemia (CLL), focussing upon possible associations with sources of chronic antigenic stimulation, occupations and familial factors. A second objective is to define possible HLA associations with CLL. To accomplish these objectives, the study will be divided into three components. In Part I all cases of CLL first diagnosed in the Baltimore Standard Metropolitan Statistical Area (SMSA) from July 1969 through June 1979 will be identified. Medical chart review of all these cases, an anticipated number of 450, and two groups of matched controls will be performed. Part II will consist of an interview study of all cases and controls, identified in Part I. For cases and controls who have died, spouse, other next-of-kin, or closest friends will be interviewed. Part III has three components. The first is a concurrent case - control study, involving chart review, interview, and HLA testing of newly diagnosed cases in the Baltimore SMSA (150 cases expected). The second part of the study will involve a three-month follow-up of the 150 cases in order to differentiate 'indolent' cases from the 'rapidly progressive': the HLA types of these two types will be compared. The third component involves interview and HLA testing of families with two or more cases of CLL, lymphproliferative diseases and/or autoimmune diseases.

Description provided by IARC and DKFZ with ICRDB/NCI support.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.2519,

EPIDEMIOLOGY OF APLASTIC ANEMIA IN METROPOLITAN BALTIMORE

M. Szklo, Johns Hopkins University, School of Hygiene & Public Health, Dept. of Epidemiology, *615 N. Wolfe St., Baltimore, Maryland* 21205 (02471)

This study has been designed to explore risk factors for aplastic anemia and acute non-lymphocytic leukemia. The study will have two phases. In Phase I, temporal trends of incidence rates of these disorders will be studied, so that etiological hypotheses can be generated. In Phase II, a case - control study will be carried out. Two general kinds of etiological agents will be explored: viruses and chemicals. In addition, HLA studies will be conducted in order to allow ex-

amination of interaction between genetic and environmental factors. It is estimated that the final sample sizes will be as follows: aplastic anemia 100; acute non-lymphocytic leukemia 200. For each case, there will be two types of matched controls: individuals with non-hematological cancers and normal individuals, selected by means of random digit dialing of telephone numbers having the same exchange digits as cases. Interviews and drawing of blood samples are now starting. It is predicted that data collection will be completed by the end of 1982.

Description provided by IARC and DKFZ with ICRDB/NCI support.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.2520,

HEALTH EFFECTS FROM INGESTION OF ASBESTOS FIBERS IN A MUNICIPAL WATER SUPPLY

E.E. Sigurdson, State Dept. of Health, Disease Prevention & Control Section, *717 Delaware St. S.E., Minneapolis, Minnesota* 55440 (01138)

The study established baseline incidence of cancer of all sites in the resident population of Duluth, Minnesota (1970 population 100,078) during 1969-1971 and will continue to monitor incidence through 1981 or longer. The purpose of the study is to determine the health effect, if any, from the ingestion of asbestos (amphibole) fibers present in the city water supply during approximately 15 years. Data are collected in the same manner as the Third National Cancer Survey and compared with the Minneapolis St. Paul component of the Survey and the Surveillance, Epidemiology and End Results Program of the U.S. National Cancer Institute. Additional information will be obtained from cancer cases of selected sites and matched controls. Incidence data for gastrointestinal sites and lung will be published in Environmental Research.

Description provided by IARC and DKFZ with ICRDB/NCI support.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.2521,

URANIUM EPIDEMIOLOGY STUDY

J.M. Samet, University of New Mexico, School of Medicine, Dept. of Medicine, *University Hill N.E., Albuquerque, New Mexico* 87131 (02430)

The Grants, New Mexico, mineral belt is the largest uranium area in the U.S. Since mining began in this district, precision of radiation measurement and stringency of radiation standards have increased. This is the first study focusing on Grants area miners and on low-level radiation exposures for which only extrapolations are now available. The purpose of the study is to investigate health effects of radon daughter exposures, with emphasis on lung cancer. The study groups is comprised of 4,100 uranium miners with at least one year underground since 1957 in the Grants area mines: 1,800 began work before 1961, with mean working level months (WLM) near 40 per year; 1,300 began work in 1961-1970, with mean WLM decreasing from 40 to four per year; the rest began work in 1971 or later, with mean WLM not exceeding the current allowable four per year. The general New Mexico population, adjusted for ethnicity, will serve as comparison group.

Description provided by IARC and DKFZ with ICRDB/NCI support.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.2522,

POSSIBLE ROLE OF VITAMIN A IN UTERINE CERVICAL DYSPLASIA

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In this study of carcinoma of the uterine cervix the primary focus is on the possible interrelationships of diet, with emphasis upon vitamin A, social environmental epidemiological factors, and the cellular changes which are detectable clinically by routine cytology and biopsy of the uterine cervix. The availability of the Papanicolaou test permits screening of large population groups and the finding of a positive or suspicious smear identifies 'women at risk'. Such women are being studied intensively in terms of (1) diet, with computer coding and scoring of nutrient values, (2) ethnic and socio-economic background and (3) personal lifestyle including educational performance as well as (4) measurements of specific blood and tissue retinol and retinoic binding proteins.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.2523,

METABOLIC EPIDEMIOLOGY OF LARGE BOWEL CANCER IN A DEFINED POPULATION

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The overall objective of the proposed research, continuing an on-going comprehensive program, is to (1) acquire significant information on the mechanisms related to, and the role played by, dietary components, gut microflora and their metabolites on the etiology of large bowel cancer in humans; (2) identify specific fecal constituents that directly and/or indirectly cause large bowel cancer or promote the development of large bowel neoplasms, and (3) develop key biochemical indicators which distinguish low- and high-risk populations for large bowel cancer. The dietary profiles, fecal bile acids and fecal mutagens of 100 healthy Seventh-Day Adventists, who are at low risk for colon cancer development, and of age- and sex-matched healthy non-Seventh-Day Adventists, who are at high risk for colon cancer in the New York Metropolitan area will be studied. In addition, the effect of dietary fiber in the form of wheat bran on the excretion of fecal mutagens in the volunteers from the New York area, who exhibit a high fecal mutagenic activity will be studied. It is also aimed to study the effect of vegetarian diet in the Seventh-Day Adventists consuming a non-vegetarian mixed-Western diet on the fecal bile acids, bacterial enzymes, and mutagenic activity, and to isolate and identify the mutagens in the feces of the study population.

Description provided by IARC and DKFZ with ICRDB/NCI support.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.2524,

MORTALITY AND INDUSTRIAL HYGIENE STUDY OF WORKERS IN FIRED POWER PLANTS

C. Ortmeyer, U.S. Dept. of Health & Human Services, Public Health Service, Center for Disease Control, National Inst. for Occupational Safety & Health, Division of Respiratory Diseases Studies, *944 Chestnut Ridge Rd., Morgantown, West Virginia* 26505 (02467)

Pulmonary disease and impairment could arise in part from exposures to gases emitted during coal combustion and to coal dust when coal is burned as fuel for steam-powered electricity generating plants. Those workers who handled the asbestos sheets used to insulate steam pipes may also show evidence of health damage. NIOSH and the Tennessee Valley Authority TVA are co-operating in a study of these occupational health risks. The TVA is conducting detailed cross-sectional industrial hygiene studies of workers in selected occupations. Existing industrial hygiene data on past exposures and control methods will be reviewed in order to estimate cumulative working lifetime exposures in occupations where there has been exposure to the same particulates or gases. This information will be used to attempt dose assessment for mortality studies of workers exposed in the past. An epidemiological mortality study of TVA employees is also being carried out to estimate effects in terms of higher-than-expected death rates and/or early retirement due to disability involving principally cardiopulmonary disease or specified malignancies linked to earlier exposures to air contaminants in the workplace. All permanent male employees of the TVA with five or more years of employment (at least two consecutive), and employed some time between 1 January 1955 and 39 December 1972 will be included in the cohort. Demographic data (age, sex, etc.), most recent and previous addresses, detailed work-histories within TVA, and information about dates and causes of death or of early retirement will be obtained. During data collection and analysis, NIOSH will arrange for sub-categories of 'high-risk' employees and matched non-exposed controls to be selected when analyzing the mortality data, for collection of additional diagnostic evidence regarding chronic cardiopulmonary diseases and completion of data on non-occupational exposures such as cigarette smoking, area of residence or traffic pollutants.

Description provided by IARC and DKFZ with ICRDB/NCI support.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.2525,

EPIDEMIOLOGICAL STUDY OF CHILDHOOD GLIOMAS

P. Nasca, State Bureau of Cancer Control, *Empire State Plaza, Tower Bldg. Rm. 565, Albany, New York* 12237 (02388)

The general objective is to determine, by means of an epidemiological case-control study, the importance of various prenatal and childhood environmental exposures in the etiology of childhood gliomas. Special emphasis will be placed on prenatal and early childhood exposures to drugs, chemicals, radiation, tobacco, immunizations and animals. Selected birth characteristics including maternal age, parity and season of birth will also be examined. Approximately 400 patients with childhood gliomas should be available for study, with two controls for each case. This number should permit investigation of the study variables with respect to the more common histological subtypes. Demographic, pathological and clinical data will be collected from the hospital records of each patient, utilizing a standardized form. Further data will be collected through telephone interviews with the mothers of each patient and control. These will be validated by comparing the mothers' responses with physician and hospital records.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.2526,

LUNG CANCER SCREENING OF WORKERS AT HIGH RISK

C. Mittman, City of Hope Medical Center, *1500 E. Duarte Rd., Duarte, California* 91010 (02387)

The overall objective is to determine if strategies can be developed to predict and/or prevent lung and bladder cancers in steel workers exposed to the coke oven environment known to increase risk. This is a five year prospective study of approximately 6500 coke oven workers in 11 geographical locations in the United Statec. Sputum, urine and blood samples are collected along with lung spirometry and questionnaire data. No control group is necessary since exposure is categorized by work site and the outcome is cancer. Occupational exposure data will be used for all analyses.

Description provided by IARC and DKFZ with ICRDB/NCI support.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.2527,

HEREDITY AND ENVIRONMENT IN THE ETIOLOGY OF CHILDHOOD CANCER

A.T. Meadows, Childrens Hospital of Philadelphia, Division of Oncology, *3400 Civic Ctr. Blvd., Philadelphia, Pennsylvania* 19104 (02386)

A case - control study of risk factors for specific childhood neoplasms has been initiated which will focus on three case groups: (1) tumors of neural crest origin, including CNS tumors, retinoblastoma, and neuroblastoma; (2) lymphoreticular neoplasms, including the leukemias and lymphomas; and (3) Wilms' tumor. Three matched controls will be chosen for every case, including a sibling control, a child with a different type of cancer, and a population control chosen through a random-digit-dial telephone technique. Variables of interest in the etiology of neural crest-derived tumors include (1) drugs that affect the CNS (anticonvulsants, alcohol, phenothiazines, amphetamines, tricyclic antidepressants, benzodiazepines); (2) ionizing radiation; (3) pesticide/herbicide exposure; (4) fetal exposure to chicken pox/influenza; and (5) family history of CNS disorders, genetic disorders, or cancer. Variables of interest in the etiology of lymphoreticular neoplasms include (1) maternal or paternal occupational exposure to petrochemicals/organic solvents, or to arsenic; (2) maternal or paternal employment in the rubber, shoe, or farming industry; (3) exposure to ionizing radiation; (4) fetal exposure to chicken pox/influenza; and (5) family history of immunodeficiency disorders, autoimmune diseases, or chromosomal instability syndromes. Lastly, this study will investigate the relationship between Wilms tumor and (1) exposure to analgesics and hormones; (2) lead exposure; and (3) family history of diabetes, hypertension, and congenital anomalies.

Description provided by IARC and DKFZ with ICRDB/NCI support.
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.2528,

PREDICTION OF LUNG CANCER RATES BY SPUTUM CYTOLOGY

T.J. Mason, U.S. Dept. of Health & Human Services, Public Health Service, National Inst. of Health, National Cancer Inst., Epidemiology Branch, *9000 Rockville Pike, Bethesda, Maryland* 20205 (00595)

In assessing the lung cancer risk of a worker population, it is highly desirable to have an early prediction method so that excess risk can be detected early. For new chemicals suspected of being pulmonary carcinogens, sputum cytology may reduce by half or more the time needed to determine the existence of risk, this possibly saving many lives. Several sputum samples from about 15,000 uranium workers have been collected over a period of 18 years. Using Dr. Saccomanno's classification, the samples will be analyzed to show correlation with age, tobacco smoking and radiation exposure. Persons with various grades of atypia will be followed to see how their sputum changes over the years, and to determine subsequent lung cancer mortality associated with each class of atypia (up to 18 years). Multiple correlation analyses will be done (utilizing support from NCI). These analyses will permit assessment of the use of sputum cytology as a survey tool assessing the lung cancer risk of a population before lung cancer has appeared.

Description provided by IARC and DKFZ with ICRDB/NCI support.
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3.2529,

CASE-CONTROL STUDIES OF ADENOCARCINOMAS OF THE SINONASAL TRACT

C.H. Lingeman, U.S. Dept. of Defense, Armed Forces Inst. of Pathology, Dept. of Environmental & Drug Induced Pathology, *c/o Walter Reed Medical Ctr., Washington, District of Columbia* 20306 (02248)

The purpose of the study is to identfy occupations or other types of environmental exposures that are associated with an excess risk of developing adenocarcinomas of the nasal cavities or sinuses. Cases will be the most recent patients whose biopsies have been submitted to AFIP for consultation. Controls will be AFIP accessions whose biopsies have been submitted to other registries than those involved with respiratory diseases, and who have diagnoses of diseases other than neoplasms. They will be matched to cases by age, sex, race, geographical location and data of diagnosis. Information about occupations and other environmental exposures to carcinogens will be obtained by means of questionnaires. It is hoped to study 100 cases and 200 controls. Information from both groups will be compared using standard statistical methods. Particular attention will be given to those occupations in which workers are exposed to wood dust or leather products because of reports of excessive of sinonasal neoplasms, particularly adenocarcinomas, in workers so exposed.

Description provided by IARC and DKFZ with ICRDB/NCI support.
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.2530,

CASE-CONTROL STUDY OF MALIGNANT NEOPLASMS OF SOFT TISSUES

C.H. Lingeman, U.S. Dept. of Defense, Armed Forces Inst. of Pathology, Dept. of Environmental & Drug Induced Pathology, *c/o Walter Reed Medical Ctr., Washington, District of Columbia* 20306 (02249)

The purpose of the study is to attempt to determine whether exposure to chemicals in the environment is associated with an excessive frequency of neoplasms orginating in soft tissues. The first phase of the study will involve 200 case (patients with soft tissue neoplasms) and 800 controls (patients with non-neoplastic diseases). Cases will be the most recent AFIP accessions of patients 25 years and older with diagnoses of malignant neoplasms of soft tissues. Controls will be selected from the AFIP data base and will be matched by age, sex, race, geographical location and date of diagnosis. Information obtained from questionnaires concerning occupations and other possible sources of exposure to chemicals will be compared in the two groups using standard statistical methods. Particular attention will be given to phenoxyherbicides and related compounds because of reports of excessive soft tissue neoplasia in people with occupational exposure to these compounds.

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3.2531,

IMMUNE REGULATION AND GENETICS OF DISSEMINATED NEUROFIBROMATOSIS

L. Helson, Memorial Sloan Kettering Cancer Center, Dept. of Pediatrics, *1275 York Ave., New York, New York* 10021 (01979)

The incidence of neurofibromatosis and the factors leading to malignant conversion within those affected remain obscure. This prospective study aims to assess the genetic and immunological patterns associated with conversion to malignancy and any environmental factors which may contribute to it. Approximately 300 families from the eastern portion of the US will be studied. Personal records of birth, work history, mortality, location, occupational exposures, and specific genetic factors (HLA types), fibroblast conversion, and immunological factors (immune complexes) associated with malignant transformation will be included in the analyses. The control group will be family members without neurofibromatosis. Preliminary results (In Vitro, 16, 8:706-714, 1980) show no unusual HLA type frequencies. Some 60% of 70 patients had abnormal levels of immune complexes compared with 20% in family controls. Fibroblast conversion with 12-0-Tetradecanoyl phorbol-13-acetate was attempted on three families but no differences were noted when compared with controls.

Description provided by IARC and DKFZ with ICRDB/NCI support.
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.2532,

PANCREATIC CANCER EPIDEMIOLOGY - SOURCES OF CASE MISCLASSIFICATION

B.C. Yankaskas, University of North Carolina, Chapel Hill Campus, School of Public Health, Dept. of Epidemiology, *Rosenau Hall, 201H, Chapel Hill, North Carolina* 27514 (02444)

Pancreatic cancer has always been difficult to diagnose, and even with improved diagnostic techniques is most often diagnosed after metastasis or at autopsy. In view of the poor diagnosis the search for risk factors and high risk populations becomes very important. Pancreatic cancer cases used in epidemiological studies come from three main sources; death certificates, hospital series, and tumour registries. The source of diagnosis may lead to misclassification. The yield from epidemiological studies will be of higher quality when cases are similar and definitely pancreatic cancer. The object is to identify the amount of misclassification that occurs, paying special attention to the type and source of histological confirmation and diagnostic evaluation for the years 1955-1979. The study will cover all cases of pancreatic cancer identified at three University hospitals in North Carolina. Cases will be identified from the hospital tumour registries and autopsy records. Information will be taken from review of the medical chart, autopsy reports, death certificates, and all diagnostic and pathology reports. For each case a comparison will be made of clinical diagnosis, autopsy diagnosis when present, and death certificate diagnosis. The misclassification identified will be related to symptoms and histological confirmation. The effect of misclassification based on sources of cases for epidemiology studies will be estimated. Some 1,000 cases and 1,500 gastric cancer charts will be reviewed to evaluate the relationship of changing diagnostic techniques as the source of pancreatic cancer misclassification.

Description provided by IARC and DKFZ with ICRDB/NCI support.
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.2533,

IMMUNOGENETIC AND IMMUNOLOGICAL ASPECTS OF NASOPHARYNGEAL CARCINOMA

S.H. Chan, University of Singapore, School of Medicine, *Sepoy Lines, Singapore 3, Singapore* (00270)

The HLA profiles of 313 newly diagnosed unrelated Chinese nasopharyngeal carcinoma (NPC) patients were compared with those of 330 normal Chinese subjects and with 98 NPC patients who had survived five years. HLA-B17 and HLA-VW46 were strongly associated with increased risks of developing NPC and HLA-A11 with a decreased risk. Joint occurrences of AW19/B, B17 and A2 BW46 were associated with a higher risk than B17 or BW46 alone. The risk associated with A2 BW46 was confined to older onset patients (greater than 30 years old) were as AW19/B B17 was associated with the total group of patients but particularly marked with younger (less than 30 years old) patients. The association of B17 and poor survival was shown both in retrospective and prospective studies. On the other hand A2 B13 was associated with good prognosis. HLA-DR blank was significantly associated with an increased risk of development of NPC (RR equals 9.6) and HLA-DRW4 associated with a decreased risk (RR equals 0.24). The next phase of research is to study some of the mechanisms of these HLA associations. It is proposed to examine the immune responses to EBV in relationship to HLA patterns.

Description provided by IARC and DKFZ with ICRDB/NCI support.
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3.2534,

CARBON BLACK STUDY

K.P. Duncan, Health & Safety Center, *97 Horseferry Rd., London SW1P 2DY, England, United Kingdom*

OBJECTIVE: To see whether excess lung cancer mortality in the rubber industry and printing industry is associated with carbon black.

Description provided by IARC and DKFZ with ICRDB/NCI support.
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3.2535,

FOLLOW-UP OF WORKERS EXPOSED TO CHEMICALS

C.F. Ottevanger, Shell Internationale Petroleum Maatschappij N.V., Dept. of Industrial Health, *P.O. Box 7000, Rotterdam, Netherlands*

Workers exposed to organochlorine and alkylchloride compounds, and to vinyl chloride, trichloroethylene and unsaturated compounds will be followed.

Description provided by IARC and DKFZ with ICRDB/NCI support.
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.2536,

THYROID TUMORS

L.M. Pollice, Universita degli Studi di Bari, Fac. di Medicina, Pathological Anatomy Institute, *70124 Bari, Italy*

A study on thyroid tumors and the relationship between adenoma and carcinoma of the thyroid has been undertaken.

Description provided by IARC and DKFZ with ICRDB/NCI support.
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.2537,

NEURAL NEOPLASMS IN THAILAND

S. Shuangshoti, Chulalongkorn University, School of Medicine, Dept. of Pathology, *Phya Thai Rd., Bangkok, Thailand*

OBJECTIVES: (1) To study relative proportions of type, age, sex and location of all neoplasms of the nervous system in Thailand, (2) to study individual types of neural neoplasms, (3) to study highly interesting or unique cases of neural neoplasms and report them separately.

SCOPE: Review of surgical specimens and postmortem materials from two large general university hospitals in Bangkok: Chulalongkorn Hospital and Siriraj Hospital. Materials from other hospitals in Bangkok and from the rest of the country, sent in for consultation, are also included.

Description provided by IARC and DKFZ with ICRDB/NCI support.
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.2538,

STUDY OF WOODWORKERS IN FURNITURE INDUSTRY - A HIGH RISK GROUP FOR ADENOCARCINOMA OF SINUSES

E.H. Hadfield, Wycombe General Hospital, *High Wycombe, England, United Kingdom*

The high risk group of woodworkers in furniture industry is examined annually (at the workers' work place) by R.G. Macbeth. When some clinical change is visible in their noses they are sent to E.H. Hadfield at the hospital for biopsy and/or treatment.

Description provided by IARC and DKFZ with ICRDB/NCI support.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.2539,

ANALYSIS OF CAUSES OF DEATH OF VETERANS IN SOUTH AUSTRALIA AND MULTIPLE CORRELATION ANALYSIS

R.V. Southcott, Australian Dept. of Veterans Affairs, *186 Pulteney St., Adelaide, South Australia 5000, Australia*

Studies are being made on the incidence of the various causes of death among Australian veterans residing in South Australia (males only, in view of the numbers involved), over recent years, for comparison with larger Australian non-veteran male populations. It is hoped to relate such data also to the incidence of other diseases, e.g. areas of birth and service, height, weight and other data, including hair and eye color, etc.

Description provided by IARC and DKFZ with ICRDB/NCI support.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.2540,

INCIDENCE AND DISTRIBUTION OF LEUKEMIAS AND LYMPHOMAS

D.E. Powell, Bridgend General Hospital, Dept. of Pathology, *Bridgend CF31 1JP, Wales, United Kingdom*

Observation of time-space relationships, and consideration of possible environmental and infective factors are being undertaken.

Description provided by IARC and DKFZ with ICRDB/NCI support.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.2541,

THE IMMUNE SYSTEM IN DOWN'S SYNDROME AND ITS RELATIONSHIP TO MALIGNANCY

S. Levin, Kaplan Memorial Hospital, Dept. of Pediatrics, *P.O.B. 1, Rehovot, Israel*

Evaluation of immune status (thymic dependent) in Down's Syndrome, known to have an increased incidence of lymphatic leukemia, is being undertaken.

Description provided by IARC and DKFZ with ICRDB/NCI support.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.2542,

MESOTHELIOMA REGISTER

K.P. Duncan, Health & Safety Center, *97 Horseferry Rd., London SW1P 2DY, England, United Kingdom*

To identify all cases of mesothelioma.

Description provided by IARC and DKFZ with ICRDB/NCI support.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.2543,

EPIDEMIOLOGIC INVESTIGATION AND CASE-CONTROL STUDIES OF BLADDER CANCER PATIENTS

W. Fokkens, Rotterdamsch Radiotherapeutisch Instituut, Dept. of Documentation & Epidemiology, *Groene Hilledijk 301, Box 5201, 3075 EA Rotterdam, Netherlands*

All bladder cancer patients treated at the Rotterdam Radiotherapy Institute are interviewed about their occupational history and about other suspect factors such as smoking and phenacetin use. Since March 1977, in collaboration with Health Insurance Unions, interviews are also conducted on bladder cancer patients under 60 years of age living outside the Rotterdam region.

Description provided by IARC and DKFZ with ICRDB/NCI support.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.2544,

CANCER INCIDENCE AND MORTALITY IN GREATER SAO PAULO

A.P. Mirra, Universidade de Sao Paulo, School of Public Health, Dept. of Epidemiology, *Avenida Dr. Arnaldo, 715-10 A, Sao Paulo, Sao Paulo, Brazil* (02281)

The aims are to study cancer incidence and mortality in the Greater Sao Paulo area for the period 1969-1978. The data are collected in standard files from the following sources: hospitals, clinics, homes for aged, drug control service, pathology laboratories, autopsy services and death certificates. The data received are coded and transferred to magnetic tapes. The ordering of cancer cases is made by the first and last names of the patients, and number of registration. The unit is the cancer case and not the patient, each neoplasm being registered individually.

Description provided by IARC and DKFZ with ICRDB/NCI support.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.2545,

ANIMAL CONTACTS IN YOUNGER VICTIMS OF HODGKIN'S DISEASE AND LEUKEMIA

H. Doerken, Universitat Hamburg, Medizinische Facultat, First Medical Clinic, *Martinistrasse 52, 2000 Hamburg 20, Federal Republic of Germany*

In the age-group 15-19 years 84 cases of Hodgkin's disease have been found in the State of Hamburg and Northern Germany during the last 10 years. Cases will be compared with controls with particular reference to contact with animals and the occupation of the parents. In a more rural area (Oberallageu/ Bavaria) 191 death from leukemia occurred during the period 1959-1974. Animal contacts were analysed. An unexpected risk factor was prior use of chloramphenicol. 440 deaths from leukemia in the purely urban area of Hamburg North are now being analyzed and compared with data on controls. First results confirm the rarity of clustering.

Description provided by IARC and DKFZ with ICRDB/NCI support.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.2546,

PVC MANUFACTURERS STUDY

K.P. Duncan, Health & Safety Center, *97 Horseferry Rd., London SW1P 2DY, England, United Kingdom*

The aim is to evaluate the mortality pattern of workers exposed to vinyl chloride monomer or PVC dust in PVC manufacture. Data on job histories are being collected to allow mortality to be related to particular jobs.

Description provided by IARC and DKFZ with ICRDB/NCI support.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.2547,

ENVIRONMENTAL AND OCCUPATIONAL FACTORS IN THE ETIOLOGY OF HUMAN BLADDER CANCER

J. Connolly, University of Toronto, *Medical Sciences Bldg., Toronto, Ontario, Canada* M5S 1A8

To study the association between occupation, dietary and social patterns and bladder cancer, 348 bladder cancer patients (248 males, 100 females) and 2 controls per case (matched by sex, age within 5 years, and geographical location) were interviewed. Information was obtained about occupation (including contact with fourteen classifications of industrial chemicals), family background, past illnesses, analgesic intake, beverage consumption, smoking habits. The data are being analyzed.

Description provided by IARC and DKFZ with ICRDB/NCI support.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.2548,

RADIATION EXPOSURE AND MORTALITY IN FLUORSPAR MINERS

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The objective of the study is to evaluate the risk of death due to lung cancer as a function of cumulative exposure to radon and radon daughters in the fluorspar mines of St. Lawrence, Newfoundland. The mortality and adaptation exposure experience of over 2,000 men employed between 1933 and 1977 will be reviewed. Fluorspar mining in St. Lawrence (population 2,078, 1956 census) began in 1933 and by the period 1952-60, lung cancer accounted for 21 of the 71 total deaths: only 0.73 lung cancer deaths were expected based on proportional mortality rates for the province (O/E equals 29). Investigation in 1959 revealed the presence in air of radon and radon daughters at levels up to 193 SWL (1 SWL equals 100 pc/l for radon and 1.3 x 10 to the 5th power MeV total potential alpha-energy per liter for daughters) in non-working, unventilated areas. The average exposure of miners was estimated to be 2.5-10 SWL. Improved ventilation and monitoring of individual exposure were started in 1960. Current studies are directed towards evaluation of control procedures and analysis of the associations between radiation exposure and mortality utilizing individual exposure data and man-years at risk.

Description provided by IARC and DKFZ with ICRDB/NCI support.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.2549,

BRITISH RUBBER MANUFACTURERS' ASSOCIATION HEALTH RESEARCH PROJECT

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The aim of this study is to examine the health records of workers in the British rubber industry and to compare their mortality experience with that of the general population. All major type companies are included, together with some associated products. The study also compares the experience of three distinct cohorts of entry to the industry - first for those who entered the study between 1946 and 1950, the second between 1951 and 1955, and the third between 1956 and 1960. Although the main aim of the study is to investigate possible excesses of cancer hazards, all causes of death are recorded and certain other groups of causes are being examined. It is hoped to be able to associate any high risk areas with the results of environmental monitoring tests that have been made in the last year or so and with such details as can be obtained of past conditions in each factory. Analysis of the results to date has shown a small, but significant, excess of malignant disease of the stomach and of the lung, particularly in recent entry cohorts. Except for the first entry cohort there is no raised incidence of bladder cancer. This is in line with the banning of the use of 2-naphthylamine in 1949. Detailed studies of the conditions of work in those areas which show an excess of malignant disease in each factory are now being made and a further follow-up of mortality records is being undertaken.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.2550,

ASBESTOS SURVEY

K.P. Duncan, Health & Safety Center, *97 Horseferry Rd., London SW1P 2DY, England, United Kingdom*

All asbestos workers in the UK are seen at 2-yearly intervals and morbidity questionnaire completed with clinical examination of lung fields. The mortality experience of the same population is also measured.

Description provided by IARC and DKFZ with ICRDB/NCI support.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.2551,

SMOKING AND CHEWING HABITS IN RELATION TO HEALTH - A PROSPECTIVE STUDY IN BOMBAY

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A number of retrospective studies carried out in this country have demonstrated the association of smoking and chewing habits with oral and pharyngeal cancers. Laboratory and experimental studies on bidi smoke and betel quids have also served to establish this cause-effect relationship. To see whether the results obtained in retrospective studies are sustained in prospective studies in which large populations with known habits are followed for several years for the occurrence of cancer, a limited study of this nature has been in progress, following earlier pilot studies. About 7,000 white-collar workers and 3,500 blue-collar workers over the age of 35 have been followed up for varying periods since 1969. A preliminary analysis of the data on white collar workers is being undertaken.

Description provided by IARC and DKFZ with ICRDB/NCI support.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.2552,

A STUDY OF THE USE OF TOBACCO AND ALCOHOL BY MALES AND FEMALES OF TRANSKEI

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Cancer of the oesophagus occurs at very high frequency in Transkei. There is evidence that the use of commerical pipe tobacco smoked either in pipes or as hand-rolled cigarettes may be responsible, or partly responsible, for the disease. To investigate this, a field study of geographical regions having higher and lower incidence rates (than the overall rate) of oesophageal cancer in the resident population of Transkei was carried out. Nine hundred detailed questionnaires are now being analysed and results will shortly be available.

Description provided by IARC and DKFZ with ICRDB/NCI support.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.2553,

CONTINUING LONG-TERM STUDY OF THE NATURAL HISTORY OF CANCERS IN A COMMUNITY OF 9,000 PERSONS

J. Fry, (No Performing Organization Reported), *United Kingdom*

The family practitioner (general practitioner) has some special opportunities to study the early beginnings and the cause of the various cancers as they occur in a community. Such a study has been going on in my practice of 9,000 persons for over 25 years and still continues. An interim report will be published in 'A Guide to Common Diseases', Fry, J., Lancaster: MTP Press, 1979. The result of 15 years' studies of infectious mononucleosis will be published shortly.

Description provided by IARC and DKFZ with ICRDB/NCI support.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.2554,

ORAL FOCAL EPITHELIAL HYPERPLASIA (ABBREV)

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Oral focal epithelial hyperplasia is widespread among Eskimos and Amerindians, but rare among Caucasians (Europides). In Greenlanders there seems to be a direct relationship between the prevalences found and the degree of mixture of the population with Caucasians. This may be due to an influence of a genetic factor, and serological studies are, therefore, performed. Histology and electron microscopy seem to indicate a viral etiology of the disease; the size and morphology of the virus-like particles correspond to what has been described in verruca, condylomata, and in oral papillomatosis in dogs and rabbits. Pilot studies with immunofluorescence technique have shown that the patients with focal epithelial hyperplasia produce antibodies against an antigen in the affected cells. It is likely that the disease is contagious. Epidemiological studies have been performed on 3,500 persons in Greenland and on population groups of Greenlanders and Danes in Denmark. Follow-up studies are undertaken in Greenland. Electronic data analysis of the collected material is performed in collaboration with J.E. Bearman. Blood group type studies are done on saliva samples from the same persons and are performed in collaboration with Dr. H. Guertler, Copenhagen. Family studies are carried out in collaboration with Dr. R. Gessain, Paris, who is in possession of records of the entire Eskimo population of the east coast of Greenland, dating back to about 1820. Biopsies from Greenland are studied histologically and ultrastructurally; immunofluorescence studies are also carried out. The electron microscopic studies are performed in collaboration with Dr. O.Fejerskov, Arhus, Denmark. Tissue culture studies are also performed.

Description provided by IARC and DKFZ with ICRDB/NCI support.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.2555,

PRENATAL EVENTS AND CHILDHOOD CANCER

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This programme uses material from established prospective studies to assess the role of prenatal events in the incidence of congenital malformations. The Oxford study was started in 1972; by December 1977 cohort of 18,000 had been assembled. The pregnancy records in this study contain information on illnesses during pregnancy and on exposure to drugs and chemicals; two or more antenatal serum samples and one postnatal sample were collected for each woman admitted to the study. The Hungarian study dates from 1975 and now consists of the records of 12,500 pregnant women. In this study antenatal specimens will also be available, in addition to the pregnancy records. The children born to women participating in either of these studies are being followed to identify those with congenital malformations or cancer. The occurrence of these diseases will be correlated with specific intrauterine exposures recorded in the pregnancy records, and the serum specimens and controls will be used appropriately.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.2556,

INCIDENCE OF COLORECTAL TUMORS

G.R. Ekelund, Malmo General Hospital, Dept. of Surgery, *S Forstadsgatan 101, S21401 Malmo, Sweden*

All cases of colo-rectal carcinoma are being collected as reported in Acta Chir Scand, Suppl. 438, 1973, 'Carcinoma of the colon and rectum in a defined population. An epidemiological, clinical and postmortem investigation of colo-rectal carcinoma and coexisting benign polyps in Malmoe, Sweden'. Special interest is however focused on metachronous colorectal carcinomas.

Description provided by IARC and DKFZ with ICRDB/NCI support.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.2557,

MORTALITY STUDY OF WORKERS IN THE CHROME PIGMENT INDUSTRY

J.M. Davies, Inst. of Cancer Research, Division of Epidemiology, *Clifton Ave., Sutton SM2 5PX, England, United Kingdom*

This is an ongoing mortality study of about 1,000 past and present workers at three English factories where lead chromate and zinc chromate pigments have been manufactured. The main purpose is to ascertain whether the workers have suffered excess mortality from respiratory cancer and the basic results have been published. Deaths from other causes are being studied, and mortality will continue to be monitored.

Description provided by IARC and DKFZ with ICRDB/NCI support.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.2558,

CANCER AND DIET

G. Hems, University of Aberdeen, Dept. of Statistics/ Community Medicine, *Aberdeen AB9 1AS, Scotland, United Kingdom*

OBJECTIVE: To determine associations between cancer rates and environmental factors, especially diet. Cancer rates are for countries, and dietary data from published national surveys.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.2559,

ANTIMONY STUDY

K.P. Duncan, Health & Safety Center, *97 Horseferry Rd., London SW1P 2DY, England, United Kingdom*

OBJECTIVE: To discover whether workers in an antimony smelting factory have excess mortality from lung cancer.

Description provided by IARC and DKFZ with ICRDB/NCI support.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.2560,

VINYL BENZENE STUDY

K.P. Duncan, Health & Safety Center, *97 Horseferry Rd., London SW1P 2DY, England, United Kingdom*

The mortality patterns of subjects exposed to vinyl benzene are being evaluated.

Description provided by IARC and DKFZ with ICRDB/NCI support.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.2561,

STUDIES ON INCIDENCE OF PRIMARY CARCINOMA OF LIVER AND PATTERN OF ITS CLINICAL AND PATHOLOGICAL BEHAVIOR

D.B. Reddy, Guntur Medical College, Dept. of Pathology, *Guntur 522004, Andhra Pradesh, India*

The frequency of liver cancer as reported from different parts of the world shows a striking difference. It has been pointed out by various studies that the incidence of this disease is high in South India. A study has been undertaken to find out the incidence of this disease in the Andhra Pradesh Area of South India and also the pattern of its clinical and pathological behavior.

Description provided by IARC and DKFZ with ICRDB/NCI support.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.2562,

EPIDEMIOLOGICAL BONE TUMOR REGISTRY FOR THE FRG

G.A. Wagner, Deutsches Krebsforschungszentrum, Institut fuer Dokumentation Information und Statistik, *Im Neuenheimer Feld 280, D6900 Heidelberg 1, Federal Republic of Germany*

The institute runs the central bone tumour registry for the Federal Republic of Germany. It includes all types of malignant and semimalignant tumours of the skeletal system. The material is intended to provide more exact data on the incidence of these tumours, and will form a basis for future aetiological research and epidemiological studies.

Description provided by IARC and DKFZ with ICRDB/NCI support.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.2563,

FOLLOW-UP OF PATIENTS TREATED WITH CYTOTOXIC CHEMOTHERAPY AS AN ADJUVANT TO SURGERY IN CARCINOMA OF THE BRONCHUS (ABBREV)

H. Stott, Medical Research Council, Tuberculosis & Chest Disease Unit, *Fulham Rd., c/o Brompton Hospital, London SW3 6HP, England, United Kingdom*

The objectives of the study were: (1) To assess the long-term survival in patients receiving busulphan, cyclophosphamide or placebo (allocated at random) as an adjuvant to surgery for carcinoma of the bronchus; (2) to identify important prognostic factors influencing survival; (3) to investigate the incidence of 'busulphan' lung by comparing in a 'blind' study the

radiographic abnormalities in patients receiving busulphan, cyclophosphamide or placebo; (4) to investigate the incidence of leukemia (or other cancers) following long-term chemotherapy with busulphan and cyclophosphamide. Over 700 patients were admitted to the study from 23 centers in Great Britain between January 1965 and January 1968. After the removal of all visible growth at operation the patients were allocated at random to receive busulphan, cyclophosphamide or placebo for 2 years. They are being followed up until their death and at present the follow-up has continued for 7-10 years and will continue indefinitely to measure leukemic risk.

Description provided by IARC and DKFZ with ICRDB/NCI support.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.2564,

POONA CANCER REGISTRY

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The purpose of this study is to obtain reliable morbidity data on cancer from a precisely defined urban area (Poona) with a population of about 1-2 million. Apart from Bombay no such study has been carried out in India before. All institutions in Poona, medical profession, hospitals and Poona municipal corporation and authorities of cantonments cooperate fully. Staff, field workers and statistical laboratory are provided. The Poona Cancer registry has continued its work since 1973. The report for the first three years will soon be published. A rural cancer registry has been started at Sirur District, Poona, Maharashtra State. Also population-based this registry covers a defined population of 43,000 persons living in 22 villages.

Description provided by IARC and DKFZ with ICRDB/NCI support.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.2565,

ASSESSMENT OF THE CARCINOGENICITY OF ISONIAZID IN PATIENTS WITH PULMONARY TUBERCULOSIS

H. Stott, Medical Research Council, Tuberculosis & Chest Disease Unit, *Fulham Rd., c/o Brompton Hospital, London SW3 6HP, England, United Kingdom*

There is evidence that isoniazid in high dosage can induce neoplasms of the lung and lymph nodes and sometimes leukaemia. This study aims to assess the carcinogenicity of isoniazid by the follow-up of nearly 4,000 adult tuberculous patients admitted to two hospitals from 1950 to 1957. Details of the dosage of isoniazid received by the patients (including the daily dosage and duration) have been reported, as well as other antituberculous drugs received, a crude estimate of exposure to ionising radiation and of the smoking history in males. Reports of deaths among the population are obtained from the Office of Population Censuses and Surveys for England and Wales (as well as from replies to routine postal questionnaires) and the mortality in these patients is compared with that expected in the general population in England and Wales of the same age, sex and occurring during the same period. The follow-up at present ranges from 16 to 23 years after entry to the study and in view of the long induction time between first exposure to a carcinogen and the development of cancer, it is being continued indefinitely.

Description provided by IARC and DKFZ with ICRDB/NCI support.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.2566,

AN INVESTIGATION INTO THE SO-CALLED PREMALIGNANT LESIONS OF THE ORAL CAVITY

C.W. Van Wyk, University of Stellenbosch, Faculty of Dentistry, Dept. of Oral Pathology, *Private Bag 11, Tygerberg 7505, Cape Province, South Africa*

The object of the study is to determine the prevalence, the anatomical distribution, the histopathology, the ultrastructure and histochemistry of the so-called premalignant oral lesions (leukoplakias) among different population groups in Cape province (Bantu, colored, white and Asian) paying due regard to habits, social circumstances and geographical distribution. Furthermore, a similar demographic study is being carried out on oral squamous carcinomas among the same people to make comparisons between the premalignant and malignant lesions possible. In addition all other oral mucosal lesions detected during the survey are recorded and their distribution plotted. Specific investigations are undertaken into the etiology of some, especially the atrophic lesions and lesions caused by viral infections.

Description provided by IARC and DKFZ with ICRDB/NCI support.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.2567,

EPIDEMIOLOGICAL STUDY OF CANCER IN THE STATE OF QUINDIO

E. Gaitan Marquez, Instituto Nacional de Cancerologia, Epidemiologia, *Apartado Aereo #17.158, Bogota, DE, Colombia*

The aim is to determine frequency and prevalence, morbidity and mortality from cancer and its distribution by age, sex and site, in a population group of about 300,000 inhabitants. All cases are followed after treatment. The programme has been running for nine years and is scheduled to last ten years. A preliminary report has been issued and the final report will be published next year.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.2568,

GENETICS OF RETINOBLASTOMA

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It is now recognized that bilateral retinoblastoma is a condition with dominant autosomal transmission and complete penetrance, but the mode of transmission of the unilateral form is not yet clear. This study aims at monitoring 600 families that have been registered through at least one proband and examining the offspring of patients during the next generation.

Description provided by IARC and DKFZ with ICRDB/NCI support.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.2569,

DIFFERENTIAL MORTALITY PATTERNS BETWEEN NATIVE-BORN AUSTRALIANS AND MIGRANTS

M.G. McCall, University of Western Australia, Queen Elizabeth II Medical Centre, Dept. of Medicine, *Nedlands, W. Australia 6009, Australia*

The initial data were published following the 1966 census. The cooperation of the Commonwealth Bureau of Statistics has been obtained to continue the study and data on all deaths in Australia (1962-1971) have been collated. 1971 was the last year for which census data are available and denominators for twenty-four migrant groups with seven periods of residence have been computed. Provision has been made for the inclusion of 1976 data when they become available. The difficulty caused by the change to the ICD 8th Revision classification has been resolved and a numerator file for any given disease is available. From this, standardized mortality ratios for a wider range of malignancies and population groups can be computed and several publications are being prepared.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.2570,

THEORY OF COMPETING RISKS OF DEATH IN CANCER EPIDEMIOLOGY

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The objective of the study is to develop and validate methods for eliminating the confounding effects of competing risks of death when estimating mortality rates from cancer registry material.

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3.2571,

LUNG CANCER IN ICELAND (1931-1972)

H. Thorarinsson, Haskola Islands, Landspitalinn, Surgical Department, *Baronsstigur, Reykjavik, Iceland*

This report is a survey of lung cancer in Iceland during the period from 1931 to 1972. The age, sex and geographical distribution are recorded and a comparison made between smoking habits and histologic types of carcinoma. The operability rate and the resectability rate versus histological types as well as the immediate surgical results and five-year survival, are discussed.

The National Cancer Registry was established in 1955 and since then all the cases have come from this institution's files as well as from the files of various hospitals throughout the country. All cases of lung carcinoma diagnosed clinically and verified histologically from 1931 to 1954 were also reviewed and summarized.

The hospital records of all the patients were studied and the macroscopic descriptions of the surgically resected lungs and necropsies were reviewed. All available microscopic slides have been re-examined by one pathologist and the tumors classified histologically. Tho WHO classification has been adhered to. The surgical files and necropsy protocols of the Department of Pathology of the University of Iceland cover all the pathologic-anatomic examinations in the country from the beginning.

Lung cancer in Iceland: The incidence of carcinoma of the lung has increased over the last two decades, and there is a definite correlation with the increased sale of cigarettes, which occurred some twenty years earlier. Tobacco consumption by Icelanders increased more than a hundred-fold during the years 1910-1949. In the period 1931-1954 only 34 cases of lung cancer were recorded, whereas during the periods 1955-1964 and 1965-1972 156 and 224 cases were reported, respectively. There is a preponderance of large cell and small cell anaplastic carcinomas in this series, epidermoid carcinoma comprising only about 20 percent. Smoking habits are known for 75 percent of the patients admitted to the Department of Thoracic Surgery: 90 percent of the patients with epidermoid carcinoma had been heavy smokers (29 or more cigarettes a day) for ten or more years; 80 percent over twenty years. The corresponding figures for the other histological types are: small cell anaplastic carcinoma 77 percent; 70 percent over twenty years; adenocarcinoma 36 percent; large cell carcinoma 69 percent; 64 percent over twenty years. (Text Abridged.)

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.2572,

RESEARCH INTO OCCULT CARCINOMA OF THE THYROID GLAND IN AUTOPSY MATERIAL AND SURGICAL SPECIMENS

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PROGRESS: Material from over 400 autopsies has been reviewed. Our incidence has increased above the previously reported 2.7 percent, while neither exceeding the limits reported in the literature nor approaching the incidence in high risk areas (Hiroshima, etc.).

We are conducting a critical study of the last 100 thyroid specimens obtained at autopsy, in which we have included all suspect areas. So far we have found one tumor in addition to the 4 others that were previously diagnosed in that group.

Regarding surgical specimens, we are placing special emphasis on hyperplastic goiter treated with antithyroidal agents. We believe that there may exist a relationship between occult tumors and medications (propylthiouracil) when used indiscriminately or irregularly by the patient. This may occur as a result of the personality of the thyroid patient (hyperthyroid) who may be in a state of emotional crisis and may change physicians and hospitals frequently. Such changes favor variation in therapeutic schedules which may have catastrophic results in addition to resulting in errors in treatment.

In this fashion excessive and cumulative medication schemes may occur, which may in turn cause hyperplasia, changes in cellular behavior, and finally, occult carcinoma. We have had occasion to document this phenomenon in a case of functional goiter with atypical epithelium which developed into a malignant lesion after super-dosages.

Such treatment schemes actually represent in vivo experimentation in human beings.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.2573,

ETIOLOGICAL FACTORS IN BREAST CANCER

H.K. Akoguz, Ankara Oncology Hospital, Dept. of Surgery, *Imrahor Caddesi, Incesu, Ankara, Turkey*

In our country 27.70 percent of female cancers are breast carcinomas (statistics of our hospital). This study aims to establish the relationship of breast carcinoma to age, marriage, and fertility.

Description provided by IARC and DKFZ with ICRDB/NCI support.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.2574,

EPIDEMIOLOGICAL STUDIES OF HODGKIN'S DISEASE

J.H. Abramson, Hebrew University of Jerusalem, Hadassah Medical School, Dept. of Social Medicine, *P.O. Box 1172, Jerusalem 91000, Israel*

This study is part of a multidisciplinary study of Hodgkin's disease in Israel. The epidemiological studies include studies of mortality, incidence, survival, clustering among social contacts, clustering in space and time, correlates of the disease (based on case control comparisons), HL-A and virus antibody studies of cases and controls, and serological studies of population groups.

Description provided by IARC and DKFZ with ICRDB/NCI support.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.2575,

STUDIES ON FAMILIAL GASTROINTESTINAL POLYPOSIS IN JAPAN

J. Utsunomiya, Tokyo Medical & Dental University, School of Medicine, Dept. of Surgery, *1-Chome, Yushima, Bunkyo-Ku, Tokyo 113, Tokyo, Japan*

The objective of this study is to ascertain and register family members of patients with gastrointestinal polyposis in Japan in order to control this disease and to provide information for the genetic study on cancer. Information on the subjects was collected through inquiry, from literature, autopsy records and voluntary visits; pedigrees constructed by means of reviewing the official family register record (Koseki) and the presence of polyposes among relatives was ascertained by consulting the death certificate or by communicating with family members. Currently, 427 families suffering from familial polyposis coli (FPC) including Gardner Syndrome, 127 of Peutz-Jeghers Syndrome, 193 of multiple polyps and 65 of familial colon cancer with or without polyps are registered. A survey has been completed on 306 families of FPC and based on these materials, comprehensive studies are under way including clinicopathological studies of associated changes, genetic epidemiological analysis, cytogenetic study, genetic marker study and others.

Description provided by IARC and DKFZ with ICRDB/NCI support.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.2576,

A BREAST REGISTRY IN NORTHERN ALBERTA WITH RESEARCH AND CLINICAL APPLICATIONS

P.E. Burns, Dr. W.W. Cross Cancer Inst., Dept. of Radiation Oncology, *11560 University Ave., Edmonton, Alberta, Canada* T6G 1Z2

A breast registry has been created, in northern Alberta, to study the etiology, epidemiology, diagnosis, treatment, and patient survival of malignant and benign breast disease. Approximately 500 patients (30% of the total number) with benign breast disease and 250 patients (90% of the total) with breast cancer attend the new breast clinic at the Cross Cancer Inst. each year and extensive information is obtained for the breast registry. Data from this registry are used to examine diagnostic accuracy and the effect of delay in diagnosis; to study incidence trends; to examine etiological factors including prognostic factors and treatment methods and to determine those factors related to breast cancer patient survival. Similar aspects of benign breast disease are currently being examined.

Description provided by IARC and DKFZ with ICRDB/NCI support.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.2577,

FOLLOW-UP ON RADIUM LUMINIZERS

J. Vennart, Medical Research Council, Radiobiology Unit, *Harwell, Didcot, Oxfordshire OX11 ORD, England, United Kingdom*

There are two groups of luminizers, some with a record of body content of radium determined some years ago, and some without this measurement. Mortality data are being collected through national registration system.

Description provided by IARC and DKFZ with ICRDB/NCI support.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.2578,

LONG-TERM FOLLOW-UP OF PATIENTS EXPOSED TO THOROTRAST

K.E. Buckton, Western General Hospital, *Crewe Rd., Edinburgh EH4 2XU, Scotland, United Kingdom*

The aims are to assess morbidity and mortality from the isotope, and to study cytogenetic and hematological sequelae.

Description provided by IARC and DKFZ with ICRDB/NCI support.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.2579,

CANCER STATISTICS

W.P. Logan, (No Performing Organization Reported), *Switzerland*

A series of descriptive studies are being undertaken on international patterns and trends. The relative importance of cancer compared to other diseases, the probability of developing cancer, and methods of standardization are being examined and comparability of data assessed prior to making international comparisons of the relationships of mortality, morbidity and survival.

Description provided by IARC and DKFZ with ICRDB/NCI support.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.2580,

CANCER MORTALITY IN CALI, COLOMBIA

G. Llanos, Universidad del Valle, Dept. of Social Medicine, *Apartado Aereo 2188, Cali, Colombia*

The aims are: (1) to determine the proportion of cancer deaths in the general mortality in Cali; (2) analyze the trends of cancer mortality in Cali, Colombia; (3) compare cancer mortality and morbidity trends; (4) begin survival studies; (5) assess quality of death certificates. A paper will be published in 1981.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.2581,

PROGNOSIS IN BRONCHIAL CARCINOMA IN A LIMITED GEOGRAPHICAL AREA IN FINLAND

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The true or overall prognosis quoad vitam of patients with bronchial carcinoma is difficult to assess in clinical materials, these usually being selected in one way or another. In this study, all cases of bronchial carcinoma from 1968 to 1971 have been collected from a limited geographical area. The patients are being followed up to determine the prognosis and to see which factors are associated with a good, and which with a poor prognosis. Special attention has been paid to the histopathology of the tumours which have been classified as suggested by a WHO committee. The study is prospective and the number of patients is about 441. Factors that will be analyzed, among others, include symptoms, smoking habits, previous radiological findings before diagnosis, site of tumour, findings at bronchoscopy and mediastinoscopy, and various biochemical characteristics. The TNM classification (as suggested in 1966) will be used.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.2582,

ETIOLOGICAL FACTORS IN SKIN CARCINOMA

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According to our statistics, skin carcinoma is the most common cancer in Turkey in both sexes: 25 percent of male cancers and 27.24 percent of female cancers. This study aims to analyse the relationship between occupation and skin carcinomas.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.2583,

CANCER REGISTRY COVERING MEMBERS OF SOCIAL SECURITY SYSTEM

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A cancer registry was initiated in the Social Security Inst. in Medellim in 1972. Efforts were made to register all cases of cancer diagnosed for the first time since January 1, 1968. The objectives of this cancer registry covering a selected population are: (1) to obtain data on incidence and mortality from cancer; (2) to undertake analytical studies to determine the associations of risk factors to specific types of cancer in groups with defined occupations and other socioeconomic characteristics.

Description provided by IARC and DKFZ with ICRDB/NCI support.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.2584,

CANCER MORTALITY IN SWITZERLAND BY SITE, 1969 - 1972

R.F. Gass, Universitat Bern, Dept. of Social & Preventive Medicine, *Waldheimstrasse 18, 3012 Bern, Switzerland*

The purpose of this project is to identify variables associated with high or low mortality from cancer of different sites, based on the age-adjusted rates in the 25 cantons and 183 districts of Switzerland. The analysis is based on all deaths having occurred in Switzerland from 1969 through 1972, and on the population figures from the census of December 1970. A computer program has been prepared, testing for homogeneity, linearity, normality and mortality ratios, and for their statistical significance. Demographic, socioeconomic and environmental factors are examined by multiple regression analysis. Cancers of the stomach, oesophagus and breast are of primary interest. The results permit formulation and specification of hypotheses which will require further testing.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.2585,

LEUKEMIA AND LYMPHOMA IN NAGPUR

S.V. Grover, Government Medical College, Dept. of Pathology, *Ajni, Nagpur, India*

The objective of this study is to assces the prevalence of leukemia and lympho-reticular malignancies in Nagpur. Acute and chronic myeloid leukemia are more frequent in comparison to occidental series. The pattern of Hodgkin's disease and non-Hodgkin lymphomas is also different, especially in old age. Immune-status and types of concomitant infection are being studied.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.2586,

RISK OF CERVICAL CANCER AFTER A MASS SCREENING PROGRAM

M.K. Hakama, Tampere Yliopisto, Dept. of Public Health, *Vuolteenkatu 11, 33100 Tampere 10, Finland*

Mortality and incidence before and after a large-scale mass screening campaign are evaluated by specific risk indicators, and transition probabilities in the natural history of cervical cancer are estimated.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.2587,

A PROSPECTIVE STUDY OF FECAL STEROIDS AND BACTERIA IN NORMAL PERSONS WHO DEVELOP CANCER OF THE LARGE BOWEL, BREAST AND ENDOMETRIUM

M.J. Hill, Central Public Health Lab., Bacterial Metabolism Research Laboratory, *Colindale Ave., London NW9 5DX, England, United Kingdom*

In a preliminary retrospective case-control study (Lancet, 1:535, 1975) it was shown that the combination of a high fecal bile acid concentration and the presence of certain clostridia in the faeces characterised large bowel cancer patients. The value of this combination in discriminating between large bowel cancer patients and controls will be tested prospectively in 10,000 persons aged 45-75. Other cancers will be added if the retrospective studies in hand indicate that it would be worthwhile.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.2588,

SELECTION AND FOLLOW-UP OF HIGH-RISK GROUPS FOR BREAST CANCER IN THE ESTONIAN S.S.R.

E. Hint, Ministry of Health of the Estonian SSR, Inst. Eksper. i Klin. Medit., Dept. of Clinical Oncology, *42 Hiiu St., Tallinn 200016, Estonian S S R, Union of Soviet Soc. Republics*

Epidemiological information about risk factors for breast cancer has been obtained from 15,000 women using a special punch card. Two main groups are being followed. The first group (7,500) has been screeened by clinical examination of the breast. If disease was suspected and confirmed, conservative or surgical treatment was given and this entire group will in future have regular breast examination, lesions being treated as they are found. The second group (7,500) consists of women for whom only the epidemiological information has been collected. These women will be offered treatment on request as for the general population. On the basis of data from the Cancer Registry, the incidence of breast cancer in the general population and in both the above groups will be compared. The significance of various risk factors and genetic variables in particular and the effect of screening program will be evaluated. Taking into consideration the risk factors of most importance, a new study will be projected.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.2589,

LONG-TERM CANCER MORTALITY TRENDS AMONG KRAKOW INHABITANTS IN RELATION TO DEMOGRAPHY AND ENVIRONMENT

W. Jedrychowski, Akademia Medyczna w Krakowie, Inst. of Social Medicine, Dept. of Epidemiology, *Ul. Kopernika 7, 31034 Cracow, Poland*

The spatial analysis of mortality due to malignant neoplasms in the population of Cracow will cover the ten-year period 1974-1984. The city of Cracow has over half a million inhabitants and its four districts differ in regard to degree of air pollution, smoking habits, fertility and other social and environmental factors. The aim of the study is to make a comparison between data on mortality from malignant neoplasms in the four districts. Death certificates taken from the statistical office on a monthly basis have been used in the analysis of malignant neoplasms. Cancer mortality data are analyzed according to sex, place of residence and primary site. Age-specific and age-adjusted rates are computed for the total population and for each district. So far, data covering the years 1974-1978 have been collected and are currently being analyzed. The pilot study done for the year 1974 has shown that the most frequent causes of death in Cracow by sex were lung carcinoma in men and breast carcinoma in women. The highest age-adjusted rates were in the city center where the fertility rate was low and the level of atmospheric pollution, tobacco consumption and the proportion of working-class population appeared to be high.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.2590,

MORTALITY OF BRITISH COKE-OVEN WORKERS

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The objective of this investigation is to estimate death rates from cancers in general and lung cancer in particular among British coke-oven workers. A cohort of men employed in 1967 at industrial establishments involving coking operations is being studied. Men involved are or were employees of the British Steel Corporation or of a subsidiary of the National Coal Board. Analysis of a nine-year follow-up period suggests an occupationally related lung cancer hazard at some works, and that this hazard is considerably smaller than that reported among American coke workers. The study continues.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.2591,

INSTITUTE OF PETROLEUM EPIDEMIOLOGICAL SURVEY

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The aim is to monitor background data in order to quantify the overall level of morbidity and mortality and examine the variation from disease in relation to broad categories of work or 'environment'. Some twenty companies in the oil industry have agreed to fund an epidemiological study through the Institute of Petroleum. Present plans are to collect data from eight refineries (three Shell, three BP, one Esso, and one Mobil); details are required about men who have been employed for at least a year from 1950 to 1975, including those who have left the industry, retired, or died. The analysis will examine mortality rates by cause (taking age, location, and type of work into account). Comparisons will be made between men doing different work within refineries, and with the mortality data for men in other industries in the same region as each refinery and in the country as a whole. Such a study can quantify the general mortality (and thus indirectly the overall level of health in the industry). Examination of material on individual diseases may identify specific issues that warrant detailed study. This study is now being extended to workers at various distribution centers for refinery products and maintenance staff at London Transport garages.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.2592,

ANALYSIS OF URINES FOR NITROSAMINES FROM PATIENTS WITH BILHARZIASIS

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There is a high bladder cancer incidence in Egypt, in areas irrigated by canals from the Nile, and it is always linked with endemic bilharziasis. Bilharzial patients also frequently have chronic intractable bacterial infections of the urinary bladder. Many bacteria are capable of reducing nitrate to nitrite, and then nitrosating secondary and tertiary amines to nitrosamines. Secondary amines are normally in human urine. I have suggested, therefore, that nitrosamines could be a factor in the incidence of bladder cancer in Egypt, and if it is so, the bilharziasis is a co-factor, rather than a direct carcinogen. A pilot study has been undertaken with the collaboration of IARC, in which urines from bilharzia infested patients in Cairo and surrounding districts were analyzed by gas chromatography and mass spectrometry. Many of these patients had significantly higher levels of several nitrosamine species in their urines than did uninfested Egyptian and European individuals. For comparison, urines of European patients with chronic bacterial infections of the urinary tract were analyzed in the same way. This investigation will now be extended to other areas where bilharziasis is endemic.

Description provided by IARC and DKFZ with ICRDB/NCI support.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.2593,

CANCER AND AGING

T. Berge, Malmo General Hospital, Dept. of Pathology, *S Forstadsgatan 101, S21401 Malmo, Sweden*

To study the connection, if any, between cancer and age by means of a large autopsy material from a defined population.

Description provided by IARC and DKFZ with ICRDB/NCI support.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.2594,

MULTIPLE PRIMARY MALIGNANT TUMORS

T. Berge, Malmo General Hospital, Dept. of Pathology, *S Forstadsgatan 101, S21401 Malmo, Sweden*

To study frequencies and possible relationships between different types of malignant primary tumors in an autopsy material from a defined population. The study will comprise the years 1958-1975.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.2595,

GENETIC ASPECTS IN RELATION TO CANCER

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Indian society is divided into a large number of religious and linguistic communities, many of which are further subdivided into endogamous groups (castes and sub-castes). These groups not only differ in food habits, customs etc., but also restrict marriages within a group, leading to great differences in their gene pools. While some of these groups prohibit marriages between persons related up to three or four generations, some other groups have probably the highest levels of inbreeding in the world. Patients from all parts of India attend the Tata Memorial Hospital. Information collected from these patients will be used to build up cancer profiles of the endogenous groups to see whether these differ in a manner not explained by their habits and customs. Information on close consanguinity is also collected to assess the effects of inbreeding. Patients diagnosed as not suffering from cancer will be used as controls. Information on about 3,700 cancer cases and 2,300 non-cancer cases collected during 1975-1977 was analysed. Considering 42 site combinations and 12 community groups, for the few sites which had at least 100 cases, it has been found that differences in cancer profiles for the community groups can only partly be explained by differences in smoking and chewing habits which are known to be the major risk factors for these sites. No effects of inbreeding have been found. Detailed exploration of the question would require more extensive data and collection of data is continuing.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.2596,

LONGITUDINAL STUDIES IN ORAL LEUKOPLAKIA

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670 patients with oral leukoplakia have been under continuous control over a period from 1-30 years, with a mean observation period of 9.8 years. The points studied are: the frequency of malignant transformation, the distribution according to age, sex, localization and smoking habits, possible etiological factors and the conditions favoring malignant transformation. In the histological material of the same leukoplakia patients the frequency of histological dysplasia and cancer as well as the ultrastructural characteristics by transmission and scanning electronmicroscopy are studied in correlation with the clinical types of leukoplakia. The patients with oral leukoplakia come from the Clinic of Maxillo-Facial Surgery and Clinic of Conservative Dentistry, Semmelweis Medical University, Budapest. Part of the results has been published. (J. Maxillofac. Surg. 5(1), 69-75, 1977, J. Oral Path. 9, 41-53, 145-154, 1980).

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3.2597,

SILICOSIS AND LUNG CANCER

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Lung cancer is equally common in men and women in North Thailand.

Our objectives are to study the relationship of lung neoplasms to silicosis and to the histological cell types of these tumors. The surgical and post-mortem histological material will be examined by using the polarizing microscope.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.2598,

CORRELATIONS BETWEEN MORPHOLOGY AND EPIDEMIOLOGY OF BREAST CANCER

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Within a clearly defined area and population (four Swedish counties) 181 breast cancer cases occurred during five months. Epidemiological and morphological data were obtained from 179 of these patients and from 179 exactly age-matched population controls. The tumors were characterized by computerized cytometry of the tumor cell population and by conventional morphology, resulting in an objective atypia measure. Comparison between patients and controls showed no significant differences in age at menarche, age at first birth, age at menopause, number of children, height, obesity, or frequency of diabetes or hypertension. These results differ from most earlier reports, possibly because the controls here were selected from the whole female population instead of hospitalized patients. Breast cancer in the family and prior breast disease in the study persons were significantly higher in the patient group. Data on thyroid hormone levels suggested that altered thyroid function in the patients was probably due to a change in the peripheral conversion of thyroxin. The patients had higher serum concentrations of estrone, androstenedione and testosterone, and a lower level of sex-hormone-binding globulin. No obvious differences in the epidemiological characteristics could be discerned among different conventional morphological subgroups. The computerized cytometry value was positively correlated with biological parameters such as mitotic rate and had significantly better reproducibility than subjective systems for classification or grading. The patients have been followed up for the first thousand days post-mastectomy. A 'malignancy grade' for breast carcinomas has been developed based on image analysis and pattern recognitions. Patients with tumors over the mean value had 39% recurrences within the first thousand days of observation, patients with tumors below this mean value - 0%. This 'high-risk' index for the first thousand days of follow-up was superior to others.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.2599,

ROYAL NAVAL DOCKYARDS ASBESTOSIS STUDY - MORTALITY PROJECT

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The 6,292 men working in the Royal Naval Dockyards on Jan. 1, 1947 were followed up to the end of 1978. About 4 percent of all deaths could be related to exposure to asbestos and over half of these were mesothelioma deaths. The mortality of this group will continue to be studied because of the possible increase in the mesothelioma rate as the period since first employment in the Dockyard passes 40 years. The 40,000 men working in all four Royal Naval Dockyards in 1972/73 are also being followed to relate their mortality, including from lung cancer and mesothelioma, to history of asbestos exposure and smoking habits.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.2600,

STUDY OF EPIDEMIOLOGY, SOCIOLOGY AND GENESIS OF UTERINE CERVICAL CANCER

J.E. MacGregor, University of Aberdeen, *Aberdeen AB9 1AS, Scotland, United Kingdom*

The northeast area of Scotland is an ideal area for epidemiological studies being centred round one main city, Aberdeen. It is possible to identify individual women screened no matter how many cervical smears they have, how many different clinics they attend or how often they move within the area. Already a very high percentage of women in the region have had one or more cervical smears. A fall in the incidence of the disease has occurred and is continuing. A marked fall in mortality rates has occurred. There have been no deaths of women under 35 years of age since 1973 during which time the death rates in England and Wales were rising. Studies continue, with special emphasis on the genesis of this disease in young women.

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3.2601,

FIBER EXPOSURE, MORTALITY AND RADIOGRAPHIC CHANGES IN QUEBEC CHRYSOTILE PRODUCTION INDUSTRY

J.C. McDonald, University of London, London School of Hygiene & Tropical Medicine, T.U.C. Centenary Inst. of Occupational Health, *Keppel St., London WC1E 7HT, England, United Kingdom*

OBJECTIVES: (1) With exposure expressed in terms of fibers per ml, averaged over time, and account taken of date of birth, age first employed, duration of employment and smoking habits to determine whether exposure discriminates between (a) men who died from selected causes and others who survived to the same ages; (b) various types of radiological outcome in men aged 45-64, employed 30 years or more. If either is so, the relative risks associated with increasing average fiber concentrations will be eliminated. (2) To determine whether and in what way the subsequent experience of chrysotile asbestos workers is related to the presence or absence in past records of (a) changes observed in routine chest x-rays taken at work, (b) impaired pulmonary function and (c) respiratory symptoms. (3) (a) To determine whether there is any important difference in the chest x-ray appearances by rate and type of change between men without other occupational dust exposure who were employed at least 10 years wholly in companies mining slip fiber or in companies mining cross fiber; (b) to describe quantitatively and qualitatively the dust and fibre exposure experienced by both groups of men.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.2602,

OBLIGATORY COLLECTION OF DATA ON LUNG CANCER

I. Nyarady, Koranyi National Inst. for Tuberculosis & Pulmonology, Dept. of Organisation Methodology & Statistics, *1529 Budapest 124, Hungary*

OBJECTIVE: Study of long-term effects of a nationwide case-finding, notification and care-system on lung cancer epidemiology.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.2603,

CONTINUING RETROSPECTIVE STUDY OF ALL CASES OF MESOTHELIOMA IN NORTHERN IRELAND TO DETERMINE THEIR SOURCE OF ASBESTOS EXPOSURE

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The objective of this study is to detect sources of asbestos exposure in the community which are sufficient to cause mesothelioma, in order to determine whether preventive measures applied to recognized sources of exposure are sufficient. Arrangements are made for all cases of mesothelioma to be reported to the investigators as soon as possible so as to obtain pathological material for examination after death.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.2604,

NATIONAL SURVEY OF CHILDHOOD CANCERS

L.M. Kinnier Wilson, National Survey of Childhood Cancers, Cancer Epidemiology Research Unit, *c/o Queen Elizabeth Med. Ctr., Birmingham B15 2TH, England, United Kingdom* (00858)

This long-standing retrospective survey was originally started in Oxford by Dr. A. Stewart in 1953 to study the etiology of childhood cancers. It consists of interviews with the parents of children under 16 dying of cancer or leukemia in the United Kingdom and with parents of control children matched for age, sex and district; antenatal information is confirmed by application to clinics and doctors, and the case child's medical history is followed up through general practitioner and hospital notes. Surviving children have similarly been interviewed and followed up since 1962 by means of the regional cancer registries. In the past extensive studies have been made of the relation of obstetric low-level radiation to the increased risk of the child later developing neoplasia. The effect of viral diseases during pregnancy has also been found to increase the risk, but less convincingly. Present projects include: (1) A study of the effects of the use of drugs and ultrasound during pregnancy, and of the possible relationship of these agents in the etiology of childhood cancers; (2) A study of parental occupations and their possible relationship to the etiology of childhood cancers; (3) A study of congenital defects found in children who later develop cancer or leukemia, and congenital defects in their siblings, together with a similar study of defects in matched control children and their siblings; (4) A study of second primary tumors occurring in children after cure of their initial cancer with special attention to the effect of radiation and genetics; (5) A study of cancers among siblings.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.2605,

QUANTITATIVE AND STATISTICAL PROBLEMS IN CANCER EPIDEMIOLOGY

T.D. Sterling, Simon Fraser University, School of Interdisciplinary Studies, *Burnaby, British Columbia, Canada*

Evaluation of antecedents of cancer presents complex problems of design and data evaluation. Age, sex, occupation, social class and other variables interact in complex ways. Our attempt is to re-evaluate the flaws of previous studies on antecedents of cancer in order to develop better methods for study design and data analysis.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.2606,

MALIGNANT TUMORS AS CAUSES OF DEATH OF FORMER ATHLETES

L. Schmid, Universitat Karlova, Inst. of Sport Medicine, *Salmovska 5, Prague 2, 12000, Czechoslovakia*

The incidence of malignant tumors in athletes has been the subject of serveral of our earlier studies. Mortality from cancer is being compared with causes of death in males of other populations.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.2607,

GEOGRAPHICAL PATHOLOGY OF CANCER IN BANGLADESH

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The relative frequency of different types of cancer in different areas (Districts) is being studied with the help of cancer registries designed by the Cancer Epidemiology Research Project.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.2608,

LYMPHOPROLIFERATIVE AND MYELOPROLIFERATIVE DISORDERS IN TASMANIA

J.N. Lickiss, University of Tasmania, Clinical School, Dept. of Community Health, *43 Collins St., Hobart, Tasmania 7000, Australia*

Study of lymphoproliferative and myeloproliferative disorders in Tasmania (population 400,000) with detailed case study including familial and lifetime residential and occupational data. A case control study is underway. The epidemiological study is linked with laboratory studies: B and T cell typing, HL-A and D locus typing are being undertaken when feasible.

Description provided by IARC and DKFZ with ICRDB/NCI support.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.2609,

HODGKIN'S DISEASE IN WESTERN AUSTRALIA WITH SPECIAL REFERENCE TO CONTACT BETWEEN PATIENTS WITH THE DISEASE

M.L. Matthews, Cancer Council of Western Australia, Leukaemia & Allied Disorders Registry, *184 St. Georges Terr., Shenton Park, Perth, W. Australia 6000, Australia*

Previous studies have suggested that Hodgkin's disease occurs more frequently in individuals who have had contact with patients with Hodgkin's disease than in those who have not. These studies have been designed to test this hypothesis. Patients with Hodgkin's disease have been notified to the Leukemia and Allied Disorders Registry in Western Australia since 1959. Data on these patients are being used to study space - time clustering of Hodgkin's disease and the coincident occurrence of this disease in pupils and teachers at schools in Western Australia. 108 patients with Hodgkin's disease registered since 1964 and surviving to June 1976 have been matched by sex, age and area of residence with members of the general population of Western Australia. Patients and controls have been interviewed to uncover evidence of contact. Data on relatives and close associates of Hodgkin's disease patients have been collected also to determine whether any of them have developed a lymphoproliferative or myeloproliferative disorder. Data are now being analyzed.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.2610,

EPIDEMIOLOGY OF LEUKEMIA AND ALLIED DISORDERS IN WESTERN AUSTRALIA

L.E. Dougan, Cancer Council of Western Australia, Leukaemia & Allied Disorders Registry, *184 St. Georges Terr., Shenton Park, Perth, W. Australia 6000, Australia*

Patients have been notified to the Leukemia and Allied Disorders Registry in Western Australia since 1959. Further registrations were made by search of hospital morbidity indices, pathology and hematology department records and death certificate scrutiny. For patients prevalent in the period 1960 to 1969 the diagnoses were confirmed or otherwise determined by a diagnostic group of pathologists and hematologists after review of clinical and pathological material. Epidemiological and clinical data have been collected for those patients with confirmed diagnoses and incidence and mortality rates have been calculated by sex, age and geographical area. Other data collected include irradiation exposure, drug ingestion, past medical history, family history, occupation, domicile, birth order, family size, parental ages, presence of other malignancy or congenital malformations, autopsy findings and death certification. Follow-up study is continuing in order to complete survival figures and data on the development of other malignancies. Since 1969 the registration of patients has continued but diagnoses are accepted without confirmation by the diagnostic group and less detailed epidemiological information is recorded. Copies of tabulations from the 1960-1969 survey are available on request.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.2611,

GYNECOLOGICAL CANCER IN WESTERN AUSTRALIA WITH SPECIAL REFERENCE TO ROLE OF EXOGENOUS AND ENDOGENOUS ESTROGENS IN ENDOMETRIAL CANCER

B.K. Armstrong, University of Western Australia, Dept. of Medicine, *Nedlands, W. Australia 6009, Australia*

The study will describe trends in mortality from gynecological cancer in Western Australia between 1930 and 1974 and incidence data collected by cancer registration between 1971 and 1974. The latter data will permit study by area of residence, occupation, race and country of birth. A retrospective case-control study of the role of estrogen therapy with mainly ethinyl estradiol in the etiology of endometrial cancer is being undertaken and will include about 200 cases and 200 controls. Data on estrogen receptors, and plasma and urinary estrogen have been collected already on over 50 patients with endometrial cancer. Data will be collected also for appropriately matched controls and related to physical characteristics, obesity, diet and other factors.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.2612,

INCIDENCE OF CHRONIC DISEASE AND UTILIZATION OF HEALTH SERVICES BY MIGRANTS TO WESTERN AUSTRALIA

B.K. Armstrong, University of Western Australia, Dept. of Medicine, *Nedlands, W. Australia 6009, Australia*

The statutory collection of demographic and medical information on patients discharged from all hospitals in Western Australia renders possible the study of the incidence of chronic diseases which normally require hospitalization. Preliminary analyses have shown excesses of hospital admissions for gall bladder disease, acute pancreatitis, inflammatory bowel disease, lung cancer and chronic renal disease. These and other conditions are being studied in detail to ascertain whether true differences in incidence exist among migrants or whether the excesses observed are due to differential utilization of health services.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.2613,

RELATIONSHIPS BETWEEN HAPTOGLOBIN PHENOTYPE AND LUNG CONDITIONS (MAINLY CANCER)

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In individuals with primary bronchial cancer the frequency of Hp2 gene is 0.29. In the Marseille population it is 0.39. A study is being carried out to explain these differences. Known causal agents such as tobacco are taken into account. Haptoglobin types, acid mucopolysaccharides and fingerprints will be examined in 100 patients with primary lung cancer and in 100 controls with other varied respiratory conditions to determine whether there are significant differences between the two groups.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.2614,

CANCER RISK IN VEGETARIANS

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Animal experiments have shown many nitrosamines to be carcinogenic. Nitrosamine precursors in human food and vegetables have been investigated and high concentrations in certan vegetables point to the possibility of a higher risk of cancer in persons consuming particular types of greens. Analytical studies together with a mortality survey of a cohort of vegetarians are being undertaken to investigate a postulated relationship between cancer incidence and dietary habits. Depending on the result of the mortality study a prospective morbidity survey will be considered and form the basis of a case-control study. Comparison groups will be comprised of individuals having chosen a so-called 'reformed' lifestyle (i.e. preference of a natural diet, but not exclusively vegetarian) and mortality rates for both study and comparison groups will be compared with those for the general population.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.2615,

EPIDEMIOLOGY AND CLUSTERS OF TUMORS IN CHILDHOOD, FREQUENCY AND GEOGRAPHICAL DISTRIBUTION

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OBJECTIVES: In 1960-1968, 104 cases of childhood leukemia were observed in South Moravia. A significant clustering in space (0-12 km distance) and time (0-1, 0-2 years) was found (Blut, 21, 180-185, 1970). We intend to continue this study as these population groups, which could be regarded as genetic isolates, are very suitable for comparative studies of genetic factors. The main object of the study will be: (1) To register all cases of childhood leukemia from 1969 onwards; (2) to compare the previous (1960-1968) and the new (1969-1980) results; (3) to study the families with malignancy genealogically; and (4) to study the influence of environmental factors on the incidence of leukemia, if any.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.2616,

CAIRO METROPOLITAN AREA CANCER REGISTRY

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The objective of this registry is to define the magnitude of the cancer problem in the Metropolitan Cairo Area and define the relative frequency of different cancers by sex and in different age groups as well as examining on sound statistical grounds the possible relationships between certain types of cancer and prevalent diseases or habits, e.g. bilharziosis, malaria, nutritional disorders and male circumcision.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.2617,

STUDIES AIMED TOWARDS FACILITATING LESS HARMFUL SMOKING HABITS

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Cigarette smoking is known to represent one of the main risk factors for lung cancer, and is also important in the aetiology of a number of other diseases. The objectives of the present study include: (1) the study of regional variations of various smoking-related and other diseases; (2) the undertaking of various surveys and the analyses of survey data, both in school age and in adult populations to estimate the prevalence of smoking habits in Canadian populations; (3) the study of individual smokers to determine their ability to adjust to a less hazardous cigarette (i.e., one delivering less tar, nicotine and carbon monoxide); (4) the analysis of cigarette consumption and sales data to estimate the effect of price on consumption, and to study the relationship between advertising, sales, and tar content for Canadian cigarettes; and (6) the collection of autopsy material from smokers and non-smokers, in order to investigate differences in trace-metal levels between smokers and non-smokers (particularly for cadmium and lead), and to evaluate the importance of cadmium and lead in human disease processes.

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3.2618,

OCCUPATIONALLY RELATED CANCER

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Employment records for a 10% sample of the Canadian Labour Force from 1965 to 1968, and for a

(different) 5% sample for 1969 to 1971 (a total of about 600,000 individuals) are being linked, using computer techniques, to the national mortality and cancer incidence data bases maintained by Statistics Canada. The objective is to determine mortality from all causes and cancer morbidity for the various occupations and industries represented in the cohort.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.2619,

REGISTRATION OF CANCERS OF THE DIGESTIVE SYSTEM IN BURGUNDY

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This cancer registry has several goals: (1) Collect all available information concerning benign and malignant tumours of the digestive system occurring among residents of the department of Cote d'Or and to submit this to epidemiological statistical analysis, (2) estimate the cost of diagnosis and treatment of cancers of the digestive system in the future, (3) determine survival time for each tumour type bearing in mind all influencing factors and, (4) identify groups at risk in order to aid early detection and to indicate dietary factors which might predispose to certain cancers of the digestive system.

Description provided by IARC and DKFZ with ICRDB/NCI support.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.2620,

ETIOLOGY AND PREVENTION OF ORAL LEUKOPLAKIAS AND THEIR MALIGNANT TRANSFORMATION

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Oral leukoplakia is well-known as a precancerous condition. On this assumption the aim of the present study has been to analyze prospectively the aetiology and pathogenesis of oral leukoplakias as well as the aetiology and pathogenesis of carcinomas developing in such leukoplakias. In this context availability of means of early diagnosis of oral carcinoma is important. By October 1978 the study comprised 750 persons who had all had a biopsy taken at the first examination. Follow-up biopsies have been performed in case of morphological changes of the lesions. Over the years the annual follow-up for each year has covered 95.6% of the persons with only small variations from one year to another.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.2621,

EPIDEMIOLOGY OF CANCER IN CANADIAN HUTTERITES

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Hutterites are members of a genetically isolated Christian sect who live in approximately 240 farming colonies in the Canadian Prairie Provinces and United States border states. In 1971 there were approximately 13,000 Hutterites living in the Prairie Provinces of Alberta, Saskatchewan, and Manitoba comprising over 70 percent of North American Hutterite colonies. Three major subdivisions of the Hutterites, the Dariusleut, Lehrerleut, and Schmiedeleut are distributed as follows: both Dariusleut and Lehrerleut in Alberta and Saskatchewan, and only Schmiedeleut in Manitoba. Over 200 Hutterite cases of cancer were ascertained from the three population-based provincial registries by a search of surnames for the period 1951-76. Approximately half of these cases were diagnosed in Alberta and most of the remainder in Manitoba. Comparative analyses of cancer incidence will be undertaken with respect to geography and the three major endogamous subdivisions of the Hutterite population. Preliminary results for this data set corroborate the patterns of both high- and low-risk sites determined for Alberta Hutterites.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.2622,

COLLABORATIVE EPIDEMIOLOGICAL STUDY ON THE FEASIBILITY OF PREVENTING COLONIC AND RECTAL CANCERS

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Colonic and rectal cancers represent a major cause of cancer mortality in France. They seem to result, in most cases, from transformation of precancerous lesions - intestinal polyps. The survey aims at evaluating the exact frequency of colonic and rectal polyps in gastroenterology clinic population, assessing the value of examinations used for their detection (double contrast enema, fiberoptic endoscopy, assessing the prevalence of polyps and cancers in the study population, determing the effect of routine excision of polyps on the incidence of colorectal cancers. For this, eight medical or surgical centers register patients or asymptomatic individuals, among whom routine screening of colorectal tumors are carried out. This study was activated on January 1977; by November 1978, 1,242 cases had been registered.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.2623,

FEASIBILITY STUDY OF BREAST CANCER SCREENING

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A project is being initiated in Toronto with the collaboration of the College of Family Physicians of Canada and the Women's College Hospital of Toronto to evaluate the feasibility of the procedures planned for a national study of breast cancer screening in Canada. Approximately twelve family physicians will be invited to identify women aged 40 to 64 in their practice, from whom data on identifying information and risk factors for breast cancer will be collected by means of a self-administered questionnaire. These women will then be assessed by the physician for their stability for participation in the study in which approximately half the women would be chosen at random to (1) be invited to attend the Women's College Hospital for a breast cancer screening examination including mammography and clinical examination by a nurse, or (2) to remain under the care of the family physician without such referral. All women participating in this study will be taught breast self-examination. Informed consent to the transfer of the questionnaire to the National Cancer Institute of Canada, Epidemiology Unit, and to randomization will be obtained. In six month period approximately 1,000 women will be screened. Additional data on dietary and other variables will be obtained from those attending the screening center. It is anticipated that this will be the first stage of a study which will eventually be carried out across Canada and which will involve the recruitment and randomization of approximately 100,000 women aged 40 to 59.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.2624,

DIET AND BOWEL CANCER

A.B. Miller, University of Toronto, *Medical Sciences Bldg., Toronto, Ontario, Canada* M5S 1A8

The study has been designed to investigate the role of diet in the causation of bowel cancer. A high intake of protein, fat and refined carbohydrates and a low intake of fibre have all been associated with high incidence of large bowel cancer. This is a case-control study to be conducted in two geographically distinct areas of Canada -Metropolitan Toronto and Calgary. In both areas an unselected series of newly diagnosed patients with bowel cancer will be admitted to the study. Data from such patients will be compared against age- and sex-matched neighbourhood and frequency-matched hospital controls.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.2625,

EXOGENOUS ESTROGENS AND THE DEVELOPMENT OF CANCER OF BREAST AND ENDOMETRIUM

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This retrospective cohort study is designed to examine the risk of breast cancer and endometrial cancer in menopausal and postmenopausal women who had received estrogen therapy for other than contraceptive purposes. The study group is composed of 1,678 women (ages 40-55) in Toronto, who, between 1960 and 1970, were started on long-term estrogen therapy for menopause (Cohort A). Drug use information and epidemiological data are being obtained from the following sources: gynecologists' records, Ontario Cancer Registry, Ontario Cancer Foundation, and telephone interviews. The incidence rates for breast cancer and endometrial cancer will be compared with age-specific incidence and mortality rates of the female population of Ontario (Cohort B). The mortality rates for the study population will also be compared with age-specific cancer mortality rates of the Canadian female population (Cohort C). An estimate will be made of the relative and attributable risk of developing malignant breast disease or endometrial carcinoma and of dose-response relationships of oestrogens to disease.

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3.2626,

DOCUMENTATION OF OCCUPATIONAL DISEASES

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Registration and analysis of occupational cancer with special attention to asbestos and vinyl chloride. Since 1975 such data have been registered according to an electronic data processing protocol in order to provide an analysis of the development of these diseases.

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3.2627,

RETINOBLASTOMA IN FINLAND SINCE 1912 - INCIDENCE OF OTHER MALIGNANT NEOPLASMS IN RETINOBLASTOMA PATIENTS AND THEIR RELATIVES

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It has been suggested that retinoblastoma might be used as an index cancer to whose frequency the frequency of other cancers could be compared. Hence efforts should be made to bring to light data on this cancer from different countries of the world. It has also been shown that bilateral retinoblastoma survivors may be more likely to develop another primary malignant neoplasm than any other cancer patients. It is proposed to estimate the incidence of other malignant neoplasms in retinoblastoma patients and their relatives. The data will be collected from Finland, with the pathology laboratory of the Helsinki University Eye Hospital serving as the main source of information.

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3.2628,

ENVIRONMENTAL ANTECEDENTS OF CANCER

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An attempt is being made to determine the relative effects on cancer of various sources of pollution - from occupation, from community sources, and from tobacco products. Analysis is based on a number of data files that have been collected concerning mortality of the U.S. veterans' population (previous Dorn Study), on the 1969 through 1974 survey results of the Household Interview Survey of the National Center for Health Statistics, on files on Occupational Compensation claims, and from direct studies of a population of workers in a pulp and paper mill on Vancouver Island.

Description provided by IARC and DKFZ with ICRDB/NCI support.
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3.2629,
EPIDEMIOLOGICAL STUDY ON WORKERS EXPOSED TO CHLOROMETHYL-METHYL ETHER (CMME) AND BIS-CHLOROMETHYL ETHER (BCME)

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In the Montedison plant in Castellanza (Varese, Italy) CMME was used in the manufacture of ion-exchange resins during 1946-63 and it has been used in the laboratory since that time. In addition, in several areas of the plant the concurrent presence of formaldehyde and HCL (precursors of BCME) has been observed. The number of workers employed since 1946 in the plant is about 2,500. Deaths are being traced through the records of the town of birth of each worker. Mortality rates will be related to the length and sector of work in the plant and compared to those of the general population in the province of Varese.
Description provided by IARC and DKFZ with ICRDB/NCI support.
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3.2630,
ANTHROPOLOGICAL, FAMILIAL AND PRENATAL FACTORS IN HEMOPOIETIC SYSTEM NEOPLASMS

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Differences in mortality rates for these neoplasms have been observed among the different immigrant groups in Argentina. Preliminary results of a case-control study carried out on 603 case-control pairs show: (1) Fewer cases of acute non-lymphocytic leukemia and Hodgkin's disease in Spaniards, and more cases of lymphoproliferative disorders in Spaniards and of Hodgkin's disease in Italians; (2) acute non-lymphocytic leukemia cases had fewer Spanish ancestors and cases of lymphoproliferative disorders had fewer Paraguayan, Chilean and Bolivian ancestors; (3) fewer cases of acute lymphocytic and non-lymphocytic leukemia had green eyes, and among the latter cases there were fewer people with blue and grey eyes; (4) there were no differences in the proportional mortality caused by cancer or hemopoietic system neoplasms between relatives and spouses; (5) among the cases it was observed that fewer patients were born by young mothers and fewer were first born. The differences were observed both in children and in adults. No differences were observed in other prenatal factors. The study continues.
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3.2631,
THE EFFECT OF EXOGENOUS ESTRIOL AND ANTIESTROGENS ON BREAST CANCER INCIDENCE

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Previous work has shown that full-term pregnancy before 25 years of age significantly reduces the incidence of breast cancer in women. The possible mechanism underlying this observation may be that the high production of oestriol which occurs during pregnancy could block cell receptors for the more 'carcinogenic' oestrogens, oestrone and oestradiol. The observation that oestriol prevents chemically induced mammary cancer in rats (Lemon, H.M.; Cancer Res. 35: 1341, 1975) poses the question of whether exogenous oestriol given early in life may prevent mammary cancer in women. A registry of women who are at high risk of developng first or second breast cancer, consisting of first order relatives of breast cancer patients and patients with unilateral breast tumor who have been 'cured' surgically, is being set up. Using this high-risk population, it is anticipated that the time normally required for a prospective study on the occurrence of the disease as a consequence of environmental factors will be more than halved. Particular attention is paid to the effect that administration of oestriol and/or antioestrogens may exert upon breast cancer incidence. The study is being organized as an inter-hospital registry which will record data on high-risk factors, parity and oestrogen treatments.
Description provided by IARC and DKFZ with ICRDB/NCI support.
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3.2632,
DIAGNOSTIC AND ETIOLOGICAL IMPLICATIONS OF MAMMOGRAPHIC CALCIFICATIONS IN BREAST DISEASE

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The presence of multiple punctate calcification in the breast and its association with breast carcinoma has been reported by many investigators. In the course of clinical mammography during the past several years we have detected calcifications in numerous cases of carcinoma of the breast and, in many of these, the presence of calcification on the mammogram in the absence of a palpable mass was the only sign of carcinoma. We have obtained genetic, epidemiological, pathological, and radiological information on 2,338 women who were radiographed for clinical indications of breast disease at the Toronto Western Hospital from 1968 to 1973. Biopsies or mastectomies were done for surgical or radiological suspicion of malignancy in these women. The biopsies indicated that 354 women had breast cancer, 1,713 had benign breast disease, and 272 had no apparent breast disease. We are studying the genetic, epidemiological, pathological, and radiological factors in those diagnosed as having breast cancer, those who had benign breast disease, and those without apparent breast disease. From the available pathological and radiological information on these women, we are also determining if a certain pattern of calcification correlates with (1) the presence of breast cancer, (2) the type of breast cancer, and (3) the type and degree of fibrocystic disease if carcinoma is not diagnosed pathologically.
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3.2633,
THE POPULATION STUDY IN GLOSTRUP OF MEN AND WOMEN BORN IN 1914

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The Glostrup population study of 60 year olds in 1974 was an epidemiological investigation of a cohort delimited by age and geographical conditions, which had been investigated previously in 1964. The investigation illustrates risk factors for arteriosclerotic cardiovascular disease in a Danish population, but many variables are registered at 50 and 60 years and interrelations found. In 1974, 15 men and 10 women of the originally investigated 514 men and 461 50 year old women had died from cancer. In 1974, all cancer diagnoses and treatment given during the ten years were registered. All participants were given a thorough clinical examination including X-rays of thorax and spine and all women had a vaginal smear taken. The cohort will be followed.
Description provided by IARC and DKFZ with ICRDB/NCI support.
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3.2634,
NON-SPECIFIC INFLAMMATORY COLON DISEASES AS PRECURSORS OF COLONIC CANCER

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Previous morphological, biochemical and histochemical studies were performed to prove the existence of two types of chronic nonspecific colitis. The genetic determination of the first type of chronic colitis was hypothesized, and some biochemical and histochemical differential diagnostic signs were found. The aim of this study may be considered as the search for correlations between these two types of chronic colitis and cancer of the colon.
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3.2635,
NATURAL HISTORY OF POSTMENOPAUSAL BREAST CANCER

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Population screening for breast cancer (palpation, xeroradiography) of 20,000 women 50-64 years of age, at regular intervals (12-18 months) will enable the investigators to study factors which determine incidence and growth rates of preclinical breast cancer occurring after menopause. Particular attention will be paid to endocrine and nutritional factors. Urine is being collected for determination of 11-deoxy-17-ketosteroids and frozen for future research (prospective study). Body weight and height and skinfolds are being measured. Blood pressure is taken and data on antihypertensive drug treatment and other possible risk factors are being collected. Blood samples are being taken at the second examination.
Description provided by IARC and DKFZ with ICRDB/NCI support.
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3.2636,
SYSTEMATIC DETERMINATION OF GENOTYPE OF TWINS AT BIRTH

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Type, frequency and concordance of congenital malformation. Cancer epidemiology in monozygotic and dizygotic twins. Frequency of malignant conditions in twins which have been exposed to radiation in utero.
Description provided by IARC and DKFZ with ICRDB/NCI support.
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3.2637,
EPIDEMIOLOGY OF MESOTHELIOMA IN DOCKYARD WORKERS IN DEVONPORT, UNITED KINGDOM

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About 10 cases of pleural mesothelioma occur each year in workers previously exposed to asbestos in Devonport dockyard. This is a prospective study relating the disease to previous exposure and to histopathological and immunological changes. It is hoped to identify any high-risk groups within this population including those who have already developed some form of asbestos related disease.
Description provided by IARC and DKFZ with ICRDB/NCI support.
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3.2638,
PROSPECTIVE STUDY OF ROLE OF FECAL BILE ACIDS AND NUCLEAR DEHYDROGENATING CLOSTRIDIA IN LARGE BOWEL CANCER

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The aim is to determine the role of faecal bile acids (FBA) and nuclear dehydrogenating clostridia (NDC) in the aetiology of cancer of the larger bowel. About 7,500 men and women aged 45-74 are being recruited into the prospective study; stool samples are collected from each participant, and stored at low temperature. All participants are then followed up for a minimum of five years. The stool samples from those developing large bowel cancer and from two or three matched controls for each new case will then be analysed for FBA and NDC. Breath methane estimations are also being carried out on about half the total study population, as it has recently been shown that a higher proportion of patients with large bowel cancer have detectable levels of breath methane than patients with other diagnoses.
Description provided by IARC and DKFZ with ICRDB/NCI support.
SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.2639,

AN INVESTIGATION INTO ORAL CANCER AND ORAL PRECANCEROUS LESIONS IN INDIAN RURAL POPULATIONS IN RELATION TO TOBACCO HABITS

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Oral cancer is one of the most common forms of cancer in India. There is a strong belief that such cancer may be preceded by certain white lesions in the oral cavity, which are thus termed precancerous. It is known, mostly through hospital-based studies, that oral tobacco habits are associated with oral cancer and precancerous conditions. The main objectives of the present study are to (1) investigate the degree of association between tobacco habits, oral cancer and precancerous conditions, and (2) elucidate the natural history of oral precancerous conditions from clinical and histological viewpoints. The study design is prospective in nature. In a first survey in 1967-1968, in five districts in different parts of India where different tobacco habits prevail, 50,000 individuals were interviewed about their tobacco habits and examined for the presence of oral precancerous conditions. Since 1969 these individuals have been followed up annually, clinically, histologically, and cytologically, for change of habits and development of oral precancerous conditions. Follow-up surveys comprising a period of 10 years have been completed. A comprehensive report on the follow-up study is now under preparation.

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3.2640,

INVESTIGATIONS OF ORAL CANCER AND PRECANCEROUS CONDITIONS

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Oral cancer is the most common form of cancer in India. It is said to be frequently preceded by white lesions termed precancerous lesions. Two studies are carried out to elucidate the natural history of these oral precancerous lesions and their association with tobacco usage. About 100,00 individuals residing in Ambegaon and Junnar Taluks of Poona districts were examined for the presence of oral precancerous lesions and tobacco usage habits. The individuals with lesions and suitably matched controls are now followed up annually. About 4,000 Bombay policemen were examined in 1959 for the presence of oral precancerous lesions and tobacco usage habits. These policemen are re-examined at five-year intervals. Three follow-ups have been completed and the fourth one is now being planned.

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3.2641,

ETIOLOGY OF CANCER

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Environmental and hereditary causes of cancers of different organs; effects of smoking, ionizing radiations, diet, drugs, cosmetics, infections, immunological defects, and occupation.

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3.2642,

INCREASING RISK FOR BREAST CANCER - ASSOCIATION WITH FAMILIAL, GENETIC AND REPRODUCTIVE FACTORS

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OBJECTIVE: To determine whether there are hereditary characteristics which might be of use in the identification of women having a high risk of developing breast cancer. The unique facilities available in Iceland for the study will be utilized. These include (1) a nationwide cancer registry functioning since 1954 (about 800 cases); all cases of breast cancer diagnosed between 1910 and the start of the cancer registry are on file, (2) a computer-based National Roster since 1952, (3) a family linkage file linking every individual alive after 1910 to his parents and children, and (4) a cervical screening clinic which has seen more than 80% of the female population in Iceland born between 1905 and 1945. Information is collected on reproductive history and age at menarche, to be used as control data. If an excess risk is found, an effort will be made to (1) correlate familial risk with recognized epidemiological risk factors for breast cancer, (2) quantify the risk attached to different types of relationships, and (3) for each class of relative, examine the association, if any, between the degree of risk and the age of the proband case and age of appearance of cancer among these relatives.

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3.2643,

COMPARISON OF THE EFFECTS OF PLAIN AND FILTER CIGARETTE SMOKING UPON THE INCIDENCE OF LUNG CANCER

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OBJECTIVES: To: (1) determine smoking habits in relation to the amount and type of cigarettes smoked (filter or plain); (2) ascertain the lung cancer incidence over a period of at least four of five years; and (3) relate lung cancer incidence to type of cigarette smoked.

METHODS: Large numbers of male mass radiography volunteers, at least 40 years of age, have been questioned and answers recorded on special forms. Subsequent X-ray examinations have excluded men with existing lung cancers. Yearly follow-up will be accomplished by comparing notifications of lung cancer cases of the Manchester Regional Cancer Registration Bureau with these special forms. Most deaths from lung cancer are registered even if the cases have not been registered before death. Information on smoking habits has been computer processed.

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3.2644,

ENVIRONMENTAL AND OCCUPATIONAL FACTORS AND DISTRIBUTION OF LUNG CANCER AND BRONCHITIS IN UMBRIA

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Umbria is one of the central regions of Italy. Some areas of this region are very different from others with respect to economic and social development, kinds of industries, density of population and climate. These differences are especially marked between the two biggest cities of the region, Perugia and Terni. Preliminary studies have shown that mortality from lung cancer and from bronchitis is higher in Terni than in Perugia. Research is in progress on atmospheric pollution in these towns which seems higher in Terni than in Perugia. For this reason it is proposed to study retrospectively the mortality and the morbidity from lung cancer and bronchitis in the two cities in relation to environment and occupation.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.2645,

DISTRIBUTION OF SITE-SPECIFIC CANCER MORTALITY IN AUSTRALIA

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The objective of the study is to utilize death certification to define stochastic and geographical internal variations of cancer mortality within Australia. A particular feature is the use of probability testing to assess significantly high and low incidences by area. Hopefully this will be followed by local inquiry towards explanation. A preliminary publication appeared in Medicine, Biologie, Environment, 4, 85-97, 1976.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.2646,

EPIDEMIOLOGY OF LUNG CANCER IN ANTIMONY PROCESS WORKERS

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This is a mortality study of men exposed to inorganic antimony compounds during the processing of the imported ore to determine whether or not there is an excess of deaths from lung cancer, and the influence on this of smoking habits and other factors in the environment, including exposure to arsenic.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.2647,

MESOTHELIOMA REGISTER

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In order to obtain information about the frequency of mesothelioma of pleura, peritoneum and pericardium, from 1969 onwards, all pathologists in the Netherlands were asked to cooperate in the registration of all histologically verified cases. These results are compared with the data of the Central Bureau of Statistics. In many cases slides and/or tissues were available: in a limited number of cases, electron microscopical investigations of lung tissue were done for asbestos. The occupational history was investigated extensively. Many cases are reviewed by a mesothelioma committee (Planteydet, de Jagar, van der Schoot). The geographical distribution, relation to occupational history and exposure to asbestos are recorded in several ways. From 1976 onwards registration, together with the other investigations, follows the same lines as the mesothelioma register in the United Kingdom. Since 1976 collaboration with other mesothelioma registers in the EEC has been established.

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3.2648,

ANALYSIS OF CLINICAL, ANATOMICAL AND ENVIRONMENTAL DATA FOR BURKITT'S DISEASE AND PRIMARY LIVER CANCER

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OBJECTIVE: Collection of clinical, anatomical, biological, biochemical, immunological, geographical, etc. data on Burkitt's disease and primary liver cancer.

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3.2649,

ETIOLOGY AND INCIDENCE OF BREAST CANCER AMONG ISHAN WOMEN

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Breast carcinoma is relatively rare in Ishan women with their prolonged breast-feeding, grand parity, early marriage, etc. Previous work involved 10,670 women followed over 15 years. A second series of nearly 15,000 women followed over 8 years is being analysed.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.2650,

REGIONAL DIFFERENCES OF AND TIME TRENDS IN CANCER MORTALITY IN POLAND

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The aim of the study is to uncover and describe patterns in the geography and dynamics of cancer in Poland. This is necessary for studies of the suspected aetiologic factors, as well as for monitoring the changes in cancer frequency. Cancer mortality data by primary site, age, sex, and residence are being collected, starting with calendar year 1970. Age-specific and age-adjusted rates have been computed

and analyzed for the total country, for urban and rural areas, and for each of the 22 districts for the period 1970-1974.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.2651,
LIVER TUMORS IN CHILDREN AND ADULTS

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Following a study on primary hepatic tumors in infancy and childhood, a general study on hepatic tumors is under way. Correlations between viral hepatitis and hepatocarcinoma are investigated.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.2652,
EPIDEMIOLOGICAL AND CLINICAL ASPECTS OF STOMACH CANCER

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The aim of the studies is to set up the criteria for the early detection of stomach cancer, to evaluate the effectiveness of different treatment methods, to learn the natural history of the disease in the population. The project will cover epidemiological as well as clinical aspects. An epidemiological study will be made in an industrial population of about 10,000 workers. On the basis of a screening questionnaire and endoscopy the risk-group will be followed-up by a yearly health examination. In addition a case-control study will be conducted on hospital patients. A mortality study on stomach cancer in different subgroups of a population in the Kracow region has begun.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.2653,
EPIDEMIOLOGY OF LEUKEMIA AND APLASTIC ANEMIA

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Japanese immigrants to Hawaii and their descendants have experienced a much higher mortality rate from leukemia and lower mortality from aplastic anemia than indigenous Japanese, reaching a mortality level similar to the Caucasians. There is no statistically significant difference in the sum of the age-adjusted mortality from all bone marrow diseases (ICD 280-289, ICD 205-209) except for lymphatic leukemia between Japanese Americans and indigenous Japanese. Genetico-epidemiological study has shown that consanguinity among aplastic anemia cases and leukemia cases was significantly more frequent than in the general population. The above data suggest that not only environmental factors but also host factors affect the incidence of these diseases.

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3.2654,
CASE-CONTROL STUDY OF ETIOLOGICAL FACTORS IN CANCER AND OTHER TUMORS OF THE BREAST

J. Staszewski, Inst. of Oncology, Cancer Epidemiology Unit, *Armii Czerwonej 15, 44100 Gliwice, Poland*

This is a study of the environmental and host factors in the development of breast cancer and also of benign breast tumors, such as chronic cystic disease and fibroadenoma in a population in which the frequency of breast cancer is lower than in other western countries but appears to be increasing substantially. Both cases and controls consists of the inpatients of the Oncological Inst. in Gliwice, residents of Silesia, interviewed since late 1965. Some of the results have been published. They relate to age at menarche (JNCI 47, 935-40, 1971), childbearing and breast feeding (Pol. Tyg. Lek. 29, 1329-32, 1974), past and co-existent diseases (Nowotwory 26, 201-4, 1976), and body build (Prev. Med. 6, 410-15, 1977) and benign breast diseases (Nowotwory 29, 213-221, 1979).

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.2655,
CASE-CONTROL STUDY OF MORBIDITY IN UNITED STATES CARBON BLACK WORKERS

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This study aims to determined if carbon black workers who contracted selected circulatory, malignant and respiratory diseases had higher exposure to carbon black than did control workers who remained free of these diseases. Seven of the eight companies that are members of the Carbon Black Industry Committee for Environmental Health searched the records of their health insurance plans for cases of the selected diseases. Two contol workers will be selected for each case, one matched on age (plus or minus 2.5 years) and one matched on age and years of service (plus or minus 2.5 years). The exposures of the cases and controls will be estimated from their work histories in the carbon black industry. The exposure levels of the cases will be compared with those of the controls to determine if any differences are evident.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.2656,
EPIDEMIOLOGICAL STUDY OF ACUTE LEUKEMIA IN ADULTS AND CHILDREN (ABBREV)

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In a retrospective study, an association between cases of acute leukemia in some adults and between other cases of leukemia in childhood or in other adults has come to light within the suburban community of North and West Vancouver, there being a variable and sometimes long latent period between cases. A prospective questionnaire study of all newly diagnosed cases of acute leukemia within the above suburban community is being carried out, attempting to define a relationship between cases as to time, place and person. This is considered under the following headings: date of diagnosis, age, sex, duration of symptomatology, family history of malignancy, contact with other cases of lymphoreticular malignancy in family or friends, addresses and change of address (domestic and employment) within the above community, exposure to domestic animals. It is proposed to compare these findings with data on age matched controls i.e. non-leukemic cases admitted to Lion's Gate Hospital.

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3.2657,
CEA IN AN UNSELECTED POPULATION

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The adult population of Busselton, which is relatively closed and stable, has since 1966 been the subject of ongoing surveys, marked by accession rates in the order of 90%. The surveys entail health questionnaires, medical examinations and numerous biochemical and other health indices such as electrocardiograms. In particular, the occurrence of cancer and changes in smoking habits are under close scrutiny. The serum level of CEA, measured by microradioimmunoassay, was included in the 1969 and 1975 surveys. The 1969 survey results, including the association of raised CEA levels with increasing age and cigarette smoking and the weak predictability of CEA for development of cancer, have been reported. The 1975 survey involved 3,120 adults, and results are presented according to frequencies of persons with levels less than five ng per ml, regarded as normal, 5-10 ng per ml, and ten or greater ng per ml. According to these groupings the 1975 survey shows that: (1) CEA increases with age in both sexes; (2) CEA is strongly related to smoking habits and differences are seen between more than 15 and less than 15 cigarettes per day, and recent ex-smokers. Long-term ex-smokers are not affected and pipe smokers are marginally affected; (3) raised CEA is associated with increased risk of death, but it is not certain from the data whether the confounding effect of age has been accounted for; (4) statistics for CEA-associated cancers are being independently assessed and results are pending; (5) correlations between CEA values in the 1969 and 1975 surveys is now being analyzed.

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3.2658,
EPIDEMIOLOGY OF MALE GENITAL TRACT CANCER

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A series of 1,003 male genital cancers (prostate 514, testis 182, penis 307) were recorded in Greater Bombay during 1964-72. The specific aims of the investigation are: 1. To study the natural history and epidemiology of these tumors; 2. to determine the morbidity and mortality from such tumors; 3. to study the practice of circumcision in relation to penile cancer in different religious groups; and 4. to determine whether any reasons can be ascertained for the low incidence of male genital cancer in Greater Bombay.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.2659,
EPIDEMIOLOGICAL STUDY OF INCIDENCE, MORBIDITY & NATURAL HISTORY OF SOME TYPES OF CANCER, BY RELIGIOUS GROUP, IN THE BOMBAY AREA POPULATION

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A study carried out by Jussawalla and others (1970) examined the differences observed in the site incidence of cancer between the Parsi community and the total population of Greater Bombay. This investigation revealed disease differences of appreciable epidemiologic interest. Thus, cancers of the buccal cavity, pharynx, larynx, oesophagus and cervix uteri were less common in the Parsis. On the other hand, the Parsi rates were higher for sites such as the female breast, body of uterus, ovary, prostate and skin and for all leukemias. The purpose of this study is to determine the incidence of various types of cancer by religion. The numerical distribution of religions in Bombay is as follows: Hindus 4,110,746 (68.85%), Muslims 843,358 (14.13%), Christians 375,265 (6.29%), Parsis 64,667 (1.08%), Jains 244,721 (4.10%), Buddhists 284,303 (4.76%), and Sikhs 42,862 (0.71%) out of a total population of 6 million persons. Statistical analysis of the recorded data on cancer will be carried out as follows: (1) Crude and age-specific rates by sex, year and primary sites in various religious groups; (2) age-adjusted rates, as suggested by Doll and others, by sex and primary sites; (3) comparison of incidence rates for religious groups in Greater Bombay with those for other races in the United States and other countries.

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3.2660,
PROSPECTIVE STUDIES ON CANCER EPIDEMIOLOGY BASED ON CENSUS POPULATION IN JAPAN

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To study the health consequences of selected risk factors including cigarette smoking, alcohol drinking, diet (rice, fish, meat, milk, green-yellow vegetables, soybean paste soup, pickles, hot tea), occupation, marital status, number of children, age at first marriage, length of breast feeding, etc., a prospective population study has been in progress in 29 Health Center Districts in 6 prefectures in Japan since the autumn of 1965. In total 265,118 adults, 122,261 males and 142,857 femals aged 40 years and over,

91-99% of the census population, were interviewed and followed by establishing a record linkage system between the risk factor records, a current residence list obtained by special and annual census, and death certificates. The 39,127 deaths, including 10,331 cancers, occurring during thirteen years of follow-up from 3,060,499 observed person-years, age-adjusted and age-specific rates for each cause of death were calculated by socio-economic status and by the above listed risk factors. High and low risk groups for cancer were identified. For instance, the risk enhancing effect of cigarette smoking and risk lowering effect of daily intake of green-yellow vegetables, especially on ex-smokers, was observed for lung cancer. The attributable risk of daily cigarette smoking for cancer of all sites was 31.8% and 5.2% respectively in males and females. Effect of daily meat intake on cancers of pancreas and breast was also observed. Study is still in progress (currently at 14 years of follow-up).

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3.2661,

ECOLOGICAL AND PATHOPHYSIOLOGICAL STUDIES OF PRIMARY LIVER CELL CARCINOMA IN RELATION TO LOCAL THAI FOOD PRODUCTS

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Primary liver cell carcinoma is one of the most common causes of mortality in Thailand, especially in the northeast region. The incidence rate is five times that of western countries. The age at diagnosis is generally younger than 40 and the youngest reported case was 11 years old. It is suggested that the cause may be associated with food. Plara is a fermented fish product which is prepared locally and consumed by Thai people throughout Thailand, particularly in the north and northeast. During the preparation of plara, which is sometimes stored for over a year or for years, secondary and tertiary amines are probably formed and these amines may react with nitrates or nitrites which are present as contaminants in salt or water to form nitrosamines which are known carcinogens. The main objectives of the present studies are to (1) bioassay by feeding the local food product to animals to observe the toxic effects; (2) investigate, both quantitatively and qualitatively, nitrosamines, nitrates and nitrites in Thai food products and (3) study by polyacrylamide gel electrophoresis and immunoelectrophoresis serum protein patterns and some single protein fractions such as proteinase inhibitor from clinically diagnosed primary liver cell carcinoma cases in comparison with other hepatic diseases, such as liver cirrhosis, hepatitis and opisthorchiasis in order to better understand the pathophysiology of the disease. At the same time, the studies are designed to determine the geographic, cultural and social relationship of this cancer with the food consumption patterns of the population.

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3.2662,

THE FREQUENCY OF SKIN CARCINOMA IN THE REGION OF RIJEKA (YUGOSLAVIA)

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The characteristics of 1,016 persons with cancer of the skin treated at Rijeka, Yugoslavia, in 1965-1974 have been analyzed. Representing 18% of all forms of cancer, 953 patients had solitary and 63 multiple lesions. Basal cell carcinoma was diagnosed histologically in 748 instances (67.6%), squamous cell carcinoma in 296 (26.7%) and mixed forms in 62 (5.6%). Basal cell carcinoma was more frequent in women (409), squamous cell carcinoma in men (181) due to a greater frequency of lip neoplasms (80). In 89.9% carcinomas were located on exposed parts of the body and only in 18% on covered parts. The frequency of the disease was highest among housewives (360 or 35.4%) who, in many instances, had migrated to the city from villages. There were a large number of seamen, fishermen (288 or 28.3%), laborers, longshoremen and masons. Farmers repesented only 10.2% or 104 cases. Previous trauma was noted in 314 cases (30.9%). The study continues.

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3.2663,

PROSPECTIVE AND RETROSPECTIVE COHORT STUDIES OF MORTALITY AND MORBIDITY AMONG SWEDISH CHEMISTRY GRADUATES

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The causes of death among chemists who belonged to a cohort of men who graduated from the School of Chemical Engineering at the Royal Institute of Technology in Stockholm during the years 1930-1960 were studied. The group was followed until the end of 1977. Results to date show a significant increase in cancers, particularly malignant lymphomas and brain and prostate neoplasms in comparison with the causes of death in the general population, as well as in a similar cohort of architects educated at the same school during the same period of time. The study is at present being continued prospectively. The surviving male chemists have been sent a questionnaire concerning exposures and health effects; the participation rate is about 85%.

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3.2664,

CAUSES OF MORTALITY AND DISABILITY IN FERRO-ALLOY WORKERS

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Previous work has shown that the mortality from cancer in workers handling chrome-containing ferroalloys is significantly higher than in the general population. These workers had a heavy exposure not only to chrome compounds but also to polycyclic aromatic hydrocarbons (PAH), especially benz(a)pyrene. The present study aims to explore the causes of death and disability among smelters of various ferroalloys (exposed not to chrome but to PAH), particularly from malignant lymphoma and leukaemia. The follow-up of the cohort began in 1955 and continued until 1974.

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3.2665,

MULTIPLE PRIMARY MALIGNANT TUMOR SURVEY

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An analysis of population-based data, collected at the Birmingham Regional Cancer Registry, is being carried out to determine whether there is any evidence of an increased risk of a second primary over that of a first, in terms of either site-specific associations or high-risk groups. The results may help to define aetiological factors in tumour development and to identify individuals 'at risk' who will benefit from increased surveillance. The method of analysis is similar to previous surveys in that an index site is selected, and observed numbers of second primary tumours are compared with expected numbers computed from incidence rates for the regional population. Special consideration has been given to fundamental methodology related to coincidental diagnoses and to the sequence of tumours. The emphasis has been, therefore, on 'site-pair' analysis, that is on investigating each sequence for a pair of sites, in contrast to the conventional approach which considers one index site in relation to all second primary sites. A major survey of bilateral breast cancer over a period of nearly 30 years has been undertaken and the interrelationships between breast and female reproductive sites have been investigated. Current work includes analyses for lung in association with male reproductive sites, and also with bladder. Future projects will include the addition of large bowel tumours to the spectrum of paired analyses.

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3.2666,

SERO-EPIDEMIOLOGICAL STUDY OF HEPATITIS B VIRUS AND ITS ROLE IN THE CAUSATION OF PRIMARY LIVER CANCER

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The aims of this study are to assess the role of hepatitis B virus in the causation of hepatocellular carcinoma, to assess the various subtypes of the virus in Uganda and to determine the rate of infection in relatives of patients with hepatocellular carcinoma.

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3.2667,

EPIDEMIOLOGICAL ANALYSIS OF LARGE BOWEL CANCERS BY SUBSITE DISTRIBUTION AS EXEMPLIFIED BY AGE & SEX PARAMETERS OF DIAGNOSIS & SURVIVAL

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Variations in morbidity between the sexes and at different ages could indicate possible aetiological factors, provided there is no bias due to incomplete registration or inaccurate diagnosis. Registration in the West Midlands has been virtually complete for over fifteen years and the region has a high standard of medical of care so that even in patients too advanced for treatment there are facilities for an accurate assessment of the primary site. Moreover, in a population of 5.2 millions, over 2,000 cases of large bowel carcinoma are registered each year. Hence chance variations due to small numbers are minimised. Fortunately a single anatomical site code has been in use for the whole period and the subdivisions are sufficiently fine to permit examination of incidence rates by finer divisions of the colon than is possible with the present ICD code. Preliminary examination of incidence rates by age, sex and site of primary indicates in some cases marked similarities and in others marked differences between different segments of both the colon and rectum.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.2668,

TUMORS IN CHILDREN - SEX- AND AGE-SPECIFIC INCIDENCE RATES IN RELATION TO HISTOGENESIS

J. Powell, Regional Cancer Registry, *c/o Queen Elizabeth Med. Ctr., Birminghan B15 2TH, England, United Kingdom*

Tumors in children differ sharply from those of the adult, particularly in the systems of the body in which they most commonly occur. Examination of sex- and age-specific incidence rates (for single years from birth) indicates the well-known marked variations during the first decade of life, although from age ten onwards the difference between childhood and adult cancer becomes one of quantity rather than quality. A method of classification according to histogenesis has been developed and, since the datta are from a population-based registry, variation in the age at onset appears to provide a useful modell for studying the relationship between the different types of malignancy and possible aetiological factors, the organs affected depending in some types on the gestational age of exposure.

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3.2669,

FREQUENCY OF SELECTED CANCERS

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A computerized tumor data base has been implemented to permit instant retrieval of sellected diagnoses. At present all the tumor data from 1974 to 1978 have been processed. A project has been designed to study relative frequencies and age distributions of primary cancers of all sites from 1974 to 1978, with an emphasis on female genital tract cancers. Computer programs have been prepared to facilitate automatic tabulation of the frequencies of specific types of cancers as well as the overall fre-

quency of all cancers of a particular site. Age distribution will also be obtained automatically.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.2670,

DEMOGRAPHIC CANCER STUDIES IN NORTHERN SWEDEN

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Northern Sweden has some interesting features for geographical and epidemiological cancer studies as it contains several well separated and, from the socioeconomic and industrial point of view, different regions. There exist towns with a very low degree of industrialization, others being heavily industrialized, large rural areas and some rather specific industrial sites such as the mining districts in Norrbotten and Vaesterbotten. The study is based on morbidity and mortality data from the Swedish Cancer Registry and the Swedish Death Registry and will cover the years 1959-1971. The first part of the project involves calculation of age-adjusted incidences for different cancer sites for comparison by small geographic regions (towns, communes, parishes) in the three most northern counties (Vaesternorrland, Vaesterbotten and Norrbotten). Commune-based age-adjusted incidence rates have so far been calculated for lung cancer and female breast cancer. In both cases significant differences between communes were found which are now the subject of further studies. Incidence data for other cancers will also be produced. The findings concerning female breast cancer have been published in Swedish Society of Medical Radiology. Proc. No. 8, 1977 and Acta Radiol. Oncol. 17: 497, 1978 and the findings concerning male lung cancer and female breast cancer will soon be published in Nordic Council for Arctic Medical Research, Report 22: 15, 1978. An atlas containing data for all more frequent cancer types will probably be published during 1980. Work continues.

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3.2671,

PREVALENCE OF ASBESTOSIS, PLEURAL CHANGES AND MALIGNANT NEOPLASMS IN BLACK EX-MINERS AND FEMALE COBBERS

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In 1973 the National Research Institution for Occupational Diseases was approached to determine the state of health of ex-employees of the asbestos mining industries, especially those using Cape crocidolite. Based at the St. Michael's Hospital at Bathlaros, near Kuruman, in the North West Cape Province, a small clinic was established, staffed by a doctor, nurse and a driver who knew the country and were well known in it. With the assistance of the Bureau of Census and Statistics mining company records were investigated. By August 1977 some 1500 ex-employees had been traced. At present attention is concentrated on investigating a cohort of ex- and current employees exposed during 1957-1962.

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3.2672,

LOCAL CAUSES IN THE ETIOLOGY OF HEAD AND NECK CANCER

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Local causes in the etiology of head and neck cancers (i.e., buccal mucosa, tongue, gingiva, floor of mouth, oropharynx, hypopharynx, tonsils, larynx and upper esophagus, excluding nasopharynx) are being studied. Information is sought on use of alcohol, tobacco, cleaning of teeth, kind of food taken, preferred foods, temperature at which food and drinks are taken, habit of biting the tongue or buccal mucosa and the habit of taking foreign bodies in the mouth (some drugs are retained in the mouth for a long time).

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3.2673,

STUDY OF VALIDITY OF CLINICAL EXAMINATION AND X-RAY MAMMOGRAPHY AS SCREENING TESTS FOR BREAST CANCER (ABBREV)

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The aim of this study is to determine the error rates of clinical examination and mammography in screening for breast cancer and to measure reproducibility between two observers performing the same test. Women over 40 years of age are screened in a well-women clinic where, in addition to a medical history, they have two independent examinations of the breasts, one by a nurse and one by a doctor, and mammography, using the low dose medichrome film system. Mammograms are read independently by two radiologists. Women in whom an abnormality is detected are referred for surgical assessment, biopsied when necessary, and in those in whom cancer is found, follow-up is continued for at least 15 years. To get some idea of the false negative results (the cancers which would be missed by annual re-examination), all women are asked to attend for rescreening at six-month intervals for the first year and then to have one further re-examination two years after initial entry into the study; this, it is hoped, will help determine optimum screening frequency. To date about 6,000 screenings have been done in 2,000 women and 32 cancers found. The economic study is trying to assess both the costs and the benefits of screening. Not only are the health service costs of providing screening taken into account, but also all costs resulting from referral to hospital for surgical opinion and biopsy and costs of treating cancers found. These will be compared with conventional management of breast disease in a system without screening. Benefits are being assessed by trying to obtain a measure of the value which women themselves put on the screening service. It is hoped that eventually some measure of the effectiveness of screening in reducing mortality can also be included.

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3.2674,

MORTALITY PATTERN OF NICKEL PLATING WORKERS

D.C. Burges, Employment Medical Advisory Service, *Broad Rd., Birmingham B15 1DL, England, United Kingdom*

A population of some 900 workers at a nickel plating factory is being studied with the assistance of the Office of Population Censuses and Surveys which will provide death certificates, to test whether there is any carcinogenic risk, particularly lung cancer, involved in decorative electrolytic nickel plating, in view of the fact that nickel has been reported as a carcinogen in other nickel industries, principally the refining of nickel. This is a 'historic-prospective' study.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.2675,

INFECTION WITH HEPATITIS B VIRUS IN RELATION TO HEPATOCELLULAR CARCINOMA

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Hepatocellular carcinoma is the most common tumour of Zambian men. A recent study of 19 patients treated in Lusaka and of 40 control villagers living in the Eastern Province showed that all patients and 63% of controls showed serological evidence of past infection with hepatitis B virus (HBV), usually antibody to surface antigen. The objectives of this study are: (1) To record the prevalence of HB surface antigen (HBsAG), antibody to this antigen, and antibody to core antigen in the serum of selected Zambians of all age groups; (2) to investigate serial blood samples from apparently healthy individuals with serological evidence of past or present infection with HBV; (3) to examine cord blood at birth for evidence of exposure to HBV and to follow up the babies of HBsAG-positive mothers to determine if and when serological evidence of infection develops; (4) to investigate the pattern of antibody production to surface and core antigens following exposure to infection at work (surgeons) and by transfusion (children); (5) to compare the prevalence of HBsAG and antibody to core and surface antigens in persons in villages where hepatoma has or has not been observed in the last five years; (6) to identify men with a high risk of developing hepatocellular carcinoma for regular screening. Control villages and 'hepatoma' villages have been selected close to a well established mission hospital. It is planned to attempt to obtain three serum samples from each of 500 individuals over the age of three years during a period of two consecutive years.

Description provided by IARC and DKFZ with ICRDB/NCI support.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.2676,

INFLAMMATORY BOWEL DISEASES AND CANCER

R.N. Allan, General Hospital of Birmingham, *Steelhouse Ln., Birmingham B4 6NH, England, United Kingdom*

A survey is in progress to monitor the appearance of cancer in a hospital-based series of patients with chronic inflammatory bowel diseases (Crohn's Disease, coeliac disease and ulcerative colitis). The patients have been under continuous surveillance for periods of up to 30 years and the development of subsequent cancers have been recorded. The number of tumors which might be expected to occur in the series is computed from person-years of observation together with cancer incidence rates based on data from the Birmingham Regional Cancer Registry.

Description provided by IARC and DKFZ with ICRDB/NCI support.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.2677,

FOLLOW-UP OF PATIENTS TREATED FOR MALIGNANT DISEASE

M.R. Alderson, Inst. of Cancer Research, Division of Epidemiology, *Clifton Ave., Sutton SM2 5PX, England, United Kingdom*

This study will follow adolescents and young adults treated with increasingly powerful schedules to quantify the mortality from second malignancies and to check whether there is any evidence of a carcinogenic or teratogenic effect following conception. For both these groups of patients the original medical records will be abstracted; this will include detailed data on initial and subsequent treatment. Where patients have been followed until death, the cause of death will be obtained, whilst those known to be alive will be included, particular effort being made to trace patients presently lost to follow-up. Survivors from adolescence will be interviewed when they have reached child-bearing age, and a marital history will be obtained including data on any conception that occurs. Information about miscarriage, stillbirth, or children born with congenital abnormalities will be sought; liveborn children will be followed to identify the incidence of malignancy.

Description provided by IARC and DKFZ with ICRDB/NCI support.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.2678,

MORTALITY OF HAIR DYERS AND TINTERS

M.R. Alderson, Inst. of Cancer Research, Division of Epidemiology, *Clifton Ave., Sutton SM2 5PX, England, United Kingdom*

This study will examine the mortality of a group of hair dyers and tinters followed from 1961 to 1976 and compare their causes of death. Census data will be used to identify a sample of all hairdressers throughout England and Wales; the staff from the Office of Population Census and Survey will identify individuals specifically describing themselves as hair dyers and tinters at the time of the census. These individuals will be traced through the National Health Service Central Register and for those that have died the cause of death will be released. The all-cause mortality, mortality from malignant disease and from other diseases will be examined.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.2679,

MORTALITY OF MILLERS AND BAKERS

M.R. Alderson, Inst. of Cancer Research, Division of Epidemiology, *Clifton Ave., Sutton SM2 5PX, England, United Kingdom*

This study will examine the mortality of a group of grain millers followed from 1961-1976 and compare their causes of death with those of bakers and the general population over this period. The 1961 census will be used to identify all individuals in the general category of food processors and the specific category of bakers and pastry cooks. These records will be examined by Office of Population Census and Survey staff to identify those who recorded their occupation as grain miller at the time of the census, together with the records for male bakers and pastry cooks. These individuals will be traced through the National Health Service Central Register to identify those who have died and obtain the cause of death.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.2680,

ETIOLOGICAL FACTORS IN BREAST CANCER

M.R. Alderson, Inst. of Cancer Research, Division of Epidemiology, *Clifton Ave., Sutton SM2 5PX, England, United Kingdom*

This project will explore the relationship between history of psychiatric illness, social and emotional adjustment, and exposure and reaction to defined 'life crises' and the relative risk of breast cancer. Women attending an early diagnosis unit will be interviewed and, thus, data will be available on those subsequently found to have breast cancer compared with those with benign and no overt breast lesions. Additional data will be collected from other control patients attending the hospital.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.2681,

COLLATION OF ROUTINE STATISTICS

M.R. Alderson, Inst. of Cancer Research, Division of Epidemiology, *Clifton Ave., Sutton SM2 5PX, England, United Kingdom*

This project will collate, analyse, present and interpret routine mortality and morbidity statistics for England and Wales and selected other countries to provide (1) specific statistics required for particular studies carried out by the divisions of epidemiology, and (2) a background to consideration of the epidemiology and health care problems of cancer. Use will be made of national mortality (annual statistics, and decennial supplements on occupational and area mortality); incidence data (including unpublished analyses of occupation); hospital treatment data (from the hospital inpatient inquiry); workload and facilities (from health and personal social service statistics). Equivalent material from other national offices of vital statistics, WHO and IARC will be examined for selected countries. Many of the issues being considered require data from a non-malignant disease (e.g., time trends in stomach cancer in relation to large bowel cancer, peptic ulcer and other alimentary disease); statistics for about 30 non-malignant diseases will therefore be included in the project.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.2682,

FILTER TIP CIGARETTE SMOKING

M.R. Alderson, Inst. of Cancer Research, Division of Epidemiology, *Clifton Ave., Sutton SM2 5PX, England, United Kingdom*

This study will examine the influence of filter tip cigarette smoking in comparison with plain cigarettes upon the relative risk of lung cancer, chronic bronchitis, ischemic heart disease, and cerebrovascular disease. Two hundred patients of each sex in the age groups 35-, 45-, 55-, and 65-74 for the four diseases are being studied and equal numbers of controls will be interviewed at ten major centers treating these conditions throughout England. The data collected by trained interviewers will include information on long-term smoking patterns, place of residence, occupation, and other confounding factors.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.2683,

LUNG CANCER IN CHROMATE WORKERS

M.R. Alderson, Inst. of Cancer Research, Division of Epidemiology, *Clifton Ave., Sutton SM2 5PX, England, United Kingdom*

This study will examine the relative risk of lung cancer in process workers in the bichromate industry, taking account of factory of employment, calendar period, and duration of employment. A group of workers initially studied in the 1950's will be followed, together with those workers who have since entered three factories in the United Kingdom. All workers leaving this industry will be traced to provide 30 year follow-up for some workers. Limited data will be available on the specific tasks carried out by individual workers.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.2684,

HISTORICAL DATA BASE FOR ONE COMPANY IN THE PETROLEUM INDUSTRY

M.R. Alderson, Inst. of Cancer Research, Division of Epidemiology, *Clifton Ave., Sutton SM2 5PX, England, United Kingdom*

This project will set up a comprehensive file to examine future queries about the influence of work in a particular process upon mortality from specific diseases. Specific job histories will be obtained for all individuals who have worked at two large refineries for more than one year since these refineries were established. A comprehensive job history will be abstracted and the file will accumulate at the same time data on the plants and processes at each of the refineries including designation of the major variation in the raw materials, intermediaries, and products from each process. Individuals leaving the industry will be traced and the intention is to provide death details for all individuals who have died. This file of data will be primarily used as a computer-based retrieval system to check specific queries about health-risks from various processes. The primary approach will be to relate observed mortality to expected mortality taking into account age, sex, calendar period, and location in the country.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.2685,

LEUKEMIA INCIDENCE AMONG WORKERS EXPOSED TO BENZENE

M.B. Aksoy, Istanbul Universitesi, Faculty of Medicine, Section of Hematology, *Bayezit, Istanbul, Turkey*

Further follow-up of persons in work places where aplastic anemia and leukemia associated with benzene exposure occurs, continues. During the period 1967-1969 44 cases of leukemia were noted in addition to nine patients with malignant lymphoma, five with carcinoma of lung, three with multiple myeloma, three with myeloid metaplasia and two with paroxysmal nocturnal hemoglobinuria.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.2686,

EPIDEMIOLOGICAL STUDY OF ACUTE CHILDHOOD LEUKEMIA (ABBREV)

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Retrospective studies of acute childhood leukemia in Greece have shown an increased occurrence of new cases during the spring months and a significant yearly variation in the percentage of non-lymphoblastic forms. The main objectives of the present study are: (1) Characterization of the seasonal distribution of acute lymphoblastic leukemia (ALL) and acute non-lymphoblastic forms; (2) search for clustering of cases in space and time and clustering in time of cases with ALL which have a leukocyte count over 20,000 per mm3; (3) determination of the frequency of occurrence of the chloromatous form of acute leukemia (this variant is increased in Africa and Turkey); (4) estimation of frequency of leukemias, lymphomas, neuroblastomas and other malignant tumours among hospital admissions and of glucose-6-phosphate dehydrogenase (G-6-PD) deficiency and beta-thalassaemia trait among children with acute leukemia. Do these traits confer increased resistance against acute leukemia?

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.2687,

MALIGNANT NEOPLASMS IN TUBERCULOSIS PATIENTS

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A unique opportunity of having two population-based registries under one roof was used for a preliminary investigation of tuberculosis and lung carcinoma which suggested that tuberculosis patients are at a higher risk of developing lung cancer. Possible causes for the high risk were discussed: scar carcinoma, the effect of large amounts of radiation (diagnostic procedures) and the carcinogenic effect of anti-tuberculosis drugs. If radiation is a cause of higher risk, the bulk of the resulting lung carcinomas will have appeared by now, as diagnostic and therapeutic procedures have changed. On the other hand, anti-tuberculosis drugs, especially isoniazid, which has been shown to have carcinogenic effects in animals, have now been in use for a probably sufficient length of time to show their specific carcinogenic effects, not necessarily limited to lung cancer, in tuberculosis patients. The purpose of the study is to re-examine the risk of tuberculosis patients of developing lung and other cancers and to look for differences in the cancer experience of tuberculosis patients according to changes in diagnostic and treatment policies. This is a record linkage study based on the Israel Cancer Registry and the Israel Tuberculosis Registry, supplemented by information from hospital and regional chest clinic records. The Tuberculosis Registry has approximately 55,000 names, starting in 1948, and also includes patients diagnosed before this date. The information on the tuberculosis patients will be extracted from individual records, from the Tuberculosis Registry, hospitals and chest clinics. Information on validation of diagnosis of tuberculosis, date of diagnosis of tuberculosis, localization of the tuberculous process, type and periods of anti-tuberculosis therapy, anatomical site and histology of cancer, date of diagnosis of cancer, activity of the tuberculosis at the time of the diagnosis of the tuberculosis and at the date of diagnosis of the cancer and cause of death will be sought.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.2688,

COMPILATION AND ANALYSIS OF INTERNATIONAL CANCER MORTALITY STATISTICS

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In previous publications, the statistics of international cancer mortality were compiled and analyzed from the data printed in the World Health Statistics Annuals published by WHO. Our most recent publication is 'Age-Adjusted Death Rates for Cancer for Selected Sites (A-Classification) in 51 countries in 1974', February 1979. The next issue of 'Age-Adjusted Death Rates for Cancer for Selected Sites', in which age-adjusted death rates of cancers (buccal cavity and pharynx, esophagus, stomach, intestine except rectum, rectum, larynx, lung, bones, skin, breast, uterus, prostate, leukemia, lymphatic and hematopoietic tissue, etc.) in 46 countries in 1975 will be calculated, is now being prepared. The cumulative and age-adjusted death rates from cancer by sites in about 20 countries from 1950 to 1970 have also been computed, and cancer mortality trends analyzed. 'Ratio of Cumulative Death Rates and Age-Adusted Death Rates from Cancer by sites in 1960, 1970, to those in 1950, 1960', analyzes the increase and decrease of cumulative or age-adjusted death rates from cancer by sites during each decade of the 1950s and the 1960s. Based on these data, the correlations between mortality or incidence rates of cancer by sites in varous countries are being computed.

Description provided by IARC and DKFZ with ICRDB/NCI support.
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3.2689,

PROSPECTIVE STUDY IN RELATION TO OCCUPATIONAL EXPOSURE TO VINYL CHLORIDE

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Vinyl chloride (VC), under normal temperatures and pressures of gas, can easily be polymerized to polyvinyl chloride (PVC), a white solid material. Apart from fire and explosion risk and a quickly appreciated narcotic effect, acro-osteolysis and soft tissue changes have also been described. Following an epidemiological study by Maltoni in 1974, reporting a cluster of cases of angiosarcoma of the liver in men who had previously worked as cleaners of reactors, a prospective study on VC-workers in this polymerization plant has been set up, comprising the tracing of medical data on previous VC-workers and a biannual physical and biochemical investigation of the present VC-population. Findings are related to the degree of VC-exposure as measured either by personal monitoring or fixed point air sampling.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.2690,

THE EFFECT OF CHANGING DIETARY HABITS ON ESTROGEN PROFILES IN GREECE

D. Trichopoulos, University of Athens, School of Medicine, Dept. of Hygiene & Epidemiology, *Odos Panepistimiou 30, Athens 609, Greece*

Diet is one of the factors that may be responsible for the different incidence of breast cancer in urban and rural areas of Greece. If estrogen fractions are important in the aetiology of breast cancer, then diet should have an effect on the estrogen profiles. Urine and blood samples were collected from about 120 student nurses who came to Athens from rural areas to study nursing. Since the diet in the School for Nurses is different from that in the rural areas of Greece, third year students should be different from first year students with respect to estrogen profiles. Blood lipids were also measured because their relation to diet seems established.

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3.2691,

STUDY OF RETINOBLASTOMA IN JAPAN AS A POSSIBLE POPULATION MONITORING SYSTEM FOR ENVIRONMENTAL MUTAGENS

T. Sugahara, Kyoto University, School of Medicine, Dept. of Experimental Radiology, *Yoshida-Konoecho, Sakyo-ku, Kyoto 606, Kyoto, Japan*

Because an increasing number of environmental mutagens have been detected by laboratory screening methods, the need to monitor human population directly for mutational risk has been emphasized by many geneticists. Recent studies by Knudson offer hope that certain malignant neoplasms might be used to assess somatic mutation rates. According to Knudson, the age at first diagnosis of these diseases may be related to the annual somatic mutation rate. Thus the data on the age at first diagnosis of unilateral and bilateral retinoblastoma have been collected throughout Japan. Since 1975 the data have been obtained by a nationwide registry of the disease in cooperation with the Ophthalmology Society of Japan. A first report suggesting an increase in mutation rate in Japan has been published (Mutation Research 30, 137, 1975). The study continues.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.2692,

PROSPECTIVE STUDY OF GESTATIONAL TROPHOBLASTIC DISEASE IN THE NETHERLANDS

J.G. Stolk; Vrije Universiteit te Amsterdam, Dept. of Obstetrics & Gynecology, *Amsterdam, Netherlands*

The main objective is to study the incidence of gestational trophoblastic neoplasms in the Netherlands, and to improve the prognosis of choriocarcinoma by early therapy. Cases of molar pregnancy will be registered and beta-subunit human chorionic gonadotropin determinations in all cases will be carried out in one laboratory (Dr. Houx).

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.2693,

ASPECTS OF CANCER OF THE UTERINE CERVIX IN JAMAICA

V. Persaud, University of the West Indies, Dept. of Anatomical Pathology, *Kingston 7, Jamaica*

The crude incidence of cervix cancer (39.4 per 100,000 per annum) in Jamaica is among the highest in the world. The university departments of pathology, social and preventive medicine and obsterics and gynecology have been undertaking studies on the incidence, aetiology, early detection and morphology of uterine cervix cancer in Jamaica. Incidence figures are obtained from the Jamaica Cancer Registry, Dept. of Pathology, U.W.I., for a well-defined metropolitan population with adequate diagnostic facilities. Early detection by cytology screening in family planning clinics has shown a prevalence of 5.7 per 1,000 women whereas the rate in a low-income, high-risk, general population of 'well' women was 18.0 per 1,000. This discrepancy appeared to be due to the fact that the family planning women were of low parity (para 0-3) and therefore were not at high risk of developing cervix cancer since both groups were matched for age, race and socioeconomic background. A retrospective interview study was carried out on 300 histologically proven cases of cervical carcinoma and 390 'well' controls matched for age, race, and social class. The controls were drawn from a low-income, high-risk general population of women who were cytologically negative for cervix cancer. The questions asked concerned their marital status, number of pregnancies, age at first pregnancy and first coitus, number of coital partners and the circumcision status of these partners and sexual hygiene. The statistically significant factors were grand multiparity, promiscuity, poor sexual hygiene and early age at first coitus and first pregnancy. Studies on the epidemiology and early detection of cervix cancer in Jamaica are still progress.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.2694,

CANCER IN THE IGBOS OF NIGERIA

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This ongoing study of the relative frequency and the characteristics of cancer cases biopsied in different hospitals serving the Igbos of Nigeria and examined at a central laboratory has resulted in the following publications: Relevance of race in management of testicular tumours (Brit. Med. J.1: 22-23, 1977); Biopsy study of hepatocarcinomas in Nigerian Igbos (Acta Hepato-Gastroenterol. 24: 24-26, 1977); Comparative study of bowel lymphosarcoma in childhood (Med. J. Australia 1; 886, 1977); Cancer of the oral cavity in Nigerian Igbos (J. Oto-Rhino-Laryngol. 39; 247-250, 1977); Clinical awareness of vulvo-vaginal metastases in choriocarcinoma (Nigerian Med. J. 8; 270-271, 1978) and Jaw tumours in Nigerian Igbos (Brit. J. Oral Surg. 15: 223-226, 1978). Work continues.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.2695,

SEROEPIDEMIOLOGICAL STUDIES OF HERPES VIRUS TYPE-2 AND CARCINOMA OF THE CERVIX IN ISRAEL

S. Leventon Kriss, Ministry of Health, Central Virus Lab., *P.O. Box 8255, Tel Aviv, Israel*

The relationship between genital herpetic infection and squamous cell carcinoma of the uterine cervix has been substantiated by sero-epidemiological studies and by evidence of virus persistence in cervical tumor cells. Most studies proving the association between cervical carcinoma and HSV-2 were done in populations with high risk rates for this malignancy. Jewish women are at low risk for this disease. It was, therefore, considered interesting to compare the Jewish population studies with those in other demographic groups, namely Christians and Muslims in Israel.

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3.2696,

SPORADIC RETINOBLASTOMA IN RELATION TO PARENTAL AGE AND SEASONAL VARIATION

E. Matsunaga, National Inst. of Genetics, Dept. of Human Genetics, *Shizuoka-ken, Yata 1111, Mishima 411, Japan*

Follow-up investigations of progeny of survivors of sporadic retinoblastoma revealed that they comprise two etiologically distinct groups, hereditary and non-hereditary. All bilateral cases belong to the hereditary group and they are due to dominant germinal mutations, while the majority (90-95%) of sporadic unilateral cases are non-hereditary, and the cause appears to be the same mutational event in the somatic (retinoblast) cells. Although a few investigations (including ours) suggest that paternal age may affect the occurrence of sporadic bilateral but not unilateral cases, the evidence is as yet not very convincing. We intend to clarify this point, together with the possible effect of seasonal variation upon the presumed somatic mutations. Data concerning about 400 sporadic cases of retinoblastoma which occurred in from 1970 to 1975 in Japan have already been analyzed, and new cases (approximately 100 per year) will be collected over the next several years.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.2697,

CHILDHOOD LEUKEMIA IN NORWAY 1963-1979

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Information about all cases of childhood leukemia diagnosed in Norway during the period 1963-1979 has been collected by contacting hospitals, particularly all pediatric departments, and for the first years - all the departments of internal medicine as well. Information has also been obtained from the National Cancer Registry as cancer registration is compulsory in Norway. Information was obtained as to the type of leukemia, year of diagnosis and survival time. The first part of this study has already been published. The aim of the second part of this study is to register all current cases of childhood leukemia with emphasis on cell-type, treatment regimen, results of therapy, and possible sequelae of the use of intermediate dose levels of methotrexate for almost all cases of lymphocytic leukemia diagnosed in Norway after 1975.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.2698,

HODGKIN'S DISEASE IN NIGERIAN AND AMERICAN CHILDREN

E.G. Olisa, University of Ibadan, *Bauchi Rd., Jos, Nigeria*

The histological classification of Hodgkin's disease in Nigerian and American children is still being studied. Materials were collected from Ibadan University Teaching Hospital and Murtala Mohammed Hospital, Jos, both in Nigeria, and a few cases were obtained from Howard University Children's Hospital in Washington, D.C., U.S.A. The American cases are 150 in number, whilst the number from Nigeria is 84. Collection continues. The natural history and histological patterns of the disease are being studied in relation to granulomatous infections, in particular tuberculosis and leprosy.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.2699,

CASE-CONTROL STUDY ON URINARY BLADDER CANCER

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A random sample of 100 persons with urinary bladder cancer, all resident in the Genoa District, reported to the cancer registry is being compared with 200

persons of the same sex and age group affected by different diseases (excluding cancers and other diseases of the respiratory system, cancer of the upper alimentary tract, myocardial infarction, diseases of the urinary system and certain occupational diseases), admitted to the same hospital. Emphasis is placed on occupation and smoking habits. The objective of this study is to uncover possible associations between occupational exposure to chemical carcinogens and urinary bladder cancer.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.2700,

CAUSES OF DEATH IN THE DIFFERENT QUARTERS OF GENOA

R. Puntoni, Universita degli Studi di Genova, Inst. de Oncologia, Dept. of Epidemiology, *Viale Benedetto 15, Pad. B, 16132 Genoa, Italy*

The city of Genoa (816,872 inhabitants) is subdivided into 25 quarters. The socioeconomic and environmental situation of these quarters is very heterogeneous and there are different levels of air pollution. The 20,000 deaths which occurred in the years 1970-71 are being analyzed by the quarter of residence, the cause of death and the last occupation. The purpose of this investigation is to define possible relations between environment (different levels of air pollution), occupation and cause of death, with particular reference to cancer of the respiratory tract.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.2701,

RELATIONSHIP BETWEEN LEUKEMIA AND EXPOSURE TO DIAGNOSTIC RADIATION

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The Tri-State Leukemia Study in U.S.A., 1962-1963, showed an excess of leukemias in adult males associated with an increased frequency of x-ray examinations. The purpose of the present study is to validate the results of the Tri-State Leukemia Study and to estimate exposure and dose of x-rays in 1,000 leukemia patients and in 1,000 controls chosen by random sampling from the Polish population. A retrospective survey provides information on the number and kind of x-ray examinations during the past 20 years. Information obtained from patients and controls is confirmed in hospitals, polyclinic records and archives. Exposure and dose of x-rays will be compared in both groups. A pilot study in Warsaw of 225 leukemia cases and 419 controls was completed in 1978. Some of the results show that the radiation load in leukemia patients may be higher than in relevant control groups. The results in children seem to indicate that children with leukemia were subjected to a higher number of x-ray examinations than the controls.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.2702,

FREQUENCY OF NEOPLASTIC CONDITIONS IN A UNIVERSITY STUDENT POPULATION

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The Students' Health Service provides, in conjunction with the Hadassah University Hospital, a comprehensive health service. Diagnoses and important symptoms are classified in accordance with the ICD (A), with the assistance of a computer. Students, currently about 7,000, are of both sexes from a wide variety of countries of origin the vast majority being Jewish. The computer print-out includes inter alia, a register of all diagnosed cases of neoplastic disease in the age groups. The data base sheets in the patients' files provide background information. Quite a few cases of melanoma and squamous carcinoma of the skin have been recorded.

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3.2703,

LEUKEMIA IN KENYA

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Little is known about leukemia in Africa. Following a preliminary study (MD thesis covering period 1975-1979), this project proposes to study various aspects of leukemia in the Kenyan community. The incidence of the disease in Kenya will be determined, based on community studies of Kiambu and Machakos districts, which have so far shown the highest leukemia rates (although these may be influenced by easy access to Nairobi, with the highest concentrations of medical facilities in the country). Factor(s) which may contribute to the high frequency of myeloid leukemias, twice as prevalent as the lymphocytic types, such as background terrestrial or solar radiation, medicinal herbs, agricultural insecticides, the high carrier rates of HBsAg, and the relevance of genetic markers will be examined. Immunogenetic marker studies of the African population afflicted by leukemia, as well as in vitro studies of the leukemic cell growth kinetics, will be carried out to establish whether the very advanced stage of disease at presentation is due to lateness on the part of the patients in seeking medical advice or whether the disease in genuinely more agressive than in Caucasian populations.

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3.2704,

CANCER MORBIDITY IN NEW ZEALAND IN RELATION TO OCCUPATION

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The study, which will be based on new cases registered at the New Zealand National Cancer Registry during 1972-74, will describe differences in cancer morbidity between occupational groups of adult males in New Zealand. The findings will be examined in relation to earlier studies and to possible differences in the working environment of the occupational groups.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.2705,

BCG VACCINATION AND LEUKEMIA

L. Katz, Israel Center for Registration of Cancer & Allied Diseases, *18 20 King David St., Jerusalem 91000, Israel* (00680)

The possibility that the reported non-specific immunity conferred by BCG may have some influence in the prevention of leukemia in children is being investigated. In Israel a unique opportunity presents itself for studying the incidence of leukemia in BCG vaccinated children and in a non-vaccinated control group: since 1955 routine BCG vaccination of newborns has been carried out in all maternity wards in Israel - with the exception of the Jerusalem hospitals, where it was never introduced. The incidence of leukemia in children born in Israel since 1955, diagnosed after 1960 (the year the Israel Cancer Registry was founded) and up to the age of ten will be studied. Two hundred and sixty-three cases of leukemia in children have been identified. Their places of birth are now being ascertained.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.2706,

HIGH RISK GROUPS FOR BREAST CANCER

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For each newly diagnosed breast cancer case, two age- and residence-matched hospital controls are chosen. Questions are asked about demographic variables, reproduction-associated variables and family history. Blood groups are determined.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.2707,

EPIDEMIOLOGICAL CHARACTERISTICS OF GASTRIC CANCERS BY HISTOLOGICAL TYPE

L. Juhasz, Szabolcs Szatmar County Hospital, Policlinic Unit, *44 Voeroeshadsereg u. 68, H4401 Nyiregyhaza, Hungary*

Biopsy and autopsy material from stomach cancer patients is typed according to the system of Lauren. This information is compared with data on epidemiological factors previously obtained by interview.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.2708,

NITRATE LEVEL IN DRINKING WATER AND GASTRIC CANCER

L. Juhasz, Szabolcs Szatmar County Hospital, Policlinic Unit, *44 Voeroeshadsereg u. 68, H4401 Nyiregyhaza, Hungary*

Stomach cancer is very common in Hungary. Shallow well water in the County Szabolcs-Szatmar very often has a high nitrate content. As part of a larger study the possible relationship between incidence of stomach cancer, nitrate level of drinking water, occurrence of methemoglobinemia cases and geographical distribution by soil types is examined. This analysis and comparison of Hb-values of pregnant women from the year 1975 onwards is in progress. Analyses of urine from selected places will be performed in the Bacterial Metabolism Research Laboratory, London. The first results were presented at the 6th IARC Meeting on Analysis and Formation of N-Nitroso Compounds, 16-21 October, Budapest, Hungary, and will be published shortly.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.2709,

CASE-CONTROL STUDY OF GASTRIC CANCERS IN THE COUNTY OF SZABOLCS-SZATMAR

L. Juhasz, Szabolcs Szatmar County Hospital, Policlinic Unit, *44 Voeroeshadsereg u. 68, H4401 Nyiregyhaza, Hungary*

Using a modified questionnaire, this case-control study continues. For each newly diagnosed case of gastric cancer two hospital controls are chosen, matched by age and residence, to better characterize high risk groups. Questions are asked on food habits and family history. Blood groups are also determined.

Description provided by IARC and DKFZ with ICRDB/NCI support.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.2710,

LONG-TERM TRENDS IN STOMACH CANCER MORTALITY AMONG KRAKOW REGION INHABITANTS

W. Jedrychowski, Akademia Medyczna w Krakowie, Inst. of Social Medicine, Dept. of Epidemiology, *Ul. Kopernika 7, 31034 Cracow, Poland*

The aim of the study is to compare mortality from malignant gastrointestinal neoplasms in groups of inhabitants living in four city districts differing in their demographic features and nutritional habits. The analysis is based on death certificates and interviews regarding dietary habits carried out in representative samples of the inhabitants. The results of a preliminary study based on a 1974 survey show higher mortality rates for all causes, and for gastrointestinal neoplasms in particular, in the center of the city, with the exception of mortality due the stomach cancer in women, than among the suburban population. Mortality rates due to gastrointestinal neoplasms of the stomach, liver, gallbladder and pancreas, colon and rectum were also high in men living in the newly developed part of the city. The differences in the consumption patterns of basic food products failed to explain fully the observed divergence between the mortality rates. However, the higher mortality rates in the center of the city could be explained to some extent by the higher atmospheric pollution level.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.2711,

RELATIVE FREQUENCY OF CANCER IN ISFAHAN, IRAN

H. Emamy, University of Isfahan, School of Medicine, Dept. of Pathology, *Hezargerib, Isfahan, Iran*

The most common cancers in the Isfahan region of Iran are those of skin, prostate, stomach and malignant lymphoma. The 3,500 biopsy specimens filed in the Department of Pathology of Isfahan University Medical School are being examined to determine the distribution of malignancy in this region for comparison with other areas in Iran.

Description provided by IARC and DKFZ with ICRDB/NCI support.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.2712,

EPIDEMIOLOGY OF MALIGNANT TUMORS IN CHILDHOOD - PROGNOSIS OF WILMS' TUMOUR

Z. Erdos, Semmelweis Orvostudomanyi Egyetem, Dept. of Paediatrics, *Ulloi Utca 26, Budapest, Hungary*

The frequency of malignant neoplasms, especially Wilms' tumour, has been followed since 1947 in the First Dept. of Paediatrics of the Semmelweis Medical School, Budapest. No increase in the number of malignant tumours was found, a finding consistent with data from other countries. In this period, considerable improvement in the prognosis of Wilms' tumour, recovery in 50-70 percent of the cases has been noted; one patient with cured Wilms' tumour has been followed up for 36 years. Observations continue. Over the next 2 years it is intended to record the exact geographical sites where children with cancer are found. In adults it has been found that the highest frequency in Hungary occurs in the regions bordering on Austria. In the Transdanubian region in Hungary the number of cancer cases on the southern shore of the Lake Balaton is higher than in other parts of the country; the highest frequency of Down's Syndrome was also noted in this region.

Description provided by IARC and DKFZ with ICRDB/NCI support.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.2713,

LARGE BOWEL CANCER INCIDENCE 1972-74

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The study based on new cases registered at the New Zealand National Cancer Registry will describe differences in large bowel cancer incidence in New Zealand from 1972-74 in terms of geographical location, occupation, country of birth, and, for deaths, length of time foreign-born residents have lived in New Zealand. The findings will be compared with an earlier study.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.2714,

GENETIC POLYMORPHISMS IN HIGH AND LOW RISK BREAST CANCER FAMILIES

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The objective of this study is to select a group at high risk of developing breast cancer in the population by means of certain genetic markers. Families with a high incidence of breast cancer have been investigated for a battery of genetic markers, including blood groups, serum groups, HL-A antigens, red cell isoenzymes and chromosome bands. Linkage studies were carried out using the Edwards Computer Program. Studies on plasma prolactin levels in the members of these families were also undertaken. In the first crude analysis of the data, evidence for only a weak linkage between a susceptibility gene for breast cancer and HL-A was found. In order that significant evidence for linkage may be obtained, the number of families must be increased. The material from study carried out by Dr. H. Lynch and Dr. Mary C. King is added to the data and analyzed for linkage. The studies of prolactin regulations continue.

Description provided by IARC and DKFZ with ICRDB/NCI support.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.2715,

DISTURBANCES OF CARBOHYDRATE-METABOLISM AND ADIPOSITAS IN PATIENTS WITH CARCINOMA OF THE CORPUS UTERI AND THE BREAST

C.B. Goecke, Luisenhospital, Dept. of Obstetrics & Gynecology, *5100 Aachen, Federal Republic of Germany*

Women with either endometrial cancer or breast cancer constituted an experimental group. For this group epidemiological data and data on accompanying illnesses, diabetes mellitus and adipositas, were collected. For comparison, a group of women without cancer constituted a control group.

Data on 369 patients with endometrial cancer and 178 patients with breast cancer were collected. The control group provided data on 884 women. All data were analyzed by computer.

The highest incidence of endometrial cancer appears among women between the ages of 55 and 59 in the postmenstruation period. The graph of breast cancer has two peaks. One maximum appears before the menopause (between the ages of 45 and 49). This rate decreases during the menopause itself (50 to 54 years old). The second maximum appears in women between the ages of 55 and 59 (after the menopause).

The rate of endometrial and breast cancer among the nulliparae in the experimental group was significantly higher than in the control group.

The incidence of manifest diabetes mellitus appears to be significantly higher than in the control group. The number of patients who had glucosuria and were suspected of having diabetes mellitus and the number of patients with latent diabetes mellitus were significantly higher than in the control group.

Potential diabetes mellitus in the control group was higher than in the experimental group.

Adipositas in women with endometrial cancer was significantly more common than in the control group women.

Manifest diabetes mellitus in the group of patients with breast cancer is also significantly more common than in the control group. The same result was seen in the group of patients who had glucosuria and were suspected of having diabetes mellitus. The rate of latent and potential diabetes mellitus was found to be higher in the control group than in the experimental group. Adipositas was also significantly more common in the experimental group of patients with breast cancer than in the control group.

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3.2716,

TESTIS NEOPLASMS - CENTRAL REGISTRY AND COLLABORATIVE STUDY

W.E. Vahlensieck, Universitat Hospital of Urology, *Venusberg, 5300 Bonn, Nordrhein Westfalen, Federal Republic of Germany*

This registry collects information on patients with testis neoplasms. Particular attention is given to previous history, influence on risk of maldescended testis including effect of hormonal treatment and surgery and the age at which therapy was given. The influence of testis neoplasms on fertility will be examined.

Description provided by IARC and DKFZ with ICRDB/NCI support.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.2717,

ECOLOGICAL ANALYSIS OF CANCER MORTALITY IN LOWER SAXONY

M. Pflanz, Medizinische Hochschule Hannover, Institut fuer Epidemiologie und Sozialmedizin, *Karl Wiechert Allee 9, D3000 Hannover 61, Federal Republic of Germany*

The study aims to detect relationships between cancer mortality (1968 and 1971) and socioeconomic or environmental factors by multivariate analysis. The sex-specific age-standardized data will be correlated with about 70 socioeconomic variables. Spatial relationship between chemical plants, lead smelters and other environmental hazards on one hand, and counties with high cancer mortality for specific sites on the other hand, will be examined. The study method is similar to that used in the analysis of cancer mortality in the United States counties.

Description provided by IARC and DKFZ with ICRDB/NCI support.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.2718,

MALIGNANT DISEASES IN GREENLAND

N.H. Nielsen, Kobenhavns Universitet, Inst. of Forensic Medicine, Dept. of Forensic Pathology, *Frederik den Femtes Vej 11, DK2100 Copenhagen OE, Denmark*

This is an epidemiological study of total cancer incidence in Greenland as well as incidence of all specific types of malignancy. Records of all malignant cases diagnosed in this century are reviewed for medical and demographic information. The aim of the project is primarily to evaluate possible spatial or geographical gradients of frequency and to identify possible risk factors or risk groups. Part of the work has been published.

Description provided by IARC and DKFZ with ICRDB/NCI support.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.2719,

INCIDENCE OF BRONCHIAL CARCINOMAS IN MINERS IN THE SAARLAND

G. Dhom, Universitaet des Saarlandes, Universitaetskliniken, Pathologisches Institut, *6650 Homburg Saarlands, Federal Republic of Germany*

It is known from English and American investigations that coal miners have a lower mortality from bronchial carcinoma than the rest of the male population. The aim of this study is to see whether similar findings can be obtained for the miners from the Saarland. For this purpose, data available in the Cancer Registry of the Saarland and the health insurance company (Knappschaftskrankenkasse) will be used.

Description provided by IARC and DKFZ with ICRDB/NCI support.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.2720,

STUDIES OF MORTALITY IN AN INSTITUTION FOR AGED INVALID PATIENTS

P. Berthaux, Hopital Charles Foix, Service de Geriatrie, *Ave. de la Republique, 94200 Ivry sur Seine, France*

For the past eight years a necropsy has been done as often as possible for all patients dying in the institution (2,200 beds). Causes of death and associated pathology are investigated and compared with the clinical and biological data obtained during the life of the patients. It is proposed to identify high risk groups on the basis of previously collected data on immunodeficiency, age at menopause, etc.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.2721,

ETIOLOGICAL FACTORS IN CANCER OF UPPER RESPIRATORY AND DIGESTIVE TRACTS

J. Brugere, Fondation Curie, Service de Chirurgie Cervico Faciale et ORL, *11 rue Pierre et Marie Curie, 75231 Paris Cedex 5, France*

Four main groups of neoplasms (oral cavity, oropharynx, larynx and hypopharynx) are being analyzed. A comparative study is carried out with special reference to occupation, dental status, smoking and drinking habits, precancerous lesions, sex and age. This information will be compared for the four groups and for ENT Department outpatients without evidence of neoplasm.

Description provided by IARC and DKFZ with ICRDB/NCI support.

SUPPORTED BY (No Supporting Organization Reported) funds n.a.

3.2722,

CANCER MORTALITY IN FRANCE - STUDY OF TIME AND SPACE DISTRIBUTION IN RELATION TO SOCIO-ECONOMIC FACTORS (1954-1964)

M. Brunet, Inst. National de la Sante et de la Recherche Medicale, Section Cancer, *5 rue Gaston Latouche, c/o Centre Rene Huguenin, 92211 St. Cloud, France*

After the development of a statistical and computing tool for processing cancer mortality data in France (INSERM monographs - years 1968-1970) providing rates per 100,000 by department, site, sex and age, standardized to several reference populations (France, Europe, world), possible correlations with the socio-economic, vital and geographical data

which are available in France for 1954-1974 will be sought. To this end, the conventional statistical methods (bivariate) and multivariate analysis will be used. In this way it is hoped to demonstrate relationships leading to hypotheses to be tested by analytical aetiological research.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.2723,

STATISTICAL ANALYSIS OF PUBLISHED EPIDEMIOLOGICAL STUDIES ON ATMOSPHERIC POLLUTION AND LUNG CANCER

J. Misfeld, Technische Universitat Hannover, Institut fuer Mathematik, *Welfengarten 1, D3000 Hannover, Niedersachsen, Federal Republic of Germany*

Epidemiological studies which examine the relationship between atmospheric pollution and lung cancer are being carried out and the results analyzed statistically.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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3.2724,

EPIDEMIOLOGY OF THYROID NODULES

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Mortality from thyroid cancer seems more common in Midi-Pyrenees than in other regions of France. Over a period of 20 years the Claudius Regaud Center has collected a very large number of patients with thyroid nodules, many of which have been microscopically confirmed. The purpose of the study is to correlate habitat with (1) benign and malignant thyroid tumors and (2) different types of malignant tumors. The Midi-Pyrenees region is demographically rather simple. In the North, in the Massif Central range, there is an epidemiological cluster of goiters (Aveyron-Tarn) and in the South, in the Hautes-Pyrenees-Ariege range, there is another. Some of our patients come from the Aude department, between the Montagne-Noire and the Pyrenees. There are also Italian migrants (mainly from Treviso, Udine, Venice) and Spanish migrants (mainly from Aragon and Catalonia) as well as white migrants from North Africa, numerous before 1962, and Poles who migrated into mining regions around 1931. Each patient with benign and malignant thyroid nodules has been questioned about residential history, diet, familial history of thyroid disease and personal habits. The distribution of thyroid disease will be compared with that of population distribution, distinguishing between those with change of residence and others. There is a clear excess of females (83 percent of benign and 75 percent of malignant neoplasms). Follicular cancers seem to be more frequent than papillary cancers, particularly where benign lesions are common.

Description provided by IARC and DKFZ with ICRDB/NCI support.

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American Health Foundation Inc., New York, New York
3.0590, 3.0610, 3.0637, 3.0711, 3.0715, 3.0718, 3.0753, 3.0754, 3.0758, 3.0760, 3.0761, 3.0763, 3.0764, 3.0765, 3.1630, 3.2351, 3.2353, 3.2377, 3.2389

American Health Foundation Inc., Valhalla, New York
3.0598, 3.2284, 3.2352, 3.2354, 3.2523

American Inst. for Research, Cambridge, Massachusetts
3.1259

American Petroleum Inst., Washington, District of Columbia
3.2268, 3.2269

Andhra Medical College, Visakhapatnam, India
3.1722

Ankara Oncology Hospital, Ankara, Turkey
3.2573, 3.2582, 3.2672

Anti Cancer Council of Victoria, East Melbourne, Australia
3.1670

Anzon Ltd., Wallsend, England, United Kingdom
3.1583

Arbeitsmedizinisches Zentrum der Berufsgenossenschaften, Saarbruecken, Federal Republic of Germany
3.2090

Argonne National Lab., Argonne, Illinois
3.1338, 3.1586, 3.2145, 3.2191, 3.2200, 3.2441

Arignar Anna Memorial Cancer Inst., Kanchipuram, India
3.1728

Armand Frappier Institut, Laval des Rapides, Quebec, Canada
3.1671, 3.1707, 3.1924, 3.2130

Arthur D. Little Inc., Cambridge, Massachusetts
3.0409

Assn. of Medical Women in India, Bombay, India
3.0037

Auckland University, Auckland, New Zealand
3.1805, 3.2111, 3.2113

Australian Dept. of Veterans Affairs, Adelaide, Australia
3.2539

Badische Anailn & Soda Fabrik Ag, Ludwigshafen, Federal Republic of Germany
3.1701, 3.1702

Battelle Memorial Inst., Richland, Washington
3.1104

Battelle Memorial Inst., Seattle, Washington
3.2378

Baylor College of Medicine, Houston, Texas
3.0003, 3.0335, 3.0684, 3.0817, 3.1035, 3.2183, 3.2219, 3.2274, 3.2276

Behavioral Research & Evaluation Corp., Boulder, Colorado
3.0283

Belfast City Hospital, Belfast, Northern Ireland, United Kingdom
3.1564, 3.2603

Ben Gurion University of the Negev, Beersheba, Israel
3.2104

Berufsgenossenschaft der Chemischen Industrie, Heidelberg, Federal Republic of Germany
3.2119, 3.2626

Beth Israel Hospital, Boston, Massachusetts
3.0507, 3.0516, 3.1258

Beth Israel Medical Center, New York, New York
3.1629

Bhabha Atomic Research Centre, Trombay, India
3.0043

Blagoveschensk State Medical Inst., Blagoveschensk-on-Amur, Union of Soviet Soc. Republics
3.2109

Boston University, Boston, Massachusetts
3.0330, 3.0781, 3.0797, 3.0821, 3.0828, 3.0842, 3.0983, 3.2482

Bowling Green State University, Bowling Green, Ohio
3.0484

Brazilian Research Inst., Sao Paulo, Brazil
3.1468

Bridgend General Hospital, Bridgend, Wales, United Kingdom
3.2540

Brigham Young University, Provo, Utah
3.0929

British Aircraft Corp., Bristol, England, United Kingdom
3.1566

British Rubber Manufactures Assn. Ltd., Birmingham, England, United Kingdom
3.2549

Brown University, Providence, Rhode Island
3.0565

Bursa University, Bursa, Turkey
3.1742, 3.1851

C. Besta Neurological Inst., Milan, Italy
3.0020, 3.1856

Caduti Bollatesi Hospital, Bollate, Italy
3.1995

Cairo University, Cairo, Egypt
3.2616

Caja Nacional de Seguridad Social, La Paz, Bolivia
3.0010

California Inst. of Technology, Pasadena, California
3.1254

California State University & Colleges, Hayward, California
3.0350

Canadian Dept. of National Health & Welfare, Edmonton, Alberta, Canada
3.1472

Canadian Dept. of National Health & Welfare, Ottawa, Ontario, Canada
3.1474, 3.1674, 3.1677, 3.1975, 3.2548

Cancer Centre & Welfare Home, Calcutta, India
3.0011

Cancer Control Agency of British Columbia, Vancouver, British Columbia, Canada
3.1476, 3.1918, 3.1919, 3.1920, 3.1921, 3.2001, 3.2049

Cancer Council of Western Australia, Perth, Australia
3.2609, 3.2610

Cancer Hospital, Indore, India
3.1513

Cancer Inst. Hospital, Tokyo, Japan
3.1762, 3.1909

Cancer Registry for the Metropolitan Cairo Area, Cairo, Egypt
3.0012

Cancer Research Inst., Bombay, India
3.2551, 3.2595

Carnegie Mellon University, Pittsburgh, Pennsylvania
3.1274

Case Western Reserve University, Cleveland, Ohio
3.0314, 3.0500, 3.0502, 3.0503, 3.0534, 3.0559, 3.2364

Cedars Sinai Medical Center, Los Angeles, California
3.0671

Center for Adult Diseases, Osaka, Japan
3.1533, 3.1534, 3.1535, 3.1825, 3.1826

Center for the Prevention of Social Diseases, Florence, Italy
3.1926, 3.2092, 3.2100

Central Electricity Generating Board, Berkeley, England, United Kingdom
3.1882

Central Mississippi Inc., Winona, Mississippi
3.0840

Central Public Health Lab., London, England, United Kingdom
3.0013, 3.2587

Centre Anticancereux du Marocco, Casablanca, Morocco
3.1537

Centre Claudius Regaud, Toulouse, France
3.2724

Centre de Medecine du Travail, Cluses, France
3.2058, 3.2059

Centre Hospitalier Intercommunal de Creteil, Creteil, France
3.1679

Centre Hospitalo Universitaire Mustapha, Algiers, Algeria
3.1463

Centre Hospitalo Universitaire, Caen, France
3.1680

Centre International de Recherche sur le Cancer, Lyon, France
3.0691, 3.0703, 3.0709, 3.0744, 3.1490, 3.1494, 3.1495, 3.1691, 3.1692, 3.1694, 3.1695, 3.1696, 3.1855, 3.1971, 3.2023, 3.2055, 3.2084, 3.2555, 3.2642

Centre National de la Recherche Scientifique, Lyon, France
3.1865, 3.1902, 3.1903, 3.1916, 3.1966, 3.2064

Centre Pierre Masson, Besancon, France
3.1444

Centre Regional Francois Baclesse, Caen, France
3.1681

Centro per lo studio e la prevenzione oncologica, Florence, Italy
3.0023

Chaim Sheba Medical Center, Ramat Gan, Israel
3.0724, 3.0770, 3.0978, 3.1648, 3.1749, 3.1751, 3.1853

Charing Cross Hospital, London, England, United Kingdom
3.1573

Charles R. Drew Postgraduate Medical School, Los Angeles, California
3.0862

Chiang Mai University, Chiang Mai, Thailand
3.2597

Chiba Cancer Center Research Inst., Chiba, Japan
3.0055, 3.0057, 3.1521, 3.1522

Childrens Hospital Medical Center, Boston, Massachusetts
3.0292, 3.0811, 3.0981, 3.0982, 3.0991, 3.1023, 3.1031, 3.1045, 3.2402

Childrens Hospital Medical Center, Cincinnati, Ohio
3.0640

Childrens Hospital of Los Angeles, Los Angeles, California
3.0775

Childrens Hospital of Philadelphia, Philadelphia, Pennsylvania
3.0554, 3.0586, 3.0682, 3.2154, 3.2212, 3.2432, 3.2527

Childrens Hospital of Pittsburgh, Pittsburgh, Pennsylvania
3.0977, 3.1192

Childrens Orthopedic Hospital & Medical Center, Seattle, Washington
3.0597, 3.0646

Chittaranjan National Cancer Research Centre, Calcutta, India
3.1729, 3.1950, 3.1951

Christian Albrechts Universitat, Lubeck, Federal Republic of Germany
3.1876

Christie Hospital & Holt Radium Inst., Manchester, England, United Kingdom
3.1581, 3.1767

Chulalongkorn University, Bangkok, Thailand
3.2537

City of Hope Medical Center, Duarte, California
3.2526

City University, London, England, United Kingdom
3.0017

City University of New York, Flushing, New York
3.2500

City University of New York, New York, New York
3.0312, 3.0399, 3.0400, 3.0402, 3.0510, 3.0530, 3.0659, 3.0766, 3.1091, 3.1628, 3.1636, 3.2171, 3.2175, 3.2176, 3.2177, 3.2179, 3.2242, 3.2247, 3.2348, 3.2349, 3.2350

Claremont Colleges, Claremont, California
3.1334

Clarke Inst. of Psychiatry, Toronto, Ontario, Canada
3.0266

Clemson University, Clemson, South Carolina
3.0086, 3.0106

Cleveland Clinic Hospital, Cleveland, Ohio
3.2196, 3.2363

Clinic of Dermatovenerology, Rijeka, Yugoslavia
3.2662

College of Medicine & Dentistry of New Jersey, Newark, New Jersey
3.0553, 3.0803

Colorado Regional Cancer Center Inc., Denver, Colorado
3.0667

Colorado State University, Fort Collins, Colorado
3.0091, 3.0100, 3.0343, 3.2296

Columbia University, New York, New York
3.0269, 3.0271, 3.0273, 3.0282, 3.0341, 3.0397, 3.0577, 3.0608, 3.0837, 3.0886, 3.0997, 3.1007, 3.1102, 3.1256, 3.2282

Commonwealth Inst. of Health, Sydney, Australia
3.2076

Commonwealth Scientific & Industrial Research Org., Adelaide, Australia
3.1464, 3.1669, 3.2004, 3.2073

Community Cancer Corp. of Luzerne County, Wilkes Barre, Pennsylvania
3.0662

Connecticut Cancer Epidemiology Unit, New Haven, Connecticut
3.1624, 3.2238, 3.2252, 3.2258, 3.2454

Coordinating Commission for Polish American Sci. Collaborat., Warsaw, Poland
3.0539

Copley International Corp., La Jolla, California
3.1314

Cornell University, Ithaca, New York
3.0073, 3.0074, 3.0103, 3.0972, 3.1037, 3.1162

Cornell University, New York, New York
3.0147, 3.0583, 3.0780, 3.0879, 3.0881, 3.0906

Creighton University, Omaha, Nebraska
3.0808, 3.0964

Dacca Medical College Hospital, Dacca, Bangladesh
3.1653, 3.1654, 3.1655, 3.2017, 3.2607

Dartmouth College, Hanover, New Hampshire
3.0543

Delancey Street Foundation Inc., San Francisco, California
3.0267

Deutsches Krebsforschungszentrum, Heidelberg, Federal Republic of Germany
3.0739, 3.2098, 3.2099, 3.2139, 3.2562, 3.2614

Diyarbakir University, Diyarbakir, Turkey
3.1741

Dow Chemical Co., Midland, Michigan
3.2243

Dr. W.W. Cross Cancer Inst., Edmonton, Alberta, Canada
3.2576

Dudley Road Hospital, Birmingham, England, United Kingdom
3.1863, 3.1864

Duke University, Durham, North Carolina
3.0552, 3.0560, 3.0663, 3.0690, 3.0799, 3.0878, 3.0895, 3.1097, 3.1236, 3.1239, 3.1269, 3.1618, 3.1651, 3.2213, 3.2230, 3.2355, 3.2381, 3.2496

E.I. du Pont de Nemours & Co. Inc., Wilmington, Delaware
3.2386

East African Virus Research Inst., Arua, Uganda
3.1562

Eastman Dental Center, Rochester, New York
3.1064

Ecole Nationale de la Sante Publique, Rennes, France
3.2043

Eidgenossische Technische Hochschule Zurich, Schwerzenbach, Switzerland
3.1552

Emory University, Atlanta, Georgia
3.0498, 3.0524, 3.0618, 3.0786, 3.1587

Employment Medical Advisory Service, Birmingham, England, United Kingdom
3.2674

Ente Ospedaliero Monteverde, Italy
3.0737

Enviro Control Inc., Rockville, Maryland
3.0437, 3.0706, 3.0710, 3.2456

Environmental Policy Inst. Inc., Washington, District of Columbia
3.0070

Equifax Inc., Reading, Massachusetts
3.0716, 3.2494

Erasmus University of Rotterdam, Rotterdam, Netherlands
3.1982, 3.2048, 3.2105

Evans County Dept. of Health, Claxton, Georgia
3.0867, 3.0994

Faculdade de Ciencias Medicas da Santa Casa de Sao Paulo, Sao Paulo, Brazil
3.1657

Finnish Cancer Registry, Helsinki, Finland
3.1689, 3.1905, 3.2570

Finseninstitutet, Copenhagen, Denmark
3.0647, 3.1482, 3.1709, 3.1994

Fondation Curie, Paris, France
3.2721

Fondation Leon MBA, Paris, France
3.1697

Forensic Sciences Foundation Inc., Colorado Springs, Colorado
3.0337

Fovarosi Bajcsy-Zsilinszky Korhaz Tuedogondozo Intezet, Budapest, Hungary
3.1998

Fox Chase Cancer Center, Philadelphia, Pennsylvania
3.0655

Frauenklinik Bezirkskrankenhauses Cottbus, Cottbus, German Democratic Republic
3.1493

Fred Hutchinson Cancer Research Center, Seattle, Washington
3.0555, 3.0562, 3.0581, 3.0654, 3.0757, 3.0759, 3.1159, 3.1161, 3.1260, 3.1288, 3.2155, 3.2263, 3.2264, 3.2375, 3.2383

Freie Universitat Berlin, Berlin, Federal Republic of Germany
3.1497, 3.1498

Friedrich Alexander Universitat zu Erlangen Nurenberg, Erlangen, Federal Republic of Germany
3.1501

Fukuoka University, Fukuoka City, Japan
3.1992

G.M. Hospital & Research Inst., Goa, India
3.0029, 3.0030

Gadjah Mada University, Jogjakarta, Indonesia
3.2134

Gaevle Sjukhus, Gaevle, Sweden
3.2120

Gallup Org. Inc., Princeton, New Jersey
3.0321

Gameat Al Iskandaria, Alexandria, Egypt
3.0538

Gannon College, Erie, Pennsylvania
3.1322

General City Hospital of Alessandria, Alessandria, Italy
3.1984

General Hospital, Copenhagen, Denmark
3.1887

General Hospital of Birmingham, Birmingham, England, United Kingdom
3.2676

Geomet Inc., Gaithersburg, Maryland
3.1291, 3.2388

George Washington University, Washington, District of Columbia
3.0323, 3.0327, 3.0336, 3.0573, 3.2292

George Washington University, Bethesda, Maryland
3.2157

Georgetown University, Washington, District of Columbia
3.0094, 3.0642, 3.0916

Gerhard Domagk Research Group Cancer Epidem. & Environ. Hyg., Miami, Florida
3.2387

Gesellschaft fuer Strahlen und Umweltforschung mbH Munchen, Neuherberg, Federal Republic of Germany
3.1706, 3.2103

Gila River Indian Community Council, Sacaton, Arizona
3.0961

Gomel Provincial Oncological Dispensary, Gomel, Union of Soviet Soc. Republics
3.2016

Good Samaritan Hospital & Medical Center, Portland, Oregon
3.1190

Gorgas Memorial Inst. of Tropical & Preventive Medicine Inc., Washington, District of Columbia
3.0639, 3.0899

Gorgas Memorial Lab. of Tropical & Preventive Medicine, Balboa Heights, Canal Zone
3.1800, 3.1801

Goteborgs Universitet, Goteborg, Sweden
3.0081, 3.1548

Government Medical College, Ajni, India
3.2585

Grady Memorial Hospital, Atlanta, Georgia
3.1588

Greater Glasgow Area Health Board, Glasgow, Scotland, United Kingdom
3.1569, 3.1570, 3.2101, 3.2102

Groote Schuur Hospital, Cape Town, South Africa
3.2123

Grupo Argentino Cooperativo de Estudios Epid. en Hematologia, Buenos Aires, Argentina
3.1868, 3.1983, 3.2630

Gujarat Cancer & Research Inst., Ahmedabad, India
3.1508, 3.1509, 3.1510

Guntur Medical College, Guntur, India
3.2561

Hacettepe Universitesi, Ankara, Turkey
3.1560, 3.1941, 3.1942, 3.1985, 3.2027

Hahnemann Medical College & Hospital, Philadelphia, Pennsylvania
3.0002, 3.0031, 3.0914, 3.2159, 3.2211, 3.2404

Hanford Environmental Health Foundation Inc., Richland, Washington
3.0219

Harvard University, Belmont, Massachusetts
3.0257

Harvard University, Boston, Massachusetts
3.0007, 3.0281, 3.0568, 3.0579, 3.0619, 3.0626, 3.0645, 3.0651, 3.0658, 3.0798, 3.0805, 3.0823, 3.0854, 3.0887, 3.0903, 3.1034, 3.1040, 3.1052, 3.1092, 3.1147, 3.1157, 3.1189, 3.2158, 3.2192, 3.2218, 3.2236, 3.2317, 3.2318, 3.2327, 3.2344, 3.2384, 3.2409, 3.2465, 3.2488, 3.2507

Harvard University, Cambridge, Massachusetts
3.0768, 3.1110

Haskoia Islands, Reykjavik, Iceland
3.0215, 3.1731, 3.2571

Health & Safety Center, London, England, United Kingdom
3.1650, 3.1912, 3.1913, 3.1914, 3.1915, 3.2534, 3.2542, 3.2546, 3.2550, 3.2559, 3.2560

Health Commission of New South Wales, Sydney, Australia
3.1646, 3.2002

Health Inst., Tel Aviv, Israel
3.1520, 3.1987

Health Insurance Plan of Greater New York, New York, New York
3.0849, 3.0865, 3.2347

Health Systems Inc., Reading, Massachusetts
3.1339

Hebrew University of Jerusalem, Jerusalem, Israel
3.0949, 3.1317, 3.2574, 3.2702

Hektoen Inst. for Medical Research, Chicago, Illinois
3.0868

Helsingin Yliopisto, Espoo, Finland
3.2019

Helsingin Yliopisto, Helsinki, Finland
3.0087, 3.1488, 3.1489, 3.1682, 3.2627

Henry Ford Hospital, Detroit, Michigan
3.1617

Hiroshima University, Hiroshima, Japan
3.0044, 3.1526

Hopital Bichat, Paris, France
3.2038

Hopital Charles Foix, Ivry sur Seine, France
3.2720

Hopital Edouard Herriot, Lyon, France
3.1693

Hospital Belen, Trujillo, Peru
3.2067

Hospital de Clinicas Gaffree e Guinle - FEFIERJ, Rio de Janeiro, Brazil
3.2572

Hospital de Ninos de Buenos Aires, Buenos Aires, Argentina
3.1462

Hospital de S. Joao, Porto, Portugal
3.1793

Hospital District of Viana do Castelo, Viana do Castelo, Portugal
3.1957

Hospital du St. Sacrement, St. Foy, Quebec, Canada
3.0064

Hospital Infantil de la Ciudad Sanitaria Virgen del Rocio, Sevilla, Spain
3.1935

Hospital of the University of Pennsylvania, Philadelphia, Pennsylvania
3.2180

Howard University, Washington, District of Columbia
3.0542, 3.0571, 3.0702, 3.2204

Huddinge Sjukhus, Huddinge, Sweden
3.1717, 3.1776, 3.1917

Human Ecology Inst., Chapel Hill, North Carolina
3.0316

Illinois Cancer Council, Chicago, Illinois
3.0664

Imperial Cancer Research Fund, London, England, United Kingdom
3.0033, 3.0034, 3.0035, 3.0036, 3.1451, 3.1783

Imperial Cancer Research Fund, Oxford, England, United Kingdom
3.1774, 3.1775, 3.2050, 3.2051, 3.2091

Imperial Chemical Industries Ltd., Wilmslow, England, United Kingdom
3.1859

Indiana University, Indianapolis, Indiana
3.0829, 3.1070

Inst. de Seguridad Social, Medellin, Colombia
3.2583

Inst. for Cancer Research, Philadelphia, Pennsylvania
3.0660, 3.0755, 3.0756, 3.2181, 3.2466, 3.2467

Inst. for Medical Research, Kuala Lumpur, Malaysia
3.0151

Inst. for Research in Social Behavior, Oakland, California
3.0278, 3.0298

Inst. for Research on Social Problems, Boulder, Colorado
3.0274

Inst. Nacional de Recherche et de Securite, Nancy, France
3.1491

Inst. Nacional Regional de Oncologia, Santa Fe, Argentina
3.1660

Inst. Nacionale de Oncologia, Madrid, Spain
3.1989

Inst. National de la Sante et de la Recherche Medicale, Paris, France
3.2568

Inst. National de la Sante et de la Recherche Medicale, St. Cloud, France
3.2029, 3.2722

Inst. National de la Sante et de la Recherche Medicale, Villejuif, France
3.2085

Inst. of Cancer Research, Sutton, England, United Kingdom
3.1769, 3.1770, 3.1771, 3.1954, 3.1969, 3.1970, 3.2557, 3.2591, 3.2673, 3.2677, 3.2678, 3.2679, 3.2680, 3.2681, 3.2682, 3.2683, 3.2684

Inst. of Chronic Diseases & Gerontology, Belgrade, Yugoslavia
3.1461

Inst. of Hygiene & Social Medicine, Sarajevo, Yugoslavia
3.0475

Inst. of Medical Microbiology, Copenhagen, Denmark
3.1483

Inst. of Medicine & Pharmacy, Iasi, Romania
3.1927, 3.1928

Inst. of Mineral Raw Materials, Kutna Hora, Czechoslovakia
3.1481

Inst. of Occupational Health, Helsinki, Finland
3.1487, 3.1690

Inst. of Occupational Medicine, Edinburgh, Scotland, United Kingdom
3.2590

Inst. of Oncology, Gliwice, Poland
3.1797, 3.2650, 3.2654

Inst. of Pediatric Research, Brno, Czechoslovakia
3.2615

Inst. of Public Health, Tokyo, Japan
3.1858, 3.1978

Inst. of Social Oncology, Rotterdam, Netherlands
3.1810, 3.1811

Institut du Cancer de Montreal, Montreal, Quebec, Canada
3.1880, 3.1881

Institut Gustave Roussy, Villejuif, France
3.0740, 3.1698

Instituto Nacional de Cancerologia, Bogota, Colombia
3.0038, 3.0039, 3.2567

Instituto Nacional de Ginecologia Preventiva e Reprod. Hum., Rio de Janeiro, Brazil
3.2072

Instituto Oncologia Angel H. Roffo, Buenos Aires, Argentina
3.0040, 3.0060, 3.1849, 3.1871, 3.1872

Institutul Oncologic Cluj-Napoca, Cluj-Napoca, Romania
3.1785

Instytut Onkologii im Marii Sklodowskiej Curie, Warsaw, Poland
3.1541, 3.1542

Inter American University of Puerto Rico, Aguadilla, Puerto Rico
3.0513

International Psychosomatic & Cross-Cultural Leukemia Proj., Oldenburg, Federal Republic of Germany
3.0053

Iowa Lutheran Hospital, Des Moines, Iowa
3.2328

Israel Center for Registration of Cancer & Allied Diseases, Jerusalem, Israel
3.1518, 3.2687, 3.2705

Istanbul Medical School, Istanbul, Turkey
3.2087

Istanbul Universitesi, Istanbul, Turkey
3.1561, 3.1936, 3.2685

Istituto di Biometria, Milan, Italy
3.0022

Istituto di Oncologia, Genoa, Italy
3.1866, 3.2035, 3.2128

Istituto Nazionale per lo Studio e la Cura dei Tumori, Milan, Italy
3.0021, 3.0738, 3.2031, 3.2127

Istituto Regina Elena per lo Studio e la Cura dei Tumori, Rome, Italy
3.1524

J.K. Cancer Inst., Kanpur, India
3.1990

James Hardie Industries Ltd., Camellia, Australia
3.2009

Jarvis Breast Screening, Surrey, England, United Kingdom
3.1752

Jaszbereny Hospital, Jaszbereny, Hungary
3.2634

Jefferson County Health Dept., Lakewood, Colorado
3.0634, 3.2412

Jewish General Hospital, Montreal, Quebec, Canada
3.0265

Jichi Medical School, Tochigi, Japan
3.1759, 3.1828

Jinnah Postgraduate Medical Center, Karachi, Pakistan
3.1980

Johannes Gutenberg Universitat Mainz, Mainz, Federal Republic of Germany
3.1737

John B. Pierce Foundation of Connecticut, New Haven, Connecticut
3.1109

Johns Hopkins University, Baltimore, Maryland
3.0008, 3.0214, 3.0258, 3.0385, 3.0494, 3.0509, 3.0520, 3.0621, 3.0622, 3.0628, 3.0670, 3.0789, 3.0792, 3.0839, 3.0872, 3.0896, 3.0922, 3.0950, 3.0952, 3.1000, 3.1058, 3.1075, 3.1082, 3.1083, 3.1084, 3.1090, 3.1101, 3.1107, 3.1244, 3.1265, 3.1589, 3.2185, 3.2323, 3.2324, 3.2325, 3.2403, 3.2518, 3.2519

Joslin Diabetes Foundation Inc., Boston, Massachusetts
3.0776

Kaiser Foundation Research Inst., Los Angeles, California
3.0708, 3.0857

Kaiser Foundation Research Inst., Oakland, California
3.0588, 3.0769, 3.2228, 3.2301, 3.2302, 3.2442

Kaiser Foundation Research Inst., Portland, Oregon
3.0767

Kanagawa Childrens Medical Center, Yokohama, Japan
3.1932

Kansas State University, Manhattan, Kansas
3.0045, 3.0395

Kaplan Memorial Hospital, Rehovot, Israel
3.0643, 3.1747, 3.2541

Kappa Systems Inc., Arlington, Virginia
3.1270

Karolinska Institutet, Huddinge, Sweden
3.2138

Karolinska Institutet, Stockholm, Sweden
3.1956, 3.2003

KAS Herlev, Herlev, Denmark
3.1907

Katholieke Universiteit Nijmegen, Nijmegen, Netherlands
3.1806, 3.1993

Kazakhskiy Nii Onkologii I Radio., Alma Ata,, Union of Soviet Soc. Republics
3.1640

Kobenhavns Amts Sygehus Glostrup, Glostrup, Denmark
3.2633

Kobenhavns Tandlaegehojskole, Copenhagen, Denmark
3.2554, 3.2620

Kobenhavns Universitet, Copenhagen, Denmark
3.1710, 3.2054, 3.2718

Koranyi National Inst. for Tuberculosis & Pulmonology, Budapest, Hungary
3.2602

Krabbameinsfelag Islands, Reykjavik, Iceland
3.1891

Krajaska Hygienicka Stanice, Ostrava, Czechoslovakia
3.2018

Krebsregister beidor Basel, Basel, Switzerland
3.2062

Kreiskrankenhaus Kreispoliklinik, Templin, German Democratic Republic
3.1496, 3.2086

Kuakini Medical Center, Honolulu, Hawaii
3.0686, 3.1252, 3.2144, 3.2195, 3.2286

Kungliga Tekniske Hogskolan, Stockholm, Sweden
3.2663

Kurume University, Kurume City, Japan
3.1819

Kyoto University, Kyoto, Japan
3.2691

Kyushu University, Fukuoka City, Japan
3.1835, 3.1900, 3.1901, 3.2060, 3.2061

Lancaster Cleft Palate Clinic, Lancaster, Pennsylvania
3.1068

LDS Hospital, Salt Lake City, Utah
3.0602, 3.0913

Leeds Area Health Authority, Leeds, England, United Kingdom
3.1571

Leopold Franzens Universitat Innsbruck, Innsbruck, Austria
3.1469

Lincoln University, Jefferson City, Missouri
3.0102

Lions Gate Hospital, Vancouver, British Columbia, Canada
3.2656

Loma Linda University, Loma Linda, California
3.0009, 3.0322, 3.0576, 3.0814, 3.1245, 3.2280

Los Angeles County Sanitation District, Whittier, California
3.1298

Louisiana State University, Baton Rouge, Louisiana
3.0117

Louisiana State University, New Orleans, Louisiana
3.0550, 3.0656, 3.0749, 3.0795, 3.0832, 3.0869, 3.0875, 3.0923, 3.1634, 3.1963, 3.2326

Louisville & Jefferson City Dept. of Public Health, Louisville, Kentucky
3.1268

Lovelace Center for the Health Sciences, Albuquerque, New Mexico
3.0246

Loyola University of Chicago, Maywood, Illinois
3.0993

Ludwig Maximilians University Munchen, Munich, Federal Republic of Germany
3.2020, 3.2024

Luisenhospital, Aachen, Federal Republic of Germany
3.2715

Mahidol University, Bangkok, Thailand
3.0049, 3.1888, 3.1997, 3.1999, 3.2661, 3.2669

Malmo General Hospital, Malmo, Sweden
3.2556, 3.2593, 3.2594

Manitoba Cancer Treatment & Research Foundation, Winnipeg, Manitoba, Canada
3.1952, 3.1953

Massachusetts General Hospital, Boston, Massachusetts
3.0264, 3.0339, 3.0617, 3.0661, 3.0894, 3.1594, 3.1596, 3.2436

Massachusetts Inst. of Technology, Cambridge, Massachusetts
3.0247, 3.1078, 3.1099

Mayo Clinic, Rochester, Minnesota
3.0069, 3.2184, 3.2422, 3.2423, 3.2425, 3.2426, 3.2427, 3.2455, 3.2457, 3.2458, 3.2459, 3.2470, 3.2471

Mayo Foundation, Rochester, Minnesota
3.0592, 3.0638, 3.0851, 3.0852, 3.0951, 3.0962, 3.0968, 3.0969, 3.1125, 3.1126, 3.1127, 3.1128, 3.1129, 3.1130, 3.1131, 3.1132, 3.1133, 3.1134, 3.1135, 3.1136, 3.1137, 3.1138, 3.1139, 3.1140, 3.1141, 3.1142, 3.1143, 3.1144, 3.1145, 3.1146, 3.1148, 3.1149, 3.1150, 3.1151, 3.1152, 3.1153, 3.1154, 3.1155, 3.1165, 3.1166, 3.1167, 3.1168, 3.1169, 3.1170, 3.1171, 3.1172, 3.1173, 3.1174, 3.1199

McGill University, Mont St. Hilaire, Quebec, Canada
3.1675

McGill University, Montreal, Quebec, Canada
3.1672, 3.1673, 3.1906

McMaster University, Hamilton, Ontario, Canada
3.0062, 3.1475, 3.1661, 3.1662, 3.1873, 3.1877

Medical Academy, Sofia, Bulgaria
3.1959

Medical College, Trivandrum, India
3.0046

Medical College of Wisconsin, Milwaukee, Wisconsin
3.0650, 3.0833, 3.1024, 3.2374

Medical Foundation, Enugu, Nigeria
3.2694

Medical Research Council, Cambridge, England, United Kingdom
3.1744

Medical Research Council, Harrow, England, United Kingdom
3.2599, 3.2638

Medical Research Council, London, England, United Kingdom
3.1450, 3.2563, 3.2565

Medical Research Council, Oxfordshire, England, United Kingdom
3.2577

Medical Research Council, Cardiff, Wales, United Kingdom
3.1567, 3.1743, 3.1745, 3.2057

Medical Research Council, Penarth, Wales, United Kingdom
3.1772, 3.2637

Medical University of South Carolina, Charleston, South Carolina
3.0499, 3.0517, 3.1095

Medico Social Research Board, Dublin, Ireland
3.1967, 3.1968

Medizinische Hochschule Hannover, Hannover, Federal Republic of Germany
3.1704, 3.2717

Meharry Medical College, Nashville, Tennessee
3.0289

Memorial Hospital, Pawtucket, Rhode Island
3.0861

Memorial Sloan Kettering Cancer Center, New York, New York
3.0689, 3.1637, 3.2405, 3.2418, 3.2450, 3.2473, 3.2531

Memorial University of Newfoundland, St. Johns, Newfoundland, Canada
3.0061

Michigan Cancer Foundation, Detroit, Michigan
3.0614, 3.1616, 3.2339, 3.2340

Michigan State University, East Lansing, Michigan
3.0054, 3.0101, 3.0782

Midhurst Medical Research Inst., Midhurst, England, United Kingdom
3.1449

Mie University, Torii-Cho, Japan
3.1760

Ministerio de Salud Publica, Havana, Cuba
3.1478, 3.2081

Ministerio de Sanidad y Seguridad Social, Madrid, Spain
3.1940

Ministry of Chemical Industry, Bucharest, Romania
3.1791, 3.1792, 3.1795, 3.1883

Ministry of Concern for Public Health, Buffalo, New York
3.2421, 3.2506

Ministry of Health, Bilbais, Egypt
3.0351

Ministry of Health, Minsk, Union of Soviet Soc. Republics
3.1843

Ministry of Health, Tel Aviv, Israel
3.1748, 3.2695

Ministry of Health & Welfare, Tokyo, Japan
3.1988, 3.2660

Ministry of Health of the Estonian SSR, Tallinn, Union of Soviet Soc. Republics
3.1644, 3.1841, 3.2107, 3.2588

Ministry of Health of the Georgian SSR, Tbilisi, Union of Soviet Soc. Republics
3.1955

Ministry of Labour, Jerusalem, Israel
3.1519

Mitre Corp., Bedford, Massachusetts
3.0714

Miyagi Cancer Society, Sendai, Japan
3.2108

Monell Chemical Senses Center, Philadelphia, Pennsylvania
3.0845

Monsanto Co., St. Louis, Missouri
3.2342, 3.2343

Montana State University, Bozeman, Montana
3.0540

Montefiore Hospital & Medical Center, Bronx, New York
3.0120

Moscow Research Inst. of Oncology, Moscow, Union of Soviet Soc. Republics
3.1642

Mount Sinai Hospital, Minneapolis, Minnesota
3.0796

Mount Sinai Medical Center, New York, New York
3.2479

Mount Vernon Hospital, Northwood, England, United Kingdom
3.1779

Muhimbili Medical Centre, Dar es Salaam, Tanzania
3.2012

N.N. Petrov Inst. of Oncology Research, Leningrad, Union of Soviet Soc. Republics
3.1996, 3.2117

Nagasaki University, Nagasaki, Japan
3.0056, 3.2013

Nagoya University, Nagoya, Japan
3.1530, 3.1817, 3.1818, 3.2653

Nara Medical University, Kashihara Shi, Japan
3.1829

National Academy of Sciences, Washington, District of Columbia
3.0705, 3.2222, 3.2290, 3.2476

National Board of Health & Welfare, Stockholm, Sweden
3.1725

National Board of Occupational Safety & Health, Solna, Sweden
3.1550

National Bureau of Economic Research Inc., Cambridge, Massachusetts
3.1235

National Cancer Inst., Bangkok, Thailand
3.2039

National Cancer Inst. of Canada, Toronto, Ontario, Canada
3.0063, 3.1960, 3.2623

National Inst. for Water Supply, Leidschendam, Netherlands
3.2116

National Inst. of Genetics, Mishima, Japan
3.2696

National Inst. of Hygiene, Warsaw, Poland
3.0480, 3.2701

National Inst. of Industrial Health, Kawasaki, Japan
3.1527

National Inst. of Public Health, Bilthoven, Netherlands
3.1860, 3.2118

National Inst. of Radiological Sciences, Chiba, Japan
3.1857

National Jewish Hospital & Research Center, Denver, Colorado
3.1043

National Public Health Lab. Service, Nairobi, Kenya
3.0028

National Radiological Protection Board, Oxford, England, United Kingdom
3.1568

National School of Public Health of Portugal, Lisbon, Portugal
3.2000

National Survey of Childhood Cancers, Birmingham, England, United Kingdom
3.2604

National Taiwan University, Taipei, Republic of China
3.1553

Navajo Community College, Tsaile, Arizona
3.0514

Nederlands Kankerinstituut, Amsterdam, Netherlands
3.2714

New England Regional Primate Research Center, Southborough, Massachusetts
3.2346

New York Academy of Medicine, New York, New York
3.0211

New York Academy of Sciences, New York, New York
3.1105

New York Blood Center of Greater N.Y. Community Blood Coun., New York, New York
3.0791, 3.0804, 3.0870

New York City Dept. of Health, New York, New York
3.0900

New York State Psychiatric Inst., New York, New York
3.0301, 3.0345

New York University, New York, New York
3.0209, 3.0216, 3.0244, 3.0387, 3.0398, 3.0594, 3.1077, 3.1079, 3.1085, 3.1086, 3.1087, 3.1088, 3.1089, 3.1103, 3.1121, 3.1627, 3.1638, 3.1639, 3.2209, 3.2281, 3.2478

New Zealand Dept. of Health, Wellington, New Zealand
3.1947, 3.2713

Norsk Hydro, Porsgrunn, Norway
3.2053

Norsk Hydros Inst. for Cancer Research, Oslo, Norway
3.0075

North Dakota State University, Fargo, North Dakota
3.0105

North Manchester General Hospital, Manchester, England, United Kingdom
3.1766

North Staffordshire Medical Inst., Stoke on Trent, England, United Kingdom
3.1582

North Western Regional Health Authority, Stockport, England, United Kingdom
3.2643

Northern California Cancer Program Inc., Palo Alto, California
3.0549, 3.0606

Northwestern University, Chicago, Illinois
3.0570, 3.0751, 3.0810, 3.2220, 3.2255

Norwalk Hospital, Norwalk, Connecticut
3.1631

Oak Ridge Associated Universities Inc., Oak Ridge, Tennessee
3.0221, 3.0235, 3.0240

Odense Universitet, Odense, Denmark
3.1485, 3.1708, 3.1861

Office of Population Censuses & Surveys, London, England, United Kingdom
3.1937, 3.1938

Ohio State University, Columbus, Ohio
3.0669, 3.0942, 3.1266, 3.1292, 3.2235

Okayama Prefectural Health Dept., Okayama City, Japan
3.1532

Oklahoma Medical Research Foundation, Oklahoma City, Oklahoma
3.0784, 3.1327

Old Dominion University, Norfolk, Virginia
3.0119

Oncological Inst. of Cluj-Napoca, Cluj, Romania
3.1543

Onkologial Gondozo Intezet, Ajka, Hungary
3.1739

Ontario Cancer Inst., Toronto, Ontario, Canada
3.0086

Ontario Cancer Treatment & Research Foundation, Toronto, Ontario, Canada
3.1961, 3.1962

Ontario Occupational Health & Safety Div., Toronto, Ontario, Canada
3.2015

Operations Research Inc., Silver Spring, Maryland
3.0721

Oregon State Higher Education System, Eugene, Oregon
3.1240

Oregon State Higher Education System, Portland, Oregon
3.0148, 3.0254, 3.0504, 3.0847, 3.1313, 3.2160

Orthopaedische Universitaetklinik, Hamburg, Federal Republic of Germany
3.1502

Osaka University, Osaka, Japan
3.2052

Ospedale Generale Provinciale - Monfalcone, Monfalcone, Italy
3.2025

Oulun Yliopisto, Oulu, Finland
3.2581

Pahlavi University, Shiraz, Iran
3.1723

Pakistan Atomic Energy Commission, Peshawar, Pakistan
3.0041

Pakistan Atomic Energy Commission, Rawalpindi, Pakistan
3.0042

Pathologisch Anatomisch Laboratorium, Middelburg, Netherlands
3.2647

Pathologisches Institut der Staedtischen Kliniken, Dortmund, Federal Republic of Germany
3.1500

Pennsylvania State University, Hershey, Pennsylvania
3.1187

Peter Bent Brigham Hospital, Boston, Massachusetts
3.0986, 3.1250

Peter MacCallum Hospital, Melbourne, Australia
3.1664

Portugal Ministry of Public Welfare, Lisbon, Portugal
3.0741

Postgraduate Inst. of Medical Education & Research Chandigarh, India
3.1890

Postgraduate Medical School, Budapest, Hungary
3.1730

Princess Alexandra Hospital, Brisbane, Australia
3.1668

Queen Elizabeth Hospital, Gateshead, England, United Kingdom
3.1753

Queens Medical Center, Honolulu, Hawaii
3.0304

Queens University, Kingston, Ontario, Canada
3.1705

Queens University of Belfast, Belfast, Northern Ireland, United Kingdom
3.1740, 3.1930

Radiation Effects Research Foundation, Hiroshima, Japan
3.1827, 3.1976

Rand Corp., Santa Monica, California
3.1325

Raybestos-Manhatten Inc., Trumbull, Connecticut
3.2460

Receptor Research Inst., Los Angeles, California
3.0346

Regional Cancer Registry, Birmingham, England, United Kingdom
3.1459, 3.1746, 3.2665, 3.2667, 3.2668

Regional Lung Diseases Control Centre, Poznan, Poland
3.1796

Regionsjukhuset, Umea, Sweden
3.1711, 3.1923, 3.1933, 3.2670

Registre Genevois des Tumeurs, Geneva, Switzerland
3.1556

Registre Neuchatelois des Tumeurs, Neuchatel, Switzerland
3.1558

Registro de Cancer de La Paz, La Paz, Bolivia
3.0077, 3.2077

Registro Nacional de Patologia Tumoral, Asuncion, Paraguay
3.1798, 3.1799, 3.1869

Research Triangle Inst., Research Triangle Park, North Carolina
3.1283

Rigshospitalet, Copenhagen, Denmark
3.1484

Rijksuniversiteit te Gent, Ghent, Belgium
3.2636

Rijksuniversiteit te Utrecht, Utrecht, Netherlands
3.2635

Rockland Research Inst., Orangeburg, New York
3.0306

Roswell Park Memorial Inst., Buffalo, New York
3.0547, 3.1599, 3.2169

Rotterdamsch Radiotherapeutisch Instituut, Rotterdam, Netherlands
3.2543

Royal College of General Practitioners, Manchester, England, United Kingdom
3.1580

Royal North Shore Hospital of Sydney, Sydney, Australia
3.0072

Royal Prince Alfred Hospital, Sydney, Australia
3.1467

Royal Southern Memorial Hospital, Melbourne, Australia
3.0975

Royal Victoria Infirmary, Newcastle Upon Tyne, England, United Kingdom
3.2095

Ruchill Hospital, Glasgow, Scotland, United Kingdom
3.0719

Ruprecht Karl Universitat Heidelberg, Heidelberg, Federal Republic of Germany
3.2112

Ruprecht Karl Universitat Heidelberg, Mannheim, Federal Republic of Germany
3.1504

Rush Presbyterian St. Lukes Medical Center, Chicago, Illinois
3.1605, 3.2472

Rush University, Chicago, Illinois
3.0859

Rutgers the State University of New Jersey, New Brunswick, New Jersey
3.0071, 3.0253, 3.0311

S R I International, Menlo Park, California
3.0827, 3.2304, 3.2487

S.I.A.M., New Canaan, Connecticut
3.0245

S.I.A.M., Philadelphia, Pennsylvania
3.1295, 3.1333

Saga Medical School, Saga, Japan
3.2135, 3.2136

Saitama Cancer Center, Saitama-Ken, Japan
3.1536, 3.1874

Science Applications Inc., La Jolla, California
3.1290

Science Applications Inc., Los Angeles, California
3.1272, 3.2303, 3.2392

Segi Inst. of Cancer Epidemiology, Nagoya, Japan
3.2688

Semmelweis Orvostudomanyi Egyetem, Budapest, Hungary
3.2071, 3.2596, 3.2712

Seoul National University, Seoul, Republic of Korea
3.1809

Seton Medical Center, Austin, Texas
3.0249

Shanghai Cancer Inst., Shanghai, Peoples Republic of China
3.2065

Shell Internationale Petroleum Maatschappij N.V., Rotterdam, Netherlands
3.2535

Shell Nederland Raffinaderij B.V., Rotterdam, Netherlands
3.2689

Shirati Mission Hospital, Musoma, Tanzania
3.1559

Sidney Farber Cancer Center Inc., Boston, Massachusetts
3.0004, 3.0578, 3.0600, 3.0616

Sigma Data Computing Corp., Rockville, Maryland
3.1278

Silicosis Research Inst., Bochum, Federal Republic of Germany
3.1499

Simon Fraser University, Burnaby, British Columbia, Canada
3.2605, 3.2628

Sloan Kettering Inst. for Cancer Research, New York, New York
3.0557, 3.0558, 3.0575, 3.0615

Slovak Akademie Ved, Bratislava, Czechoslovakia
3.1479, 3.1480

South African Dept. of Health Welfare & Pensions, Johannesburg, South Africa
3.1455, 3.2671

South African Inst. for Medical Research, Johannesburg, South Africa
3.1649, 3.1764, 3.1787, 3.1886, 3.2552

South African Medical Research Council, Johannesburg, South Africa
3.1842, 3.2036

South African Medical Research Council, Tygerberg, South Africa
3.1546, 3.1547

South Dakota State University, Brookings, South Dakota
3.0107

South Pacific Research Inst. Inc., Auckland, New Zealand
3.0315

Southern Alberta Cancer Centre, Calgary, Alberta, Canada
3.1656, 3.2028

Southwest Research Inst., San Antonio, Texas
3.1321

Special Service for Groups Inc., Los Angeles, California
3.0324

St. Christophers Hospital for Children, Philadelphia, Pennsylvania
3.0863

St. Jude Childrens Research Hospital, Memphis, Tennessee
3.0657, 3.2368

St. Louis Regional Maternal & Child Health Council, St. Louis, Missouri
3.0989

St. Lukes Hospital, Dublin, Ireland
3.1517

St. Marys Hospital & Medical Center, Grand Junction, Colorado
3.0217

Staatliches Amt fuer Atomsicherheit und Strahlenschutz, Berlin, German Democratic Republic
3.1862

Staedtisches Krankenhaus im Friedrichsham, Berlin, German Democratic Republic
3.1492

Stanford University, Stanford, California
3.0389, 3.0390, 3.0853, 3.0897, 3.0925, 3.1041, 3.1193, 3.1253, 3.2513

State Bureau of Cancer Control, Albany, New York
3.0567, 3.0631, 3.0644, 3.1584, 3.2336, 3.2446, 3.2525

State Bureau of Prevention, Madison, Wisconsin
3.1621

State Dept. of Environmental Protection, Trenton, New Jersey
3.1293, 3.2337

State Dept. of Health, Little Rock, Arkansas
3.2254

State Dept. of Health, Minneapolis, Minnesota
3.1297, 3.2400, 3.2520

State Dept. of Health, Trenton, New Jersey
3.0717

State Dept. of Health, Albany, New York
3.0482

State Dept. of Health, Providence, Rhode Island
3.0946

State Dept. of Health, Richmond, Virginia
3.2152

State Dept. of Health & Human Resources, New Orleans, Louisiana
3.0116

State Dept. of Health Services, Berkeley, California
3.0909, 3.1029, 3.2300

State Dept. of Health Services, Oakland, California
3.0729, 3.2440, 3.2508

State Dept. of Health Services, Sacramento, California
3.1294

State Dept. of Health Services, Hartford, Connecticut
3.0545

State Dept. of Mental Hygiene, Albany, New York
3.0294

State Div. of Epidemiology & Disease Control, Denver, Colorado
3.2217, 3.2297, 3.2443

State Div. of Highways, Boise, Idaho
3.1273

State Div. of Lab. & Research, Albany, New York
3.0920

State Epidemiological Studies Lab., Berkeley, California
3.2480

State Health & Welfare Agency, Sacramento, California
3.0692

State Health Div., Olympia, Washington
3.1318

State Office of Highway Safety Planning, Lansing, Michigan
3.1277

State University & Community College System of Tennessee, Nashville, Tennessee
3.0108, 3.0109

State University Hospital, Leyden, Netherlands
3.1808

State University of New York, Buffalo, New York
3.0270, 3.0591, 3.1051, 3.1598, 3.2172, 3.2190, 3.2194, 3.2330, 3.2331, 3.2332, 3.2438, 3.2439

State University of New York, Stony Brook, New York
3.1098

State University of New York, Syracuse, New York
3.0150, 3.0884

State University System of Florida, Gainesville, Florida
3.0111, 3.0512, 3.0531, 3.2199

State University System of Florida, Tallahassee, Florida
3.0090

State University System of Florida, Tampa, Florida
3.0905

Stichting Nederlandse Werkgroep Leukemie bij Kinderen, Hague, Netherlands
3.1979

Straub Clinic & Hospital, Honolulu, Hawaii
3.2173

Sverdlovsk Research Inst. of Hygiene of Labor & Occup. Dis., Sverdlovsk, Union of Soviet Soc. Republics
3.1643, 3.1899, 3.2664

Systemedics Inc., Reading, Massachusetts
3.0723

Szabolcs Szatmar County Hospital, Nyiregyhaza, Hungary
3.2014, 3.2706, 3.2707, 3.2708, 3.2709

Tampere Central Hospital, Tampere, Finland
3.1845

Tampere Yliopisto, Tampere, Finland
3.1846, 3.2586

Tata Inst. of Fundamental Research, Bombay, India
3.1511, 3.2121, 3.2639, 3.2640

Tata Memorial Center, Bombay, India
3.1512

Tata Memorial Hospital, Bombay, India
3.1893, 3.1894, 3.1895, 3.1896, 3.2658, 3.2659

Technische Universitat Hannover, Hannover, Federal Republic of Germany
3.2723

Technology Inc., Houston, Texas
3.0123

Tel Aviv University, Tel Aviv, Israel
3.0392

Tel Aviv University, Tel Hashomer, Israel
3.1850

Telemark Sentralsjukehus, Porsgrunn, Norway
3.1884, 3.1898, 3.1904

Temple University, Philadelphia, Pennsylvania
3.1063, 3.2156, 3.2367, 3.2390

TERA Inc., Arlington, Virginia
3.0248

Texas A & M University, Prairie View, Texas
3.0110

Texas Christian University, Fort Worth, Texas
3.0340

Texas Womans University, Denton, Texas
3.0980

Thomas Jefferson University, Philadelphia, Pennsylvania
3.0613

Tohoku University, Sendai, Japan
3.1814

Tokyo Medical & Dental University, Tokyo, Japan
3.2575

Tokyo Medical College Hospital, Tokyo, Japan
3.1813

Tolna County Hospital, Szekszard, Hungary
3.1507, 3.2131

Triton Corp., Washington, District of Columbia
3.0748

Tufts University, Boston, Massachusetts
3.0286

Tufts University, Medford, Massachusetts
3.0093

Tulane University of Louisiana, New Orleans, Louisiana
3.0787, 3.0788, 3.0793, 3.0794, 3.0831, 3.0834, 3.0874, 3.0892, 3.0901, 3.0921, 3.1635, 3.2231, 3.2491

U.S. Dept. of Agriculture

Agricultural Research, Yakima, Washington
3.0096

Nutrition Inst.

Carbohydrate Nutrition Lab., Beltsville, Maryland
3.0095

Lipid Nutrition Lab., Beltsville, Maryland
3.0092

U.S. Dept. of Commerce

National Bureau of Standards

Center for Consumer Product Tech, Gaithersburg, Maryland
3.0112

Social & Economics Statistics Admin.

Bureau of the Census, Washington, District of Columbia
3.0731

U.S. Dept. of Defense

Air Force

Aerospace Medical Research Lab., Dayton, Ohio
3.0118

School of Aerospace Medicine, San Antonio, Texas
3.0121, 3.0122, 3.0124, 3.0125

Armed Forces Inst. of Pathology, Washington, District of Columbia
3.0126, 3.0127, 3.0128, 3.0129, 3.0130, 3.0131, 3.0132, 3.0133, 3.0134, 3.0135, 3.0136, 3.2529, 3.2530

Army

Medical Research & Development Command

Aeromedical Research Lab., Ozark, Alabama
3.0137

Bioengineering & Life Support Equipment Div., Ozark, Alabama
3.0138

Communicable Disease & Immunology Research Div., Washington, District of Columbia
3.0154, 3.0155, 3.0156, 3.0158

Div. of Pathology, Washington, District of Columbia
3.0149

Field Research & Biomedical Applications Div., Fort Rucker, Alabama
3.0139

Letterman Army Inst. of Research, San Francisco, California
3.0141

Medical Bioengineering Research & Development Lab., Frederick, Maryland
3.0142

Medical Component, Bangkok
3.0162
Medical Research Inst. of Infectious Diseases, Frederick, Maryland
3.0143
Medical Research Unit, Kuala Lumpur
3.0160
New York, New York
3.0159
Neuropsychiatry Div., Washington, District of Columbia
3.0161
Preventive Medicine Div., Washington, District of Columbia
3.0157
Research Inst. of Environmental Medicine, Natick, Massachusetts
3.0144, 3.0145, 3.0146
Walter Reed Army Inst. of Research, Washington, District of Columbia
3.0153, 3.0163
Test & Evaluation Command
Environmental & Life Science Div., Dugway, Utah
3.0164, 3.0165, 3.0166

Navy
Naval Aerospace Medical Research Lab., Pensacola, Florida
3.0191
Naval Dental Research Inst.
Dental Care Delivery Div., Great Lakes, Illinois
3.0171
Naval Health Research Center
Environmental & Social Medicine Div., San Diego, California
3.0169, 3.0173, 3.0176, 3.0177
Naval Medical Research & Development Command
National Naval Medical Center, Bethesda, Maryland
3.0184
Naval Medical Research Inst.
Biochemistry Div., Bethesda, Maryland
3.0193
Data Analysis Div., Bethesda, Maryland
3.0194
Naval Medical Research Unit #2, San Francisco, California
3.0172, 3.0180, 3.0182, 3.0185, 3.0195, 3.0197
Epidemiology & Clinical Investigation Dept., San Francisco, California
3.0175
Medical Ecology Dept., San Francisco, California
3.0183, 3.0188, 3.0190
Virology Dept., San Francisco, California
3.0196
Naval Medical Research Unit #3, New York, New York
3.0027, 3.0168, 3.0537
Bacteriology Dept., New York, New York
3.0201
Clinical Investigation Dept., New York, New York
3.0200, 3.0202, 3.0203, 3.0204
Clinical Tropical Medicine Dept., New York, New York
3.0198
Immunology & Parasitology Dept., New York, New York
3.0178, 3.0187
Medical Zoology Dept., New York, New York
3.0186
Veterinary Medicine Dept., New York, New York
3.0192, 3.0199
Virology Dept., New York, New York
3.0179
Naval Submarine Medical Research Lab.
Biochemistry Div., Groton, Connecticut
3.0174
Naval Environmental Medicine Dept., Groton, Connecticut
3.0207
Operational Medicine Dept., Groton, Connecticut
3.0189
Personnel Psychology Dept., Groton, Connecticut
3.0170, 3.0205
Physiology Dept., Groton, Connecticut
3.0206
Vision Div., Groton, Connecticut
3.0181
Uniformed Services University of the Health Sciences
Dept. of Preventive Medicine & Biometrics, Bethesda, Maryland
3.0167

U.S. Dept. of Energy
Argonne National Lab., Argonne, Illinois
3.0229, 3.1337, 3.1340
Battelle Pacific Northwest Lab., Richland, Washington
3.0226, 3.0239, 3.0243, 3.1341
Brookhaven National Lab., Upton, New York
3.0228, 3.0232, 3.0234
Div. of Biological & Medical Research, Argonne, Illinois
3.0223
Oak Ridge National Lab., Oak Ridge, Tennessee
3.0225, 3.0237
Biology Div., Oak Ridge, Tennessee
3.1267
Central Management Office, Oak Ridge, Tennessee
3.0218

U.S. Dept. of Health & Human Services
Public Health Service
Alcohol Drug Abuse & Mental Health Admin.
National Inst. of Mental Health, Washington, District of Columbia
3.0284
Bethesda, Maryland
3.0251, 3.0252, 3.0255, 3.0256
Center for Disease Control, Washington, District of Columbia
3.0732
Atlanta, Georgia
3.0713, 3.2289, 3.2291
Bureau of Epidemiology, Anchorage, Alaska
3.2221
Atlanta, Georgia
3.2170, 3.2226
Bureau of Lab., Atlanta, Georgia
3.0353, 3.0354, 3.0355, 3.0356, 3.0357, 3.0358, 3.0359, 3.0360, 3.0361, 3.0362, 3.0363, 3.0364, 3.0365
National Inst. for Occupational Safety & Health, Rockville, Maryland
3.0428, 3.0469
Cincinnati, Ohio
3.0366, 3.0369, 3.0370, 3.0371, 3.0372, 3.0373, 3.0374, 3.0375, 3.0376, 3.0377, 3.0378, 3.0379, 3.0380, 3.0381, 3.0382, 3.0383, 3.0384, 3.0403, 3.0404, 3.0405, 3.0406, 3.0407, 3.0408, 3.0410, 3.0411, 3.0412, 3.0416, 3.0419, 3.0420, 3.0421, 3.0422, 3.0423, 3.0425, 3.0426, 3.0429, 3.0430, 3.0431, 3.0432, 3.0433, 3.0434, 3.0435, 3.0436, 3.0438, 3.0439, 3.0440, 3.0443, 3.0444, 3.0445, 3.0446, 3.0447, 3.0448, 3.0449, 3.0450, 3.0451, 3.0452, 3.0453, 3.0454, 3.0455, 3.0456, 3.0459, 3.0467, 3.0468, 3.1606, 3.1609, 3.1610, 3.1611, 3.1612, 3.1613, 3.1614, 3.2148, 3.2182, 3.2207, 3.2210, 3.2216, 3.2249, 3.2361, 3.2362, 3.2380, 3.2395, 3.2396, 3.2407, 3.2408, 3.2417, 3.2430, 3.2449, 3.2451, 3.2452, 3.2461, 3.2475, 3.2481, 3.2484, 3.2485, 3.2504, 3.2514, 3.2515
Morgantown, West Virginia
3.0367, 3.0368, 3.0413, 3.0415, 3.0418, 3.0424, 3.0427, 3.0441, 3.0442, 3.0457, 3.0458, 3.0460, 3.0461, 3.0462, 3.0463, 3.0464, 3.0465, 3.0466, 3.0470, 3.0471, 3.0472, 3.0473, 3.0474, 3.0712, 3.2394, 3.2433, 3.2492, 3.2524
Food & Drug Admin.
Bureau of Biologics, Bethesda, Maryland
3.2310
Bureau of Foods, Washington, District of Columbia
3.0477, 3.0478, 3.0479
Bureau of Radiological Health, Rockville, Maryland
3.1336, 3.2311
Hospital, San Francisco, California
3.0486
National Inst. of Health, Accra
3.1505
Clinical Center, Bethesda, Maryland
3.0487, 3.0488, 3.0489
Div. of Computer Research & Technology, Bethesda, Maryland
3.0490, 3.0491, 3.0492
National Cancer Inst., Bethesda, Maryland
3.0665, 3.0666, 3.0672, 3.0673, 3.0674, 3.0675, 3.0676, 3.0677, 3.0678, 3.0679, 3.0680, 3.0695, 3.0696, 3.0699, 3.1590, 3.1591, 3.1592, 3.2162, 3.2201, 3.2208, 3.2272, 3.2312, 3.2319, 3.2320, 3.2321, 3.2322, 3.2376, 3.2382, 3.2420, 3.2435, 3.2437, 3.2464, 3.2468, 3.2489, 3.2490, 3.2505, 3.2511, 3.2517, 3.2528
Boston, Massachusetts
3.1595, 3.2163
National Heart Lung & Blood Inst., Bethesda, Maryland
3.0824, 3.2142
National Inst. of Allergy & Infectious Diseases, Bethesda, Maryland
3.0933, 3.0934, 3.0935, 3.0936
Hamilton, Montana
3.0932, 3.0937, 3.0938
National Inst. of Arthritis Metabolism & Digestive Diseases, Phoenix, Arizona
3.0953, 3.0954, 3.0956, 3.0957, 3.0958
Bethesda, Maryland
3.0955, 3.0959, 3.0960
National Inst. of Child Health & Human Development, Bethesda, Maryland
3.0990, 3.1009, 3.1010, 3.1011, 3.1012, 3.1013, 3.1014, 3.1015, 3.1016, 3.1017, 3.1018, 3.1019
National Inst. of Dental Research, Bethesda, Maryland
3.1053, 3.1054, 3.1055
National Inst. of Environmental Health Sciences, Research Triangle Park, North Carolina
3.1112, 3.1113, 3.1114, 3.1115, 3.1116, 3.1117, 3.1118, 3.1119, 3.1120
National Inst. of Neurological & Communicative Dis. & Stroke, Bethesda, Maryland
3.1179, 3.1180, 3.1181, 3.1182, 3.1183, 3.1184, 3.1185, 3.1186, 3.1202, 3.1203, 3.1204, 3.1205, 3.1206, 3.1207, 3.1208, 3.1209, 3.1210, 3.1211, 3.1212, 3.1213, 3.1214, 3.1215, 3.1216, 3.1217, 3.1218, 3.1219, 3.1220, 3.1221, 3.1222, 3.1223, 3.1224, 3.1225, 3.1226
National Inst. on Aging, Baltimore, Maryland
3.1227, 3.1228, 3.1246, 3.1247
Bethesda, Maryland
3.1229, 3.1230, 3.1231, 3.1232, 3.1233, 3.1234

U.S. Dept. of the Interior
Geological Survey
Geologic Div., Reston, Virginia
3.1271

U.S. Environmental Protection Agency
Office of Research & Development
Health Effects Research Lab., Research Triangle Park, North Carolina
3.1299, 3.1300, 3.1301, 3.1302, 3.1303, 3.1304, 3.1305, 3.1306, 3.1307, 3.1308
Cincinnati, Ohio
3.1309, 3.1311, 3.1312, 3.1315, 3.1316, 3.1319, 3.1607, 3.1608
Field Studies Div., Cincinnati, Ohio
3.1310, 3.1320
Population Studies Div., Research Triangle Park, North Carolina

3.2357, 3.2358
U.S. Tennessee Valley Authority
Office of Management Services
Div. Of Health & Safety
Div. of Medical Services, Chattanooga, Tennessee
3.0414
Div. of Occupational Health & Safety, Muscle Shoals, Alabama
3.0417
U.S. Veterans Admin.
Dept. of Medicine & Surgery
Medical Center, Tucson, Arizona
3.1388
Little Rock, Arkansas
3.1370, 3.1379
Loma Linda, California
3.1345
Long Beach, California
3.1362
Los Angeles, California
3.1348, 3.1376, 3.1383, 3.1406, 3.1411, 3.1412, 3.1429, 3.1439
Palo Alto, California
3.1369, 3.1371
San Diago, California
3.1346, 3.1358, 3.1404, 3.1418
West Haven, Connecticut
3.1349, 3.1378, 3.1380, 3.1409, 3.1413
Washington, District of Columbia
3.1351, 3.1363, 3.1364, 3.1367, 3.1372, 3.1374, 3.1393, 3.1394
Gainesville, Florida
3.1424
Miami, Florida
3.1347, 3.1434, 3.1435
Augusta, Georgia
3.1375
Chicago, Illinois
3.1359, 3.1385
Indianapolis, Indiana
3.1381
Iowa City, Iowa
3.1437
Leavenworth, Kansas
3.1405
Lexington, Kentucky
3.1415
Louisville, Kentucky
3.1387
Shreveport, Louisiana
3.1343, 3.1357, 3.2265
Togus, Maine
3.1390, 3.1421
Boston, Massachusetts
3.1408
Brockton, Massachusetts
3.1384
West Roxbury, Massachusetts
3.1356, 3.1431
Allen Park, Michigan
3.1417
Minneapolis, Minnesota
3.1386
St. Louis, Missouri
3.1373
Omaha, Nebraska
3.1354
East Orange, New Jersey
3.1402, 3.2273, 3.2334, 3.2335, 3.2391, 3.2509
Albuquerque, New Mexico
3.1427, 3.1433
Bronx, New York
3.1360
Brooklyn, New York
3.1420
Buffalo, New York
3.1355, 3.1419, 3.1426
New York, New York
3.1403
Durham, North Carolina
3.1365, 3.1366, 3.1391
Fayetteville, North Carolina
3.1407, 3.1425, 3.1430
Fargo, North Dakota
3.1395
Oklahoma City, Oklahoma
3.1352, 3.1423
Philadelphia, Pennsylvania
3.1438
Pittsburgh, Pennsylvania
3.1392
San Juan, Puerto Rico
3.1422
Charleston, South Carolina
3.1382
Sioux Falls, South Dakota
3.1397
Dallas, Texas
3.1389, 3.1401
Hampton, Virginia
3.1432
Richmond, Virginia
3.1418
Salem, Virginia
3.1400, 3.1410
Seattle, Washington
3.1398, 3.1436
Tacoma, Washington
3.1426
Martinsburg, West Virginia
3.1353, 3.1361
Madison, Wisconsin
3.1344
Wood, Wisconsin
3.1350, 3.1414
Outpatient Clinic, Boston, Massachusetts
3.1368, 3.1377, 3.1396, 3.1399
Regional Office, Washington, District of Columbia
3.2266, 3.2267, 3.2293, 3.2294, 3.2295
Uganda Cancer Inst., Kampala, Uganda
3.2666
Umea University, Umea, Sweden
3.1714
Union University, Albany, New York
3.0300
Universidad Catolica de Puerto Rico, Ponce, Puerto Rico
3.0519, 3.0527
Universidad de Chile, Santiago, Chile
3.1686
Universidad de El Salvador, San Salvador, El Salvador
3.1440
Universidad del Valle, Cali, Colombia
3.1477, 3.2580
Universidad Nacional de Trujillo, Trujillio, Peru
3.2066, 3.2088
Universidade de Coimbra, Coimbra, Portugal
3.2033
Universidade de Sao Paulo, Sao Paulo, Brazil
3.1854, 3.2544
Universidade do Amazonas, Manaus, Brazil
3.1441
Universidade Estadual de Campinas, Campinas, Brazil
3.0083
Universidade Federal do Ceara, Fortaleza, Brazil
3.2068
Universita degli Studi di Bari, Bari, Italy
3.2536, 3.2651
Universita degli Studi di Camerino, Camerino, Italy
3.1525
Universita degli Studi di Genova, Genoa, Italy
3.0018, 3.1832, 3.2699, 3.2700
Universita degli Studi di Milano, Milan, Italy
3.0019, 3.1833, 3.2032
Universita degli Studi di Palermo, Palermo, Italy
3.2096
Universita degli Studi di Perugia, Perugia, Italy
3.0058, 3.2644
Universita degli Studi di Sassari, Sassari, Italy
3.1836, 3.1838, 3.1839, 3.1840, 3.1908
Universita degli Studi di Siena, Siena, Italy
3.2137
Universita degli Studi di Torino, Turin, Italy
3.0024, 3.1523, 3.1837, 3.1870, 3.1972, 3.2056, 3.2629
Universita degli Studi di Trieste, Trieste, Italy
3.1834
Universitaet des Saarlandes, Homburg, Federal Republic of Germany
3.2719
Universitaets Frauenklinik, Hamburg, Federal Republic of Germany
3.1703
Universitaets Frauenklinik, Tubingen, Federal Republic of Germany
3.2129
Universitas Airlangga, Surabaya, Indonesia
3.1514, 3.1724
Universitat Basel, Basel, Switzerland
3.2126
Universitat Basel, St. Gallen, Switzerland
3.1712
Universitat Bern, Bern, Switzerland
3.0084, 3.1939, 3.2584
Universitat Duesseldorf, Duesseldorf, Federal Republic of Germany
3.2125
Universitat Hamburg, Hamburg, Federal Republic of Germany
3.2545
Universitat Hospital of Urology, Bonn, Federal Republic of Germany
3.1503, 3.2716
Universitat Karlova, Prague, Czechoslovakia
3.2606
Universitat Wien, Vienna, Austria
3.0720, 3.1470, 3.1471, 3.1948, 3.2011, 3.2022, 3.2047
Universitat zu Koln, Cologne, Federal Republic of Germany
3.1699, 3.1700
Universite Catholique de Louvain, Brussels, Belgium
3.1949
Universite dAbidjan, Abidjan, Ivory Coast
3.2648
Universite dAix Marseille, Marseille, France
3.2613
Universite de Dijon, Dijon, France
3.2619, 3.2622
Universite de Grenoble, Grenoble, France
3.1986
Universite de Lausanne, Lausanne, Switzerland
3.1557, 3.1892, 3.2045
Universite de Lyon, Lyon, France
3.2083
Universite de Picardy, Amiens, France
3.1867
Universite de Sherbrooke, Sherbrooke, Quebec, Canada
3.1678
Universite Laval, Quebec City, Quebec, Canada
3.1284

Universite Laval, Ste. Foy, Quebec, Canada
3.1676, 3.2079

Universite Louis Pasteur - Universite de Strasbourg, Strasbourg, France
3.1875

Universiteit van Amsterdam, Amsterdam, Netherlands
3.1812

Universitetet i Bergen, Bergen, Norway
3.1804

Universitetet i Trondheim, Trondheim, Norway
3.1026, 3.2697

Universiti Malaya, Kuala Lumpur, Malaysia
3.1538, 3.2132

University Central Hospital of Kuopio, Kuopio, Finland
3.2070

University College of Swaziland, Kwaluseni, Swaziland
3.1830

University College of Swaziland, Malkerns, Swaziland
3.1777

University Hospital, Uppsala, Sweden
3.0078, 3.0079, 3.0082, 3.1715, 3.2021, 3.2598

University Hospital of Aarhus, Aarhus, Denmark
3.0047, 3.0048

University Hospital of Lund, Lund, Sweden
3.1549, 3.1716

University Hospital of South Manchester, Manchester, England, United Kingdom
3.1765, 3.1945, 3.1946, 3.1977, 3.2044

University Hospital of Umea, Umea, Sweden
3.0080

University of Aberdeen, Aberdeen, Scotland, United Kingdom
3.2558, 3.2600

University of Adelaide, Adelaide, Australia
3.0068

University of Alabama in Birmingham, Birmingham, Alabama
3.0564, 3.0595, 3.0858, 3.0992, 3.1001, 3.1027, 3.1046, 3.1050, 3.1060, 3.1593, 3.2313, 3.2434, 3.2499

University of Alberta, Edmonton, Alberta, Canada
3.1658, 3.2621

University of Arizona, Tucson, Arizona
3.0097, 3.0140, 3.0779, 3.0790, 3.0871, 3.0908, 3.2248

University of Athens, Athens, Greece
3.1733, 3.1734, 3.1847, 3.2686, 3.2690

University of Auckland, Auckland, New Zealand
3.1296, 3.2010, 3.2704

University of Baghdad, Baghdad, Iraq
3.1965

University of Belgrade, Belgrade, Yugoslavia
3.1645, 3.1844

University of Besancon, Besancon, France
3.1878

University of Birmingham, Birmingham, England, United Kingdom
3.0050, 3.0052, 3.1565

University of British Columbia, Vancouver, British Columbia, Canada
3.0067, 3.0882, 3.1687, 3.1848, 3.1852

University of California, Berkeley, California
3.0025, 3.0220, 3.0224, 3.0230, 3.0238, 3.0241, 3.0309, 3.0926, 3.1002, 3.1004, 3.2168, 3.2239, 3.2240, 3.2241, 3.2299, 3.2486

University of California, Davis, California
3.0098, 3.0099, 3.0826, 3.2296, 3.2462

University of California, Irvine, California
3.0212, 3.0279, 3.0973, 3.2229, 3.2489

University of California, La Jolla, California
3.0506, 3.0521, 3.0541, 3.0806, 3.2246

University of California, Livermore, California
3.0222, 3.0236, 3.0242

University of California, Los Angeles, California
3.0262, 3.0302, 3.0496, 3.0515, 3.0584, 3.0641, 3.0649, 3.0661, 3.0683, 3.0694, 3.0825, 3.0976, 3.0984, 3.0987, 3.1005, 3.1048, 3.1049, 3.1124, 3.1195, 3.2253, 3.2308, 3.2314, 3.2429

University of California, Riverside, California
3.0944, 3.1281

University of California, San Francisco, California
3.0005, 3.0593, 3.0733, 3.0778, 3.0812, 3.0877, 3.1100, 3.2250, 3.2262, 3.2283, 3.2516

University of California, Torrance, California
3.0574, 3.0912

University of California, Los Alamos, New Mexico
3.0227, 3.0231, 3.0233, 3.2279, 3.2512

University of Chicago, Chicago, Illinois
3.0006, 3.0296, 3.0331, 3.0332, 3.0338, 3.0508, 3.0535, 3.0580, 3.0668, 3.1025, 3.2143, 3.2225, 3.2237

University of Cincinnati, Cincinnati, Ohio
3.0483, 3.0529, 3.1073, 3.1080, 3.1081, 3.1096, 3.1106, 3.1279, 3.1286, 3.2214, 3.2359, 3.2360

University of Colorado, Denver, Colorado
3.0493, 3.0966

University of Connecticut, Farmington, Connecticut
3.0277, 3.0310, 3.0319, 3.0320, 3.0910, 3.1072

University of Dar es Salaam, Dar es Salaam, Tanzania
3.1554

University of Denver, Denver, Colorado
3.0556

University of Dublin Trinity College, Dublin, Ireland
3.1515, 3.1516

University of Dundee, Dundee, Scotland, United Kingdom
3.1763

University of Edinburgh, Edinburgh, Scotland, United Kingdom
3.0051

University of Essex, Colchester, England, United Kingdom
3.2063

University of Ghana, Accra, Ghana
3.0746, 3.2124

University of Glasgow, Glasgow, Scotland, United Kingdom
3.1754

University of Hartford, West Hartford, Connecticut
3.1622

University of Hawaii System, Honolulu, Hawaii
3.0032, 3.0114, 3.0210, 3.0627, 3.0633, 3.0701, 3.0939, 3.0940, 3.0985, 3.0988, 3.1032, 3.1047, 3.1158, 3.2149, 3.2167, 3.2287, 3.2288, 3.2424, 3.2447

University of Health Sciences - Chicago Medical School, Chicago, Illinois
3.2141, 3.2166

University of Ibadan, Jos, Nigeria
3.2696

University of Illinois, Chicago, Illinois
3.0275, 3.0773, 3.0902, 3.1061, 3.1062, 3.1108, 3.1603, 3.1604, 3.2244, 3.2285

University of Illinois, Urbana, Illinois
3.1263

University of Iowa, Iowa City, Iowa
3.0260, 3.0280, 3.0325, 3.0347, 3.0393, 3.0551, 3.0697, 3.0813, 3.0873, 3.0996, 3.1044, 3.2277, 3.2463, 3.2501, 3.2502

University of Iowa, Oakdale, Iowa
3.0728, 3.1008, 3.1249, 3.2278, 3.2495

University of Isfahan, Isfahan, Iran
3.2711

University of Kansas, Kansas City, Kansas
3.0313, 3.0725

University of Kansas, Lawrence, Kansas
3.0333, 3.1243

University of Kent, Canterbury, England, United Kingdom
3.2093

University of Kentucky, Lexington, Kentucky
3.0815

University of Khartoum, Khartoum, Sudan
3.1831

University of Linkoping, Linkoping, Sweden
3.1718, 3.1719, 3.1720, 3.1721, 3.1911, 3.2089

University of Liverpool, Liverpool, England, United Kingdom
3.1922

University of London, London, England, United Kingdom
3.0014, 3.0015, 3.1572, 3.1574, 3.1575, 3.1576, 3.1578, 3.1579, 3.1750, 3.1756, 3.1757, 3.1761, 3.1778, 3.1784, 3.2005, 3.2006, 3.2007, 3.2008, 3.2592, 3.2601

University of Louisville, Louisville, Kentucky
3.2174, 3.2215, 3.2416

University of Manitoba, Winnipeg, Manitoba, Canada
3.0065

University of Maryland, Baltimore, Maryland
3.0213, 3.0624, 3.0625, 3.0835, 3.0891, 3.0904, 3.2161, 3.2186, 3.2187, 3.2188, 3.2189, 3.2398, 3.2410, 3.2411, 3.2419, 3.2444

University of Maryland, College Park, Maryland
3.0113

University of Massachusetts, Worcester, Massachusetts
3.0261, 3.0652, 3.2270, 3.2345

University of Melbourne, Melbourne, Australia
3.1667

University of Miami, Coral Gables, Florida
3.0295, 3.0348, 3.0587, 3.0816, 3.0995, 3.1623, 3.2406, 3.2413, 3.2414, 3.2415, 3.2428, 3.2497, 3.2510

University of Michigan, Ann Arbor, Michigan
3.0059, 3.0276, 3.0297, 3.0307, 3.0317, 3.0401, 3.0850, 3.0889, 3.0898, 3.0963, 3.0971, 3.1067, 3.2393, 3.2448

University of Minnesota, Minneapolis, Minnesota
3.0481, 3.0485, 3.0745, 3.0777, 3.0836, 3.0860, 3.0885, 3.0931, 3.0965, 3.0996, 3.1163, 3.1175, 3.1176, 3.1191, 3.1241, 3.1262, 3.1280, 3.2146

University of Minnesota, St. Paul, Minnesota
3.0089

University of Mississippi, Jackson, Mississippi
3.0783, 3.0819

University of Missouri, Columbia, Missouri
3.0612, 3.1285, 3.1324, 3.1615, 3.2245

University of Nairobi, Nairobi, Kenya
3.1807, 3.2703

University of Nebraska, Lincoln, Nebraska
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University of Nebraska, Omaha, Nebraska
3.0569, 3.0742, 3.1632, 3.2333, 3.2341, 3.2385

University of New Mexico, Albuquerque, New Mexico
3.0546, 3.0693, 3.1036, 3.1251, 3.1585, 3.2271, 3.2401, 3.2521

University of Newcastle Upon Tyne, Newcastle Upon Tyne, England, United Kingdom
3.1563, 3.1768, 3.2646

University of Nigeria, Enugu, Nigeria
3.1991

University of North Carolina, Chapel Hill, North Carolina
3.0822, 3.0917, 3.1021, 3.1030, 3.1071, 3.1282, 3.1289, 3.1342, 3.1600, 3.1601, 3.1602, 3.2150, 3.2356, 3.2483, 3.2532

University of North Carolina, Charlotte, North Carolina
3.1331

University of North Carolina, Greensboro, North Carolina
3.0104

University of North Carolina, Raleigh, North Carolina
3.1111

University of North Dakota, Grand Forks, North Dakota
3.0326

University of Occupational & Environmental Health, Kitakyushu, Japan
3.1528

University of Oklahoma, Norman, Oklahoma
3.1323

University of Oklahoma, Oklahoma City, Oklahoma
3.0843, 3.0947

University of Otago, Dunedin, New Zealand
3.2094

University of Ottawa, Ottawa, Ontario, Canada
3.1473

University of Oxford, Oxford, England, United Kingdom
3.1447, 3.1448, 3.1452, 3.1453, 3.1454, 3.1456, 3.1457, 3.1460, 3.1773, 3.1780, 3.1781, 3.1782, 3.1897, 3.1964, 3.1973, 3.2037, 3.2641

University of Pennsylvania, Philadelphia, Pennsylvania
3.0001, 3.0088, 3.0396, 3.0505, 3.0518, 3.0523, 3.0525, 3.0563, 3.0603, 3.0653, 3.0736, 3.0771, 3.0948, 3.1003, 3.1026, 3.1242, 3.1261, 3.1633, 3.2223, 3.2234

University of Pittsburgh, Pittsburgh, Pennsylvania
3.0266, 3.0303, 3.0386, 3.0620, 3.0735, 3.0818, 3.0838, 3.0846, 3.0855, 3.0883, 3.1069, 3.1267, 3.1276, 3.2151, 3.2198, 3.2259, 3.2365, 3.2366, 3.2453, 3.2477

University of Poona, Poona, India
3.2564

University of Puerto Rico, Rio Piedras, Puerto Rico
3.0572, 3.0734

University of Queensland, Herston, Australia
3.2041

University of Rochester, Rochester, New York
3.0026, 3.0272, 3.0497, 3.0526, 3.0596, 3.0599, 3.0750, 3.0841, 3.0866, 3.0911, 3.0915, 3.0945, 3.1074, 3.1076, 3.1093, 3.1094, 3.1122, 3.1123, 3.1198, 3.1395, 3.2224

University of Singapore, Singapore, Singapore
3.1544, 3.1786, 3.2533

University of South Carolina, Columbia, South Carolina
3.0388

University of Southern California, Los Angeles, California
3.0334, 3.0548, 3.0585, 3.0604, 3.0605, 3.0611, 3.0635, 3.0648, 3.0685, 3.0700, 3.0707, 3.0802, 3.0928, 3.0979, 3.1264, 3.1332, 3.2147, 3.2202, 3.2203, 3.2305, 3.2306, 3.2307, 3.2309, 3.2315, 3.2316, 3.2474

University of Stellenbosch, Tygerberg, South Africa
3.0085, 3.2566

University of Sydney, St. Leonards, Australia
3.1665

University of Sydney, Sydney, Australia
3.1666

University of Tasmania, Hobart, Australia
3.2608, 3.2645

University of Tennessee, Memphis, Tennessee
3.0807

University of Texas, Austin, Texas
3.1442

University of Texas, Dallas, Texas
3.0344, 3.0880

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